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TELEGRAPH AND TELEPHONE MEN AND WOMEN.

XXXIII.—

MISS A. A. SHACKLOCK.

Miss A. A. Shacklock, the senior Chief Supervisor of the Central Telegraph Office, retires from the service in the course of October, and it is fitting that she should form the subject of this month's notice, for her retirement is an event of more than ordinary importance in the life of the Central Telegraph Office. She has passed right through all the grades, and ends her official career in what is now the highest position for women in the Central Telegraph Office. In temperament and character and attractiveness she has cared for the welfare of the large woman establishment, has directed the operations of the special departments under her care, and has always been



more than ready to help in particular cases where help was needed. Whilst welfare work, as ordinarily understood in industry, is a considerable portion of the responsibility of this post, it is not the whole responsibility nor is it separated from the direction and control of telegraph operations generally. To combine these functions with the sense of firm and just discipline, calls for those particular qualifications which Miss Shacklock pre-eminently possessed.

She has been sensitive and sympathetic to changes in the outlook of women and has never lost an especially sympathetic vision of younger life. Into her retirement she takes the particular esteem and regard of a staff which has been very fortunate in its principal women officers.

IMPERIAL WIRELESS SERVICES.

THE BEAM STATIONS.

ONE of the most remarkable developments in wireless telegraphy within recent years has been the discovery of the merits of the short-wave system for long-distance communication. Very short waves, under a metre in length, were used by Hertz in his pioneer experiments which proved the existence of wireless waves, but in the practical application of wireless to commercial purposes, the possibilities of short waves were largely neglected, and as the range of communication increased the trend of development took the direction of using longer and longer waves and greater and greater power, reaching its climax in giant stations, such as Rugby, which employ wave-lengths of the order of 20,000 metres and power of the order of 1,000 kilowatts.

During the war, Senatore Marconi, with the assistance of Mr. Franklin, took up the study of "directive" telegraphy, using reflectors to concentrate and direct the radiated waves in a narrow beam, after the manner of a searchlight. To secure effective results, it is found that the dimensions of the reflector must be of the same order as the wavelength employed, and this consideration precludes the practical use of reflectors for all but very short wavelengths. The development of the short-wave system was facilitated by the evolution of the valve transmitter which solved the problem of producing very short waves. Up to this stage it had been assumed that the range of short waves was too small for practical purposes, but in 1921 it was discovered that short-wave stations, using very low power, were capable of communicating across the Atlantic. This discovery was followed up by Senatore Marconi, who established the practicability of world-wide communication during certain hours of the day on waves under 100 metres in length, and showed that by means of reflecting screens the radiation could be concentrated within a narrow beam, thus ensuring greater economy in power and freedom from interference.

Up to this date it had been the policy not only of the Imperial Government but also of the Dominion and Indian Governments to provide Imperial wireless communication by means of high power stations, but suddenly in 1923 Senatore Marconi disconcerted all preconceived notions on the subject by announcing the wonders of the short-wave directive, or so-called "beam" system, which he claimed would provide adequate services for a limited number of hours per day at a much smaller capital expenditure. The Government decided to give the system a trial, and an agreement was accordingly made with the Marconi Company in July, 1924, for the erection on sites to be provided by the Government of a beam station in this country for communication with a reciprocal station in Canada, which they undertook to erect through their affiliated Canadian Company, with provision for its extension, if required, for similar services with South Africa, Australia and India. The Governments of South Africa, Australia and India adopted the same policy and arranged for the provision of reciprocal beam stations.

The Marconi Company, however, subsequently came to the conclusion that, for technical reasons, the original scheme of concentrating all the sending stations on one site and all the receiving stations on another was impracticable, and a Supplementary Agreement was concluded in November, 1924, which provided for the erection of two groups of two stations each, one in the south-west of England for communication with Canada and South Africa and the other in the Eastern Counties for communication with India and Australia.

Considerable difficulty was experienced in obtaining sites which would satisfy the technical requirements, but ultimately sites for the sending and receiving stations for communication with Canada and South Africa were secured at Bodmin and Bridgwater respectively, and sites for the sending and receiving stations for communication with India and Australia near Grimsby and Skegness respectively. The corresponding stations in the Dominions are

situated near Montreal, near Capetown, near Poona and near Melbourne.

The Agreement provides that the sending and receiving sections of the beam stations are to be capable of working simultaneously, the aerial system of the sending station being so designed as to concentrate the emitted waves within an angle of 30 degrees, and the receiving section to have a similar aerial system, designed to focus the received waves. The stations are to be capable of communication at a speed of 100 five-letter words per minute each way (exclusive of repetitions) during a daily average of 18 hours between England and Canada, 11 hours between England and South Africa, 12 hours between England and India, and 7 hours between England and Australia. Upon the completion of the stations the Company is to give a demonstration by actual working for seven consecutive days that they fulfil these conditions, and if the Engineer-in-Chief of the Post Office is satisfied with the results of the demonstration, the stations are to be handed over to the Postmaster-General, and one half of the agreed purchase price is to be paid to the Company. After six months' working to the satisfaction of the Engineer-in-Chief, a further 25% of the price is to be paid, and the remaining 25% is to be paid at the end of a further period of six months, if the stations have continued to work to the satisfaction of the Engineer-in-Chief. If the stations do not satisfactorily comply with the tests prescribed at any of these stages, the Postmaster-General is free to reject the stations, and the Company must, in that eventuality, refund any money which has already been paid in respect of them.

The Company undertake that any telegrams for this country which come under the control of their affiliated Companies in the Dominions shall be forwarded to a Government station in this country. A similar undertaking is given by the Company as regards any telegrams for the Continent of Europe which are not ordered by the senders for transmission by some other route. At the outset the rates of charge to the public are not to exceed two-thirds of the corresponding cable rates in force at the date of the Agreement (July, 1924), except in the case of Canada, where the rates are not to exceed the existing cable rates.

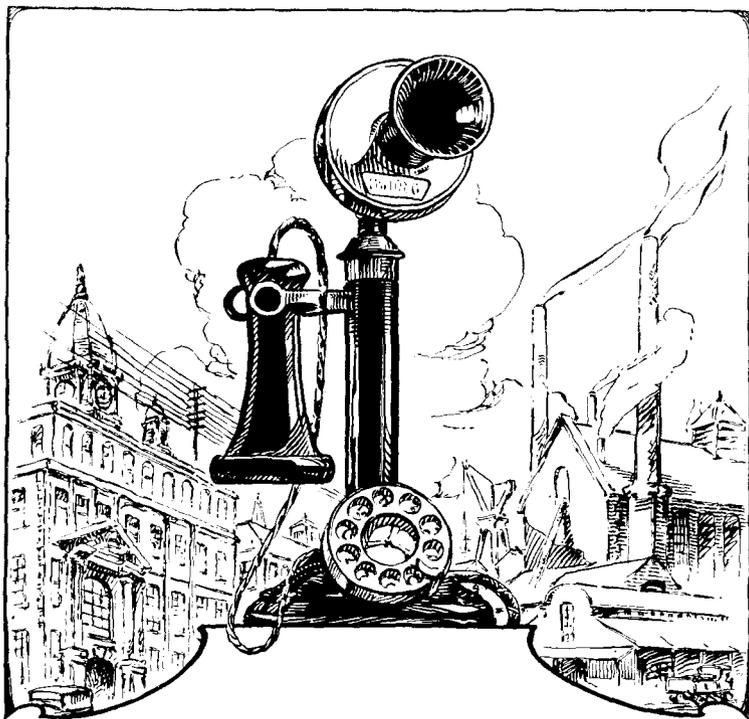
There are ten steel masts at each station 287 feet high, with a cross arm at the top, 90 feet broad, placed in two lines of five each, each line being at right angles to the direction of communication. The aerial and reflector system consists of a number of vertical wires suspended from the triatics attached to the cross-arms, the aerial wires being in front of the masts and the reflector wires behind. Each wire is brought down to a point within a few feet of the ground, and balance weights are provided to minimise the movement of the wires. Each vertical wire is connected to the transmitter or receiver as the case may be by a copper tube supported about two feet above the ground, and so arranged that there is the same length of tubing from the transmitter or receiver to each vertical wire.

The stations at Bodmin and Bridgwater for communication with Canada and South Africa are practically completed and are expected to be ready for the official demonstration within the next few weeks. The stations near Grimsby and Skegness for communication with India and Australia are expected to be ready for preliminary tests about the middle of November. All the stations are to be controlled from the Central Telegraph Office, London, which will thus be placed in direct communication with Montreal, Capetown, Bombay and Sydney.

J. D. C.

THE FRENCH TELEPHONE SYSTEM.

A considerable extension of the telephone system in France is at present in progress. Circuits are being established between Paris, Aurillac, Orleans, Saint Brieuc, Sedan, Troyes, Caen, Montlucon, and Nice. Fourteen new circuits are being provided between Paris and Boulogne (Seine), five between Paris and Clamart, four between Paris and Choisy-le-Roi, nineteen between Paris and Courbevoie, fourteen between Paris and Montreuil, six between Paris and Suresnes, ten between Paris and St. Denis, and one between Paris and Madrid.



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Only a twin wire is required to connect up an instrument.

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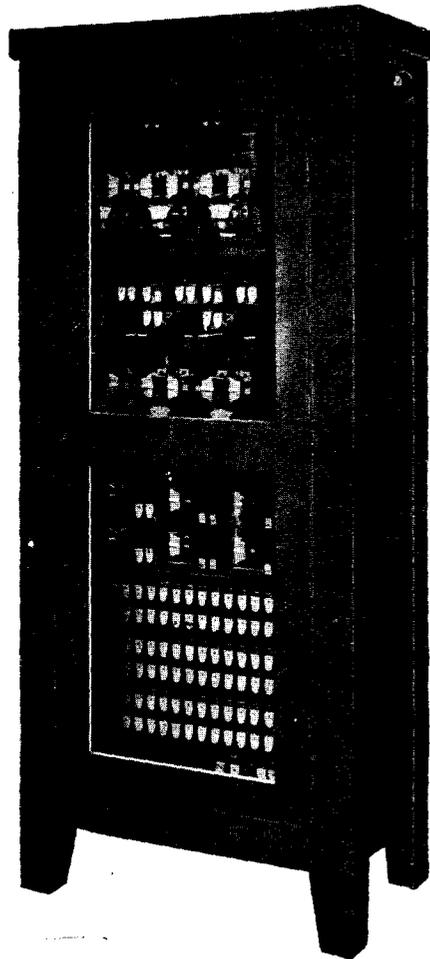
Special service features can be fitted to the standard equipment; to mention but a few:—

Secretary's Service.

This is an arrangement by which ordinary calls for the executive are received by his secretary, who can extend the connection to the executive if desired. The executive, however, can be rung direct by another number known only to a few. The executive has means of cutting out the secretary's telephone, and putting through calls directly.

Fire Alarm Service.

Any person discovering a fire can, by dialling the fire number, automatically sound all fire signals throughout the premises. Those responsible for the fire brigade service can then get into instant communication with the person giving the alarm.



Watchman's Service.

Any or all of the telephones on a Peel-Conner P.A.X. System can be arranged for use as Watchman's stations. On his rounds the Watchman dials a certain number and the station and time of the call can be recorded on an automatic clock, fitted in conjunction with the P.A.X.

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This facility affords a means whereby busy executives can have a "round table conference" without leaving their desks.

Construction, Etc.

The whole of the Switchboard equipment, excepting batteries and power panel, is assembled on an upright iron frame, and enclosed within a substantial hard-wood cabinet, with lockable glass door. It is therefore well protected against accidental damage, dust or interference. It is easily accessible and requires no separate Switchboard room. The necessary current is supplied by a 24-volt Accumulator Battery. Duplicate Batteries are supplied so that one can be charged whilst the other is being used.

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The maintenance of a Peel-Conner P.A.X. is very cheap and simple. There are practically no parts to get out of order, but should a fault occur this can be located, in most cases, immediately, and trouble on one line will not effect the other part of the equipment.

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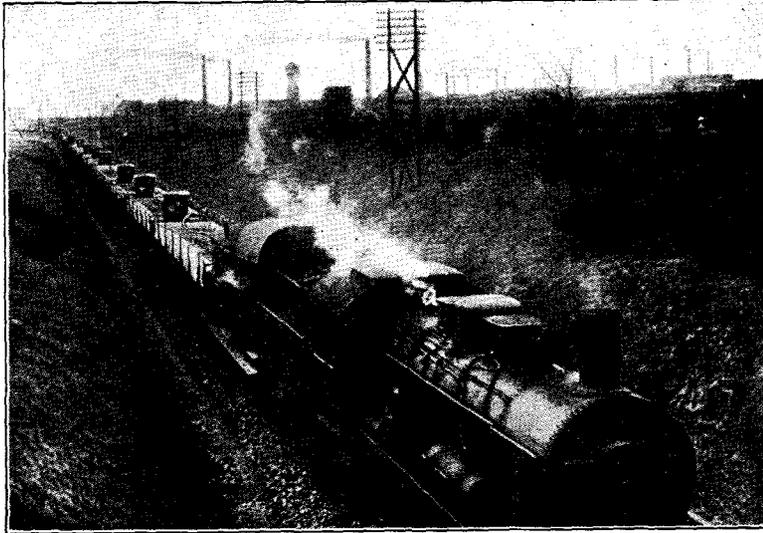
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Telegrams: "Springjack, Coventry."

London Office:
MAGNET HOUSE, KINGSWAY, W.C.2.

Telephone: Regent 7050.
Telegrams: "Peelcontel, Westcent, London."

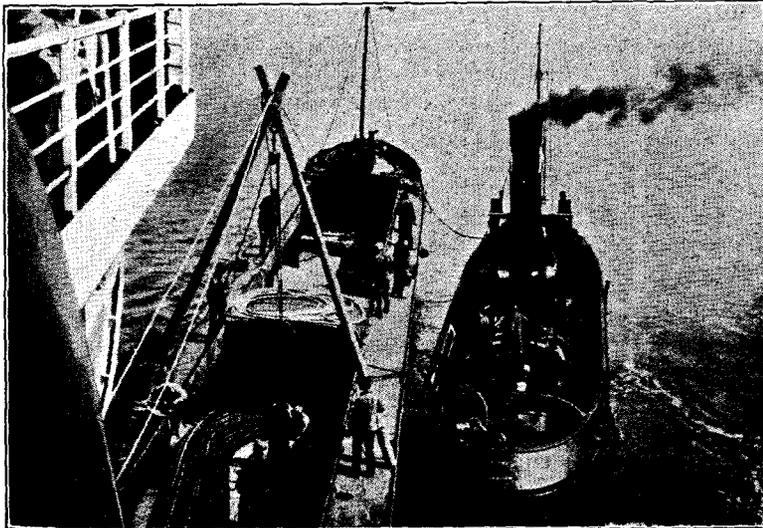
THE LAYING OF THE THIRD ANGLO-DUTCH CABLE.

THE following particulars of the manufacture and laying of the third Anglo-Dutch submarine telephone cable, designed to afford direct communication between this country and Germany, may be of interest to our readers. They are drawn chiefly from an interesting, well-illustrated booklet issued by the manufacturers,



ONE OF THE CABLE-TRAINS ON ITS JOURNEY TO NORDENHAM.

Messrs. Felten & Guilleaume, of Mülheim, near Cologne. The two previous Anglo-Dutch cables, it may be remembered, were manufactured in England by Messrs. Siemens Bros. & Co., of Woolwich, and laid by British cable ships. (An account of the laying of the second cable was contained in our issue of October 1924.) The Netherlands Government, who share with the British Government



THE LIGHTER MAKING READY TO START.

the cost of manufacturing and laying these submarine cables, provided the cable on the present occasion and placed the contract with the German firm above mentioned.

The cable contains 17 wires, namely, four quadruple groups known as "quads" (affording 12 channels of speech), and a worming circuit serving as a thirteenth channel and for voice-frequency

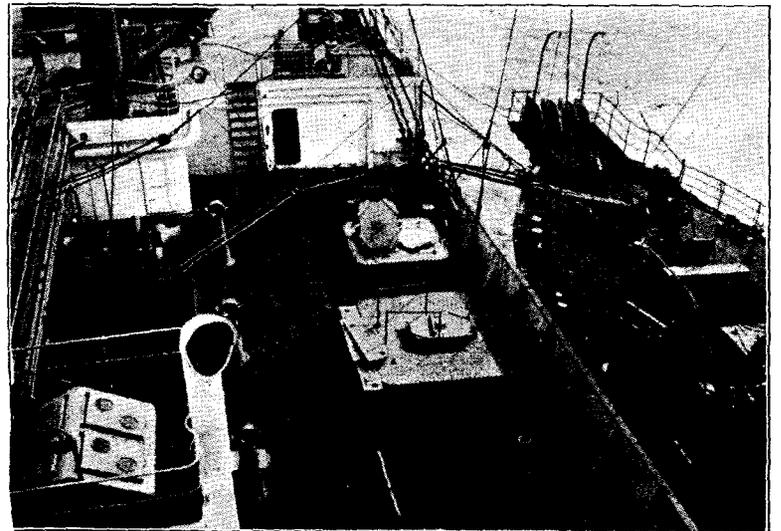


THE CABLE BEING CARRIED TO THE DOMBURG REPEATER-STATION.

telegraphy. The constituent conductors of the quads are massive circuits of 2.3 mm. diameter, and the worming circuit is formed of seven copper wires of 0.8 mm. All the copper wires are wound with a thin, special iron-wire on the Krarup system to increase the self-induction, and insulated by two layers of paper. The cable core is surrounded by two seamless lead-coverings of 2 mm. each in thickness, between which is placed a compound filling. The armouring consists of 22 galvanised iron wires of 5.8 mm. diameter. Beneath it lies a single layer of jute compound, and above it a double layer. The total diameter of the cable is nearly 54.5 mm. and its weight 10.31 kilograms per metre.

In April the cable was ready in three manufactured lengths, which were taken by rail from Mülheim to the Norddeutschen Seekabelwerke, at Nordenham. There they were spliced together and shipped on to the cable-steamer. The total lengths delivered were 165 kilometres and weighed 1,702 tons. Their carriage by rail necessitated the employment of 55 special goods-wagons, each 15 metres long and with a loading-weight of 35 tons.

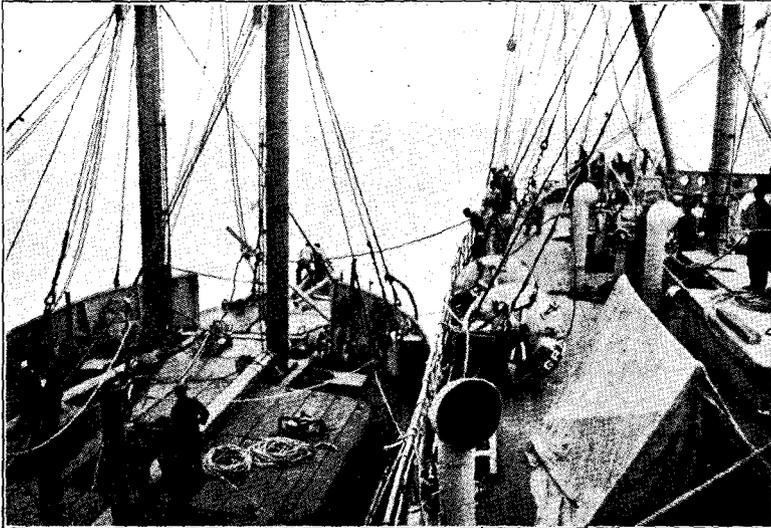
The laying was carried out by the cable-ship *Neptun*, and was delayed and rendered more difficult by very unfavourable weather. The start from the mouth of the Weser was hindered by fog, but on April 26 the *Neptun* set out, and on the morning of



THE REMAINDER OF THE CABLE TRANSFERRED FROM THE "NEPTUN" TO THE "NORDENCY."

the 28th began to lay the marking buoys off Domburg. Between Domburg and Aldeburgh eight large buoys were laid, with ten small ones in between them. Next morning the landing of the cable at Domburg went off smoothly. A Dutch lighter took off about 2.5 km. of cable from the *Neptun* and laid it in the shallow sea, and even while the cable-end was being carried to the Dutch repeater-station the *Neptun* began her voyage on the open sea.

In a short while speaking-connexion was established with Domburg and was maintained during the whole voyage of the cable ship. Thick fog came on at night which greatly increased the difficulties of navigation in the incalculable currents of those waters.



UNLOADING THE CABLE-END FROM THE "NORDENEY" ON AN ENGLISH COAST-VESSEL.

The buoys which had been laid were of little use, and for the most part could not be seen. Nevertheless, towards morning an accurate course was maintained; a slight deviation then occurred which was confirmed as one of the buoys at the English shore came in sight. This cost some hours' loss of time, and resulted in several days' delay. The English landing point, Aldeburgh, was not reached until evening, and the weather became so much worse up to the following morning that a landing of the cable was impossible. The cable was therefore cut, doubly soldered with lead, and laid to a buoy until the weather improved. At this juncture the sister ship *Nordene*, on its return from laying a Spanish cable, was signalled, and the two ships entered Harwich Harbour together.



THE CABLE-END LANDED AT ALDEBURGH.

Here the remainder of the cable was transferred to the *Nordene*, and the *Neptun* set free for other work. Not until the fourth day had the weather sufficiently improved for the *Nordene* to complete the work of laying the cable. On the morning of May 5 she lay off Aldeburgh. An English coastal boat carried out the landing while the *Nordene* took on board the two ends to be spliced. About 6 p.m. the English end of the cable lay in the Repeater Station, the balancing was undertaken, and then only the cable connexion with the *Nordene* remained to be established.

At 10 o'clock a whistle gave the engineers on land the signal that the copper connexion was ready, and while the tests were being made, the junction was completed on board with all speed. The stormy weather began again, and when the completed splice went overboard at 2 a.m., it was high time that it did so. In spite of contrary conditions the laying was satisfactorily and happily completed.

We are indebted for the excellent illustrations we reproduce to Messrs. Felten & Guilleaume's booklet before referred to.

THE RETIREMENT OF MR. E. LACK.

On the 11th ult Mr. E. Lack, M.B.E., Asst. Staff Engineer of the Engineer-in-Chief's Dept., G.P.O., was presented with a handsome wireless set by his colleagues at headquarters as a token of the high esteem in which he has been held, and as a souvenir of the completion of 44 years' service with the Government Telegraph Department, he having joined the service in 1882 as S.C. and T. at Hull.

From that office he was transferred to the East Dean Repeater Office (near Beachy Head), thence to Lowestoft, a year later obtaining a 2nd Class Engineership at Dundalk in 1899. Brentwood, Chelmsford and then London saw him, the latter point being coincident with his promotion as Engineer 1st Class. He had charge of Victoria Exchange about this time and subsequently the Mayfair and Victoria sections combined. In 1909 he was made Staff Engineer 2nd Class and Asst. Staff Engineer in 1911.

By few of our engineers could a more interesting record of services rendered be shown.

Mr. Lack formed one of the Anglo-German Telegraph Commission in 1910, had charge of the telegraph section of the E.-in-C.'s Office during the war, and was responsible for the arrangements in connexion with providing and laying the Beachy Head to St. Nazaire, and Peterhead to Alexandrovsk cables 1914-15, and the Imperial cable, Penzance to Halifax, N.S., in 1916.

He also carried out the transfer of the direct United States cable office at Ballinskelligs, Ireland, during the Irish troubles, and was responsible for arranging the application of the Gulstad vibrating relay principle to the Post Office standard relay, now known as relay "G." He received a well-merited M.B.E. in January, 1918.

During the war he also established duplex repeaters for Duplex Baudot working at Dieppe for the service between London and Paris, and equipped Lord Haig's train with telegraph apparatus for his movable headquarters during the war.

In 1924 he was sent on two occasions to the West Indies in connexion with the laying of new telegraph cables between Turk's Island, Barbadoes, Trinidad and Demarara. As one who rose from the telegraphs at the bottom rung of the telegraphic ladder, Mr. Lack has always been respected by the instrument galleries of the C.T.O., and certainly by the foreign cables with which he has been so closely associated. Of a bright, cheery, and ever optimistic nature, one could never feel depressed in his breezy company. Our kindest and best wishes follow him. J. J. T.

NOTES ON TELEGRAPH PRACTICE.

BY G. T. ARCHIBALD.

(Continued from page 260.)

XX.—Concerning the Treatment of Press Traffic.

THE treatment of press traffic is an interesting feature in the history of telegraph practice, largely by reason of the fact that the work has always been conducted at a loss to the taxpayer.

The old telegraph companies had instituted a press service and supplied newspapers with all kinds of news reports for which they demanded payments ranging from £150 to £250 per annum. Subscribers to this service were allowed to send press telegrams at half the usual rates and the charge for such telegrams addressed to several newspapers was reduced for every subsequent address to 25% of the amount charged for the first address.

In this connexion it is interesting to recall the fact that in 1867 the newspaper interests desired to set up their own press distribution service on the grounds that they were the better judges of what news the public wanted. The telegraph companies refused, however, to agree to the truncation of their service; it has been urged that as a consequence, the press identified itself with the agitation in favour of the nationalisation of the telegraph service.

The press tariff laid down in the Telegraph Act of 1868 was based on the principle that as the transmission of news was a matter of national importance the charge for the service should not be more than was necessary to make the service fairly self-supporting. The tariff was fixed at 1s. for every 100 words handed in between 6 p.m. and 9 a.m. and 1s. for every 75 words handed in between 9 a.m. and 6 p.m. to a single address, with an additional charge of 2d. per additional address for every 100 words or 75 words as the case may be, of the same telegram.

The question of the press tariff has ever been a source of anxiety to the Administration. In 1875 a Treasury Committee found that telegraph wires were largely occupied with press traffic to the exclusion of more profitable work and in 1876 it was reported to a Select Committee on the Post Office that the loss on this traffic amounted to £20,000 a year: one of the witnesses informed the Committee that it cost the Post Office about £1,000 a year to deal with the press work at two offices for which only £320 was paid by the senders. The Committee recommended that steps should be taken to increase the press charges to a point sufficient to cover the estimated loss on the traffic but the matter was not pursued.

In 1888 the loss on press traffic had risen to £200,000 a year. When the matter was raised in the House of Commons the Postmaster-General said that he feared it would be difficult to increase the press tariff which had been fixed by the Act of 1868 and had been in force for more than eighteen years. In 1895 the estimated loss had risen to £300,000 per annum. The matter was again discussed in the House of Commons and the Postmaster-General, Mr. Arnold Morley, then said he was willing to arrange for a thorough investigation if the press would abide by the result of an enquiry, and undertake not to oppose legislation for an increase in the charges if it were proved that such a course was necessary. Satisfactory assurances were not, however, forthcoming and the tariff remained unaltered until 1920 when in consequence of the increase in wages and maintenance, &c., due to the European War, the rates, authorised by Parliament in 1915, were increased to 1s. for 80 words or a fraction of 80 words between 6 p.m. and 9 a.m. and 1s. for every 60 words or fraction of 60 words between 9 a.m. and 6 p.m. with a charge of 3d. for every 80 or 60 words or fraction thereof for each additional address after the first. Although there has been a striking reduction in the amount of press work handled by the Post Office since the war, the press service is still conducted at a loss of about £250,000 per annum.

The Telegraph Act of 1868 provided that

- (i) News rooms, clubs and Exchange rooms as well as newspaper publishers should be eligible to receive telegrams at press rates.
- (ii) the names of all such concerns should appear in the official list of registered newspapers, &c., and that news telegrams should be addressed to the registered address given in the list;
- (iii) abbreviated addresses registered for ordinary telegrams should not apply to press telegrams, and that
- (iv) all telegrams addressed personally to managers, editors, publishers, secretaries, or any other person connected with newspaper institutions should be chargeable at the full inland rate.

A press telegram may contain only intelligence intended strictly for publication in a newspaper or for exhibition in a club, exchange, or news room. Letters to the editor, advertisements, notices of births, marriages, deaths, election addresses, matter not intended for immediate publication or exhibition, cypher or foreign language, or any matter for the publication of which a money prepayment is usually made are not accepted at press rates. When any such matter or matter of a private nature is included in or added to a press message the full ordinary inland rate is charged for the addition. If, for instance, the words "to follow report sent by train" are inserted in a press message, they are charged as a separate telegram at the full inland rate.

The method of counting words and signs for charging purposes is similar to that employed in connexion with ordinary inland telegrams with the following exceptions:

- (1) Figures and affixes such as st., nd., rd., th. are counted as one word each; thus 1st is counted as two words and 13th as three words.
- (2) A letter following a group of figures is charged for as one word; thus 104A is counted as four words.
- (3) Fractions expressed in figures and the bars and affixes used in combinations are counted and charged at the rate of one word for each figure, bar and affix used in a combination; thus 109 $\frac{7}{8}$ is counted as six words, 94 $\frac{1}{4}$ ths is counted as eight words.
- (4) In groups of figures expressing time the bar or other sign separating hours and minutes is charged for; thus 12-45 is counted as five words.
- (5) Sums of money are counted at the rate of one word for each figure, letter or symbol; thus 7/6 is counted as three words, £20 15s. 7d. as eight words.
- (6) The symbol % is counted as three words.
- (7) Marks of punctuation with the exception of the full stops and the symbol denoting a fresh paragraph are counted and charged for if they are required to be signalled. Marks of punctuation expressed in words are chargeable at the ordinary inland rate, but the word "stop" is allowed exceptionally to pass at the press rate.

Press messages exceeding 200 words in length in respect of which twenty-four hours' notice has not been given are accepted only at the sender's risk and are not permitted to cause delay to other telegrams; the sender is informed that the Post Office will not be responsible for any delay which may occur in the transmission of unnotified press telegrams.

When special arrangements have been made for the disposal of notified press telegrams and similar messages are tendered for other newspapers, without notice, the acceptance of such telegrams depends upon local circumstances. If arrangements can be made to dispose of them without prejudice to the advised matter the telegrams are accepted and the sender warned that they cannot be transmitted until the wires are clear, but that all unnecessary delay will be avoided.

Press telegrams exceeding 500 words in length may be accepted without additional fee outside the normal hours of telegraph business provided that at least 24 hours' notice has been given. In the case of press telegrams containing fewer than 500 words, Postmasters are at liberty to keep their offices open for the transmission of such telegrams to any telegraph office which is open at the time, or the attention of which can be gained, and to charge late fees in addition to the ordinary press message charge. The following are the fees which the Postmaster may retain for his own use and for the use of his staff:—

(1) For each telegram, not exceeding 500 words in length, irrespective of the number of addresses.

(a) If the office is open for postal business but not for telegraph business 1s. for the clerk and 6d. for a messenger if one is required.

(b) If the office is open for the receipt by wire of press telegrams 6d. for the Postmaster and 6d. for the clerk.

(c) If the office is not open for either postal or telegraph work 1s. for the Postmaster and 1s. for the clerk.

(2) For messages exceeding 500 words the like fees for each 500 words or fraction thereof.

(3) For each continuous message, part of which was tendered before the normal hour of closing, the like fees for so much of the message as is tendered after normal hours.

(4) When several press messages are tendered by the same person at one time, the messages are counted together for all the purposes of this regulation.

(5) Separate fees are payable by each person who tenders a telegram for transmission outside the normal hours of telegraph business.

Late fees are payable in respect of special attendance at transmitting and receiving offices as well as at the forwarding office.

The charges on a press telegram must be paid at the time of handing in except when a telegram is franked by a pass entitling it to transmission without prepayment. Newspaper owners, news agencies, &c., may, by arrangement with the Postmaster-General, send press telegrams under franked passes, the accounts being submitted periodically. A message containing more than 200 words may not be franked unless notice that they will be tendered has been received in sufficient time to enable suitable arrangements to be made for their disposal. A "pass" which has been altered or defaced in any way is not accepted.

In 1870 the sender of a press telegram addressed to several newspapers was required to furnish a sufficient number of copies of the text of the message to admit of one copy being placed at each circuit over which the news was to be transmitted. For some obscure reason this rule was suspended in 1878 and re-established in 1883 and is still in operation.

The addresses may either be written on one form or on separate forms. Originally charges not exceeding 10s. were brought to account by means of stamps, and charges in excess of that amount were included in the appropriate abstract. This arrangement was apparently abolished in 1876 on the modification of abstracts (see Chapter XVIII) and all charges have since been brought to account by means of stamps. If the addresses are written on separate forms the charge at the full day or night rate as the case may be is affixed in stamps to the first form and the copy rate on each of the other forms.

Since 1878 it has been the practice to accept press messages and to signal them before the charge is assessed, in order to avoid delay, if the sender is prepared to deposit a sum of money sufficient to cover the estimated charge, any balance being returned when the charge is computed.

An important concession to the press was the arrangement whereby a long news message may be handed in in several portions. These telegrams are known as "continuous" press telegrams and are subject to the following conditions:—

(i) The whole message must relate to the matter (as, for example, a report of a speech): it must be complete in itself, and must necessarily be printed consecutively in order to render it intelligible.

(ii) It must be sent to one address or one set of addresses.

(iii) No portion of copy tendered for transmission between 9 a.m. and 6 p.m. can be counted together with a portion tendered between 6 p.m. and 9 a.m.

(iv) No copy shall consist of less than the prescribed number of words. When any batch contains less than the prescribed numbers it is charged for as if containing them.

(v) The copy must be tendered at intervals of not more than one hour during the period 6 p.m. and 9 a.m. and thirty minutes between 9 a.m. and 6 p.m.

(vi) Where the authorised interval is exceeded a fresh charge is calculated from the commencement of the portion next following the break.

At the outset news agencies were permitted to enter into special arrangements with the Post Office for the transmission of their news reports and the system is still in operation. The different descriptions of intelligence are classified under distinctive headings and each office concerned is supplied with a list of the items required by local subscribers. The advantage of this scheme of distribution is that the signalling of long descriptions and addresses is avoided and each office is able to select from the news wire in which it is included the items for delivery to local subscribers. In 1872 the Press Association and Central News had adopted the scheme, the Exchange Telegraph Company followed a year or two later, and by 1888 all the important agencies had come into line.

Classified news telegrams handed in by news agencies are not delivered to any newspaper except under instructions from the Secretary to the Post Office. If a subscriber wishes to make a change in the class or classes of intelligence supplied to him he must communicate with the news agency concerned and not with the Post Office. On receipt of advice from the agency the Post Office makes the necessary change in the local distribution list.

In order to facilitate the transmission of stock and share reports, codes were devised for all descriptions of stock included in the daily reports, and specially printed sheets containing the full name of the stocks and shares and the official abbreviations were supplied for use at delivery offices. These sheets are still in use. All such reports being classified the work of the receiving operator is simplified, it being necessary only to insert the market quotation opposite the appropriate stock.

Another expedient designed to facilitate the transmission of a code for fractions in Stock Exchange reports signalled over the principal news wires. The code was:—R for $\frac{1}{4}$; L for $\frac{1}{2}$; CR for $\frac{3}{4}$; CK for $\frac{2}{8}$; FK for $\frac{5}{8}$; K for $\frac{1}{8}$; GK for $\frac{7}{8}$.

All operators engaged in the transmission of news telegrams were required to make themselves thoroughly conversant with these codes in order, as the rule says, "that the delay, which must necessarily take place if the reports are signalled in full, may be avoided." The code for fractions was, however, abolished in 1888 and all such combinations of figures have since been signalled in full.

Other abbreviations such as "tt" for "that" "t" for "the," "cd" for "could" "shd" for "should" were also in common use although no standard list was apparently laid down before 1918 when a list of ninety-two word contractions was issued together with a number of abbreviated terminations. No useful purpose

could be served by quoting the word abbreviations, but the terminations may be of interest. They are:—

fly for fully	...	...	...	e.g. wonderfly
g „ ing	...	...	...	e.g. breakg
gs „ ings	...	...	...	e.g. proceedgs
l „ ial	...	...	...	e.g. substantl
l „ ual	...	...	...	e.g. individl
mt „ ment	...	...	...	e.g. consignmt
n „ ion	...	...	...	e.g. positn
nl „ ional	...	...	...	e.g. professnl
ot „ ought	...	...	...	e.g. brot. thot.
vr „ ever	...	...	...	e.g. howvr
y „ ary	...	...	...	e.g. precautyony

(To be continued.)

THE EXPANSION OF THE ANGLO-CONTINENTAL TELEPHONE SERVICES.

By W. H. GUNSTON.

TELEPHONE service between England and the continent of Europe was first established in March, 1891, when a four-wire cable was laid from St. Margaret's Bay to Sangatte and direct service opened between London and Paris. It is interesting to note that this service antedated the opening of the first trunk line between London and Scotland by at least two years. The service was so great a success that in 1897 additional cables were laid in the Channel by both England and France, the first named between St. Margaret's Bay and Sangatte, and the second between Abbots Cliff and Gris Nez. These cables provided two additional London-Paris circuits, one London-Lille circuit and two telegraph circuits. The service was soon extended to the provincial cities of both countries, and by 1904 was in operation between Birmingham, Bristol, Cardiff and the Lancashire and Yorkshire towns on the one side, and Boulogne, Calais, Lille, Havre, Rouen, Orleans, Nancy, Marseilles, Lyons and Bordeaux on the other. In 1902 a system of charging by zones had been introduced, each country being divided into three zones, an arrangement which still exists.

It was originally proposed to serve Brussels telephonically by the London-Lille circuit, and experiments with this end in view were carried out in 1897. However, in 1902, a direct cable was laid between St. Margaret's Bay and La Panne, and service by means of two direct wires was provided between London and Brussels in the summer of 1903, and extended to other towns in both countries in the October of the same year.

It must nevertheless be admitted that despite its increasing popularity and the steady growth of its traffic, the Anglo-Continental telephone service, 30 years after its inception in 1891, was still, owing in great part to unforeseen and unavoidable causes, practically confined to communication between London and Paris, the North of France, Brussels and Antwerp. The progress of the last three years has changed all this, and the scope of the service has widened appreciably with each succeeding year as will appear from this brief history.

As the traffic between England and France steadily increased it became necessary to provide two more cables, one a coil loaded cable laid by Great Britain between Gris Nez and Abbots Cliff in 1910, and the other a continuously loaded cable laid between the same points by France in 1912, each containing two pairs. The Belgian traffic also necessitated an addition to the number of lines available for the service, and a continuously loaded cable containing three (two physical and one phantom) circuits was laid between St. Margaret's and La Panne in 1911.

In 1913 a service to certain places in Switzerland was opened via France, but the necessity for switching through each call in

Paris and the prior demands of other traffic had the effect of making the progress of telephony between Great Britain and Switzerland slow and unreliable, a state of things which could only be remedied by the provision of a direct line between the two countries.

At the outbreak of the Great War nine circuits were working between England and France and five between England and Belgium.

Public service was suspended during the war, but between 1914 and 1918 no less than 15 additional channels of communication to the Continent were provided for military purposes. After the Armistice these were gradually brought into use for the public service, and at the beginning of this year (1926) 21 circuits were in existence between England and France, 18 running to Paris, and one each to Lille, Calais and Boulogne. In 1923 a two-pair cable (continuously loaded) providing three speech channels was laid from St. Margaret's Bay to La Panne, bringing the total number of Anglo-Belgian lines up to eight, of which four terminated in Brussels, three in Antwerp, and one at Ostend. By this time service had been gradually extended to all the principal places in Belgium.

This last-mentioned cable was manufactured in 1914 for a proposed Anglo-Dutch service, but was commandeered for naval and military use and laid to Dunkirk on the outbreak of war, and recovered and relaid for the Anglo-Belgian service in 1923 as before stated. After the Armistice the demand for an Anglo-Dutch service again became pressing, and in 1922 a coil loaded four-wire cable was laid between Aldeburgh and Domburg (in Walcheren) providing two circuits (one superimposed) to Amsterdam and one to Rotterdam. The traffic on these circuits grew so rapidly that they were overloaded almost from the first, and the provision of a second cable to Holland had to receive early consideration. As a result a continuously-loaded multiple cable of the modern paper-insulated, lead-covered type, containing four sets of quadruple wires ("quads") and providing eight physical and four superimposed circuits was laid in September, 1924. At the present time seven direct circuits are working between London and Amsterdam and five between London and Rotterdam, whilst a good and rapid service is obtainable between all the principal towns in Great Britain and Holland.

The extension to long-distance telephone working of the thermionic valve repeater (a comparatively new invention developed during the war for use in wireless telegraphy) effected a revolution in trunk line practice at about this time. It not only removed the need for expensive conductors of heavy gauge, but extended the range of long distance communication out of all knowledge. The prospect of satisfactory communication with places a thousand and more miles distant from London came within the range of practical politics.

Preliminary negotiations for service with Germany were interrupted by the outbreak of war, and the question was not reopened until the Anglo-Dutch service had taken practical shape. After consideration of the question of adopting a direct sea-cable route to Germany, which was deferred owing to its greater cost, agreement was reached to provide the service via Holland by means of a third Aldeburgh-Domburg cable, the laying of which was completed last May. The experience gained of the working of the second Dutch cable was so satisfactory that the same type was adopted for the third which will provide 12 circuits in all, and together with the second Dutch cable will carry direct lines between London, Berlin, Hamburg, and the principal German cities. The distribution of the circuits in the two last Aldeburgh-Domburg cables will be such that both will carry Dutch and German lines, so that in the event of a temporary fault in either cable the service will not be entirely interrupted. Underground cables specially provided for the purpose will carry the lines from Walcheren to the German exchanges without any intermediate switchings in Holland. Some spare circuits in the cable will be available for other services, and through circuits to places beyond Germany, such as Sweden, are possibilities in the not distant future. Pending the opening of the new direct Anglo-German circuits in October or November this year, a restricted service between 5 p.m. and

8 a.m. was inaugurated in the spring between London, Berlin, Hamburg, Cologne and Frankfurt via the existing Anglo-Dutch and Dutch-German circuits. Continuous service by the same route was provided between London and Berlin and London and Hamburg later in the year. The results obtained in these provisional routes are most encouraging.

The year 1926 has been a notable one in the annals of Anglo-Continental telephony. In addition to the cable for the German service, a still larger Anglo-Belgian cable containing seven "quads" providing 14 physical and seven phantom circuits was laid in July. It is of the same type as the two latest Anglo-Dutch cables, and like them will be served by underground cable routes provided in the repeater stations at both ends. Furthermore, a cable of the same type and capacity is about to be laid between Sandgate and Audresselles. These two submarine cables and their connecting land cables are expected to be brought into use early in the New Year and will provide a rapid and reliable service between Great Britain, France and Belgium second to none in the world. Moreover the Franco-Swiss land cable is approaching completion, and as it will provide direct lines between London and Switzerland, the Anglo-Swiss service will at last be placed on a satisfactory footing. The ample number of circuits in these cables will afford spare wires for extension to countries beyond France and Belgium and the claims of an Anglo-Italian service will receive attention in due course.

The present position may be summarised as follows:—

Anglo-French circuits.

18 London—Paris	} With a considerable number of additional circuits of the most modern underground type throughout early in New Year.
1 " Lille	
1 " Calais	
1 " Boulogne	

Anglo-Belgian circuits.

4 London—Brussels	} do.
3 " Antwerp	
1 " Ostend	

Anglo-Dutch circuits.

6 London—Amsterdam	} Four spare circuits in reserve in the Anglo-Dutch cables will be available either for additions to Anglo-German or Anglo-Dutch services or for extension later to Sweden, etc.
5 " Rotterdam	

Anglo-German circuits.

4 London—Berlin	} Will shortly afford direct communication between the principal British and German cities.
4 " Hamburg	
1 " Cologne	
1 " Düsseldorf	
1 " Frankfurt-on-Main	
1 " Bremen	

Anglo-Swiss.

Two or three circuits in the latest Anglo-French cable are to be extended to Switzerland as direct Anglo-Swiss lines, and it is hoped that a direct Anglo-Swiss service (*i.e.* without intermediate switching in France) will be available early in the New Year.

Telephone services with Austria and Czecho-Slovakia are contemplated at a later date.

An international body (known as the "International Consultative Committee" and composed of representatives of the majority of Telephone Administrations in Europe) now assists—in an advisory capacity—in the co-ordination and development of international telephony in Europe, and in the standardisation of apparatus and materials, &c., and of the methods of operating.

The International Consultative Committee is in close touch with the International Chambers of Commerce and is well informed of the needs of the commercial communities in various countries. There is thus every hope that the difficulties, technical and otherwise, which have tended in the past to retard the development of international telephony in Europe will largely disappear.

PROGRESS OF THE TELEPHONE SYSTEM.

THE total number of stations working at July 31, 1926, was 1,426,056. During July 19,469 new telephone stations were added to the system counter-balanced by 12,593 cessations resulting in a net increase of 6,876 stations, a relatively small figure owing to the fact that under the present quarterly method of accounting cessations are heaviest in the first month of the quarter.

An analysis of Telephone statistics as at the end of July is given below:—

Telephone Stations—	London.	Provinces.
Total at July 31	500,893	925,163
Net increase	2,283	4,593
Resident Rate Installations—		
Total	102,622	170,972
Net increase	1,036	1,589
Exchanges—		
Total	110	3,954
Net increase	1	14
Call Office Stations—		
Total	4,534	16,218
Net increase	11	92
Kiosks—		
Total	306	1,924
Net increase	16	51
New exchanges opened under Rural Development Scheme—		
Total	—	924
Net increase	—	13
Rural Party Lines—		
Total	—	9,908
Net increase	—	—
Rural Railway Stations connected with Exchange System—		
Total	—	773
Net increase	—	5

The number of inland trunk calls dealt with during June—the latest statistics available—was 8,084,774, an increase of 952,363 or 13% over the figure for the corresponding month last year.

Calls made to the Continent during June numbered 24,212 and those from the Continent 27,072, representing an increase of 5,711 and 4,260 respectively on the totals for June, 1925.

Further progress was made during the month of August with the development of the local exchange system. New exchanges opened included the following:—

PROVINCES—Beaconsfield.

And among the more important exchanges extended were:—

LONDON—East, Hendon, Maryland, Museum, Wanstead, Wimbledon.

PROVINCES—Carlisle, Chorlton-cum-Hardy, Jesmond, Oxford, Parkstone, Staines, Walsall.

During the month the following additions to the main underground system were completed and brought into use:—

Braintree—Marks Tey (portion of the Brentwood—Marks Tey cable).

while 81 new overhead trunk circuits were completed, and 92 additional circuits were provided by means of spare wires in underground cables.

WIRELESS BROADCASTING.

FOUR short years ago there was no such thing as a broadcasting service in this country. True, there had been occasional disturbances in the ether from Writtle, where the broadcasting idea was germinating, but those efforts were crude and erratic, and few of us realised that we were listening to the birthpangs of what was to prove one of the most extraordinary scientific booms of modern times. Here and there a few enthusiastic amateurs pursued wireless experiments—a relic of their war-time experiences. Their number was small although their enthusiasm was obviously great, as none would listen to Morse signals as a pastime: and they were no doubt regarded by their intimates as cranks who spent time and money in creating muddles in their homes, to the distress of their order-loving sisters or spouses.

But what a change has taken place in the interval, largely through the brilliant and sustained efforts of those directing the fortunes of the British Broadcasting Company. That company, as the pioneers of broadcasting in Europe, encountered difficulties which the less persistent might have regarded as overwhelming. They were told there was no real demand and that obstacles such as the warring interests in and out of the electrical industry and the ingrained prejudice of the great British Public to all innovations must cause disaster to the undertaking. How well they succeeded in overcoming all obstacles is now a matter of history, and the evidence is everywhere around us. Why even our babes and sucklings now babble learnedly in terms of valve amplifiers, super-sonic receivers, heterodyne effects and statics: and the atomic theory ranks with whooping cough and measles as an early nursery epidemic. Gardens are neglected, men spin like spiders nets of aerials to catch their prey. Would that the nets were as sightly as those of their prototypes?

Three years ago the sceptic prophesied a six months' boom and then rapid dissolution: two years ago he gave it twelve months more of life and now, having gone over to the "enemy," he clamours for better and longer programmes, and the utter annihilation of all sources of interference. At the end of 1922 there were 36,000 licensees: 1923 brought the number to 597,000. Sir Henry Bunbury told the Broadcasting Committee of 1923 that he considered the number would ultimately reach two millions—an estimate then regarded as unattainable if not fantastic. But it has been more than borne out by facts. The total number of licensees passed the limit of two millions in April last, and at the end of August last had reached the figure of 2,101,000—5% more than the "fantastic" estimate. The increase has been steady and there is no show of decline—other than seasonal—at present, the average increase for the past year having been 50,000 a month, and this without reckoning the "pirates" who have so far escaped detection and prosecution—stated in some quarters to exceed a quarter of a million.

In these post-war days the country is said to be impoverished and overtaxed. Yet each one of those licensees must have spent on the average £5 for apparatus—in the aggregate a mere bagatelle of ten and a half million pounds. The cost of living is still 70% above that of July, 1914: we are paying millions a year to America: trade is said to be depressed: but there has never been such a year for motor cars and wireless sets, doles, and silk stockings. Where has the money come from? It cannot all have been saved on the clothes that the ladies do not wear, or the coal that we do not get.

Yet in spite of the alleged money shortage, wireless broadcasting has secured a mighty hold on all classes of the community. Why is this? Laziness, lack of entertainment, general restlessness, wider education, snobbishness, and human sympathy with the sick, may all have contributed their quota: but is it not that there is something more subtle in the very nature of the art of wireless itself. Carlyle would have described wireless broadcasting as thaumaturgic, and here perhaps lies its chief attraction. Magic, mysteries, magicians, and wonder-workers have ever appealed to mankind throughout the ages: and what can be more wonderful than the instantaneous and faithful reproduction of one wee small human voice in every home.

REVIEW.

"Radiotechnique Générale." By C. Gutton, Professor of the Faculty of Science at Nancy. (Librairie J. B. Baillière et fils, 19 Rue Hautefeuille, Paris. 572 pp.)

This volume is one of a series forming the Encyclopédie d'Electricité Industrielle.

It is a complete account of the present-day position of wireless telegraphy. The whole subject, from the discharge of a Leyden jar to the latest developments of wireless telegraphy and telephony, is fully treated, both in its theoretical and its practical aspects.

The first chapter deals with the oscillatory discharge of a condenser through a spark gap, and the second with the methods of charging a condenser for a subsequent oscillatory discharge, together with the various types of spark gap used in practice.

In the third chapter the production of oscillations by means of the arc is discussed, and in the following chapter the various methods of obtaining high frequency currents from alternators, either directly or by means of frequency multipliers, are described.

The fifth chapter deals with the general theory of the three electrode valve, and the sixth with the application of the valve to the production of oscillations.

In the next chapter is discussed the theory of resonance and of coupled circuits.

The theory of the actions in an aerial, and the various forms of aerial in use are the subject of the eighth chapter, and the ninth is devoted to a discussion of the theory of the propagation of electromagnetic waves, the effective height of an aerial and its radiation resistance, and the part played by the atmosphere in the propagation of the waves.

In the tenth chapter the high-frequency resistance of conductors of various geometrical forms is considered, and also the various methods of forming the earth connexion of a station, the resistance of an earth connexion, and methods, such as the Alexanderson multiple aerial, by which this resistance can be reduced.

In the next chapter are described the connexions and general arrangement of various transmitting sets, for damped waves, for continuous waves with arc, with alternator and with valves, and the special transmitting arrangements used for the emission of short waves.

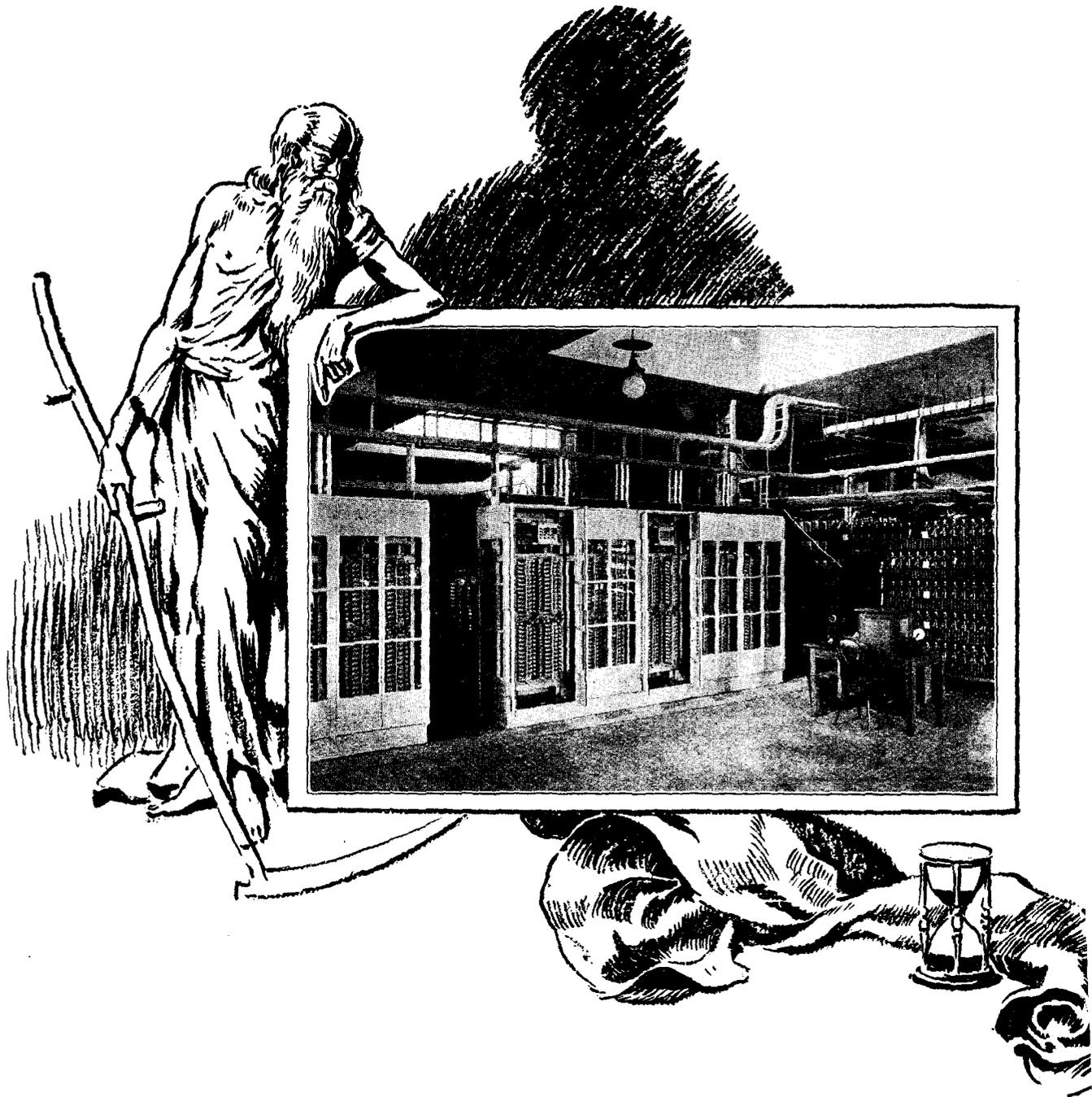
The twelfth chapter deals briefly with the various detecting arrangements which either have been used or which are actually in use at present, from the coherer up to the heterodyne, and with the different arrangements of the connexions of the sets in which they are used. In the following chapter the subject of detection by means of the three electrode valve is considered in greater detail, from the simplest methods in which the valve is employed up to the superreaction and superheterodyne systems. The next chapter deals with the use of the valve for low-frequency and high-frequency amplification, and also for the amplification of a continuous current.

In the fifteenth chapter various receiving arrangements are described, including the Beverage aerial, the neutrodyne, anti-atmospheric receivers and recording receivers.

The following chapter deals with frame reception and direction finding, the next with radio-telephony, including the modern methods in which the carrier wave and one of the side bands are suppressed, and the final chapter with wavemeters and the various other high-frequency measurements necessary in radio-telegraphy.

At the conclusion of each chapter a lengthy list of references to original papers dealing with the subject matter of the chapter is given.

The quality of the paper and of the printing, as in most French books, leave something to be desired, but these are minor defects, and the book can be recommended as a thoroughly complete and up-to-date treatise on the art of radio-communication.



Strowger Automatic Equipment

in

Havana, Cuba.

AMONG the many successful Strowger Automatic Installations, that at Havana is worthy of special mention. Since 1911 this installation has been rendering the residents of Havana the highest type of modern telephone service, and its amazing growth is proof of its appreciation. Not only in Havana, but throughout practically all of Cuba, this equipment, developed and made by Automatic Electric Inc., the pioneer automatic telephone manufacturing organization, is daily establishing standards of rapidity and accuracy that are unsurpassed anywhere in the world to-day.

Automatic Electric Inc.

FACTORY AND GENERAL OFFICES : 1033 W. VAN BUREN ST.
CHICAGO, U.S.A.

The Telegraph and Telephone Journal.

PUBLISHED MONTHLY IN THE INTERESTS OF THE TELEGRAPH AND TELEPHONE SERVICE, UNDER THE PATRONAGE OF THE POSTMASTER-GENERAL.

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NOTICES.

As the object of the JOURNAL is the interchange of information on all subjects affecting the Telegraph and Telephone Service, the Managing Editor will be glad to consider contributions, and all communications together with photographs, diagrams, or other illustrations, should be addressed to him at the G.P.O. North, London, E.C.1. The Managing Editor will not be responsible for any manuscripts which he finds himself unable to use, but he will take the utmost care to return such manuscripts as promptly as possible. Photographs illustrating accepted articles will be returned if desired.

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OCTOBER, 1926.

No. 139.

THE LAST TWO COUNTIES.

WE said last month, on the opening of the Dornoch Exchange, in Sutherland, that we believed that telephone exchanges now existed in every county in England, Scotland, and Wales. We can not only say so quite definitely, but can add Ireland to the list, for with the opening of an exchange at Ballyhaunis by the Irish Free State administration in June, telephone service was extended to Mayo. The year 1926 has thus the distinction of seeing the exchange system extended to the only two counties in the British Isles which it had, until then, failed to penetrate.

The boundaries of telephone districts have, of course, little in common with those of geographical counties. Telephone systems develop on economic lines, and spread afield, in the first instance, to meet commercial requirements. The county, nevertheless, affords a convenient standard by which progress can be measured, it is interesting to see the gaps on the map gradually fill up. In an article which we published in 1915 on the geographical distribution of the telephone in Great Britain, our contributor pointed out that the telephone had then reached every county in the British Isles save Sutherland and the Orkneys in Scotland, and Longford, Leitrim, Roscommon, and Mayo in Ireland. An exchange was opened in Longford soon after that date, but Leitrim and

Roscommon had to wait for the telephone service until it was provided by the Free State authorities within the last few years. Exchanges were opened in the Orkney Islands in 1923, and, as we have seen, in Sutherland and Mayo during the summer which has just closed. The tale is thus complete.

As was to be expected, Middlesex, when the Coleman Street (London) Exchange was opened in 1879, was the first county in the British Isles in which a telephone exchange was established. In the same year Lancashire (with Manchester and Liverpool), Warwickshire (with Birmingham), Lanark (with Glasgow) and Midlothian (with Edinburgh) received their first exchanges. Yorkshire (with Leeds), Staffordshire (with Wolverhampton), and Gloucestershire (with Bristol) followed in 1880. The last English counties to be reached by the exchange system were Hereford (Hereford) 1898, Huntingdonshire (Huntingdon) 1899, and Rutland (Oakham) in 1905. Montgomery, the last Welsh county to do so, received its first exchange in 1910 or 1911.

The opening of exchanges in two remote counties is, perhaps, not an event of the first telephonic importance, but it has something more than a sentimental interest and significance, and, along with the extension of the trunk system to Caithness and the Orkneys, constitutes a gratifying rounding-off of the system as a whole. It affords further evidence, moreover, of the activity of State organisations in providing for public needs in districts which offer little temptation to commercial undertakings.

HIC ET UBIQUE.

A LUTON paper, after enlarging on the superiority of America's telephone development, goes on to say that Germany has twice as many telephones as England, and is adding to them at a more rapid rate. As a matter of fact the British system is increasing at the rate of 9% per annum, and the German at 8%.

A champion of private enterprise, writing to the *Birmingham Daily Mail*, says:

The telephone in New York is also under a trading company, in competition with other companies except so far as local calls are concerned, with the result that the service is so efficient, and the cost so low compared with the general cost of living, that most private houses have it installed.

The American Post Office handles the telegraph service in open competition with private companies such as The Western Union, thus having to bring the service up to the top hole of efficiency, and the price down to rock bottom.

The assailants of nationalised services have usually a lordly disregard for exactitude, or a woeful ignorance of facts. The above-mentioned writer is no exception. The New York Telephone Co. has no local or other competition to face, and as for the American Post Office telegraph service, it exists only in the writer's imagination, and is about as useful in stimulating efficiency as a misinformed "letter to the Editor" would be.

It is reported, says the Greek Journal *Elephtheron Vima*, that the Minister of Communications has requested the Minister of Foreign Affairs to take the necessary steps with the Serbian and Bulgarian Governments to establish

telephonic connexion between Athens-Belgrade and Athens-Sofia. This will be easy to arrange seeing that the telephonic lines are already extended up to the frontiers.

In the event of this being arranged, Athens will then be connected by telephone with Bucharest, Budapest, Vienna, Rome and Paris through Belgrade.

Athens, in this event, could equally truly be said to be connected with Cork or Wick. But a great deal more than the mere provision of a circuit from Athens to Belgrade will be necessary before the former city can talk to Paris.

According to the *Investors' Chronicle*, this week's American advices indicate that plans are being prepared for a large French loan with a mortgage of the Paris Telephone system as security. The proceeds would, it is understood, be used for meeting some of the Government's most pressing needs for stabilisation.

Should control of the Paris telephones be granted to the International Telephone and Telegraph Corporation—for whom Messrs. J. P. Morgan, who normally arranged any French loans are bankers—it will add another link in the series of European cities in which an American network has been installed.

A *Times* New York message (Aug. 4) states that President of the International Telephone and Telegraph Corporation, M. Sosthenes Behn, is in Paris at the moment, and that financiers who have been carefully investigating the situation are stated to have returned to New York with a favourable report. The message also states that some "already envisage the establishment of a network of American telephone and telegraph lines across Europe, similar to the efficient private services prevailing in U.S."

We have heard something like the above before, and were not altogether surprised to see the following disclaimer in the *Financial Times* :—

The rumours recently current that the French telephone system would soon be acquired by a foreign firm was denied to-day by the Ministry of Posts and Telegraphs. The Ministry says that the news that the Government has been studying foreign automatic systems is responsible for this rumour, which is absolutely false.

We learn from the *Electrical Review* that automatic telephones will be in operation in Dublin by December next. The first step will be the changing over of the Ship Street relief exchange, and it is proposed to convert the Central Exchange also to automatic working, as well as the major exchanges on the outskirts of the city, such as Drumcondra, Rathmines, Ballsbridge, and Clontarf; in addition, a new exchange, called Merrion, will cover the area around Merrion Square; it is already acting as a relief exchange, and dealing with over one thousand lines. The automatic system will be used only for local calls. For trunk and junction calls the attention of an operator at the main exchange will be necessary.

With the completion of the new telephone exchange in Berlin it will be possible for subscribers in Berlin and Hamburg to obtain immediate connection with each other without using the "trunk" exchange. This, of course, is the same thing as the "Toll" service in force in this country between London and Brighton, Edinburgh and Glasgow, Liverpool and Manchester, &c.

A new automatic telephone service at Santander, Northern Spain, says the *Morning Post*, was blessed by the Bishop of Santander at its inauguration in the presence of the King.

Here you have the difference in the customs of two nations. In one the opening of a new exchange is blessed by a bishop or archbishop; in the other it is usually cursed by some arch-humorist.

It is interesting to note that in the cricket match at Chiswick between the Australian team and the Civil Service, a Post Office man, Mr. W. T. Cook of the C.T.O., was the highest scorer for the Service with 34.

Arrangements have been made for a Birmingham and District Civil Service Dinner to take place at the Grand Hotel, Birmingham, on Oct. 30. Mr. J. T. Horner, Divisional Controller, Ministry of Labour, will preside, and Mr. Neville Chamberlain, the Lord Mayor of Birmingham, and Sir Evelyn Murray will also be present.

NATIONAL RADIO EXHIBITION.

OLYMPIA, SEPTEMBER 4TH TO 18TH.

FOR the first time this really was a national exhibition, as hitherto internal trade politics have resulted in the holding of two separate exhibitions, neither of which was complete. But these differences have now been overcome and the 1926 exhibition was opened to all British wireless manufacturers and dealers. There were some 200 stands installed and there was plenty of room at Olympia; another change from former shows.

The two main points which were emphasised in the exhibition were simplicity of control and elimination of batteries. Several multiple valve sets which had only one or two tuning adjustments were noticed, amongst these the Solodyne, a five-valve set with screened coils; an arrangement due to Mr. Reyner of the Radio Press, late of the Engineer-in-Chief's Office. A large number of firms showed devices for using the lighting mains in place of or for charging high tension and low tension batteries, but these devices are still comparatively costly.

Cleartron Radio, Ltd., were showing the Lodge "N" Circuit which has caused a good deal of talk recently. The chief object of the arrangement is to get rid of re-radiation. The circuit consists of a variable condenser in shunt with an inductance and is a resonant circuit, the aerial being non-resonant and heavily damped. Owing to the long wave length and heavy damping of the aerial system, it is claimed that re-radiation from the aerial is impossible.

The Radio Society of Great Britain were showing some historical valves and coherers, and the B.B.C. showed a replica of the main studio at Savoy Hill, at which many thousands saw the routine work of broadcasting. The B.B.C., too, did not fail to hand round a pamphlet with the usual "Don't do it" slogan of Captain Eckersley.

Of the technical improvements, apart from simplification of control, it was interesting and satisfactory to see the tendency to supplant transformer coupling by resistance and choke coupling for loud speaker amplification.

Loud speakers of every description were to be seen in profusion, but nothing strikingly new was apparent.

It was an appropriate year for the first real national exhibition, as it is now just a quarter of a century since Senatore Marconi first signalled across the Atlantic, and the scene at St. John's, Newfoundland, was reproduced by the Marconiphone Company in honour of the occasion. At this scene we were pleased to renew our acquaintance with the evergreen Mr. Kemp who told us once more what had been done by himself and Mr. Marconi in the early days of wireless.

TELEGRAPHIC MEMORABILIA.

At times one receives shocks, other than those of the electrical genus, when engaged on telegraph duties, but we of the C.T.O. were quite unprepared to read in the middle of a particularly successful morning's cable-work over the London-Penzance-Halifax, N.S. circuit at 11.45 B.S.T. on August 31, and in the middle of a cablegram the following arrestingly terse words from the Fayal repeater office in the Azores, "earthquake serious"—then silence. Further information reached us via New York to the effect that considerable damage had been done and that the apparatus had all been put out of gear. Fortunately the British staff escaped injury or the worse fate of some of the inhabitants of Horta, and great credit is due to all our telegraph colleagues in that volcanic centre of the Atlantic that despite the chaos which such an upheaval must have caused alike to material and nerves, —ceilings had fallen down, batteries smashed, &c.,—yet within eight hours of the disaster temporary repairs and re-adjustments had been made and signals were once more speeding their sinuous course homewards and outwards.

Fayal has been more than once described in this Journal as the Clapham Junction of submarine cables, and one cannot but hope, with all one's heart, that no more serious seismic disaster may befall this important cable centre or any of its sister islands where American, British, German, Italian and Portuguese cable interests meet, in their united endeavours to link up the Old and the New Worlds.

Still on the subject of submarine long-distance cables the following paragraph, issued by a press agency and published by one of the most reputable of the London daily press, appeared on the 2nd of last month:—

34,000-MILE CABLE.

New York, Wednesday.

"The Western Union Cable Company has completed a three months' task in the landing of the cable connecting the United States with England, which measures over 34,000 nautical miles."

We frequently read that the telegraph annihilates distance, but America does seem a long way off at times. It is also known that a cable is not always laid in an absolutely straight line from point to point, but *this* particular cable must have been taken right round the globe before it landed on our shores. Either the time taken to lay these thirty odd thousand miles or the number of miles must be incorrect!

A propos of cables, as these lines are being written we learn that the cable ship *Faraday* has set out to lay part of the new Pacific cable, which will connect Vancouver with Australia and New Zealand.

The 2,145 miles of cable which form the section between Fanning Island in the North Pacific and Suva, Fiji, will also be carried by the *Faraday*, which will thus lay that part of the cable which will link the Dominions and complete an all-British route.

The cable has been manufactured by Messrs. Siemens Brothers and Co., Ltd., at Woolwich. It will be laid at the rate of about 10 miles an hour, and as laying will be carried on continuously day and night, the whole length should be completed in about 10 days from the time that the work begins.

Over a year ago, records *The Electrical Review*, three Frenchmen invented electrical apparatus, to be attached to a telescope, for the purpose of recording the exact instant at which the image of a star crosses the centre line of the field of a telescope. Now a young Danish engineer has perfected the work of the Frenchmen, reports a London evening paper, which explains that the method is, roughly, as follows: At the eye-piece end of the telescope is a photo-electric cell, in front of which is a plate with slits in it, so that only at the moment when the star is in the centre of the telescope's field will its light reach the photo-electric cell. The current which is then generated loads one grid of a special valve, with two grids, by means of which the slightest alteration in the potential of the grid connected to the photo-electric cell is highly magnified. It is further magnified by a 4-valve amplifier, so that it will work a relay, which makes the record on a tape. As the star passes each of the slits in the plate between the telescope and the photo-electric cell dots are recorded on the tape so that the exact mid-point can be read with fine accuracy. There is a certain time-lag, caused by the pause while the current loads the grid of the 2-grid valve, but this is a fixed factor of about one-tenth of a second, and can be allowed for. It is stated that Mr. B. Stromgren, son of the director of the University Observatory at Copenhagen, has so perfected this apparatus that a star of the eighth magnitude, far too faint to be visible to the naked eye at all, records its passage. The importance of the invention is that it secures increased accuracy in the measurement of time.

Captain P. P. Eckersley, M.I.E.E., Chief Engineer of the B.B.C., recently gave an interesting lecture in which the lecturer emphasised the policy of national broadcasting developed in England as contrasted with the policy in America, "which national policy had become the admiration of the world, including America."

Naturally the position of the B.B.C. and the Government Committee's report thereon and regarding the present policy he said that as a matter of fact a chairman had not yet been appointed. He had been told that in future he would be a Government servant, but reading the report as any member of the public would read it, he could not see that they would necessarily be under Government control; in fact, he should say that the undertaking

would be less under Government control than at present, because the idea underlying the future of broadcasting was that there should be no privileges and also no restrictions. In his opinion, only on that idea could broadcasting go ahead. If Mr. Bernard Shaw was to be forbidden to speak because he might be controversial, that would be restricting a new art which was being very carefully watched by those in charge of it. Moreover, in the past, there had been the excuse that the income of the B.B.C. had been restricted, and he hoped that in the future the very simple idea would be adopted by the Government that money subscribed towards a service should go towards that service. The Company could deal with an income many times greater than its present one efficiently in the public interest, and it was difficult to understand why a new and growing thing like broadcasting should be restricted in that manner.

Regarding the technical policy of the B.B.C., Capt. Eckersley said that the aim had been to increase the area of the crystal user (what he then called the "crystal area," a term he has now abandoned in favour of "service area"). In order to carry out this idea to the full, the obvious thing was to increase the present number of 21 main and relay stations; indeed, to erect 42, but that was not a simple matter. At present, however, the urban areas had been covered in such a manner that 85% of the users could get an uninterrupted programme, and the next step was to deal with the country areas, work upon which was proceeding.

The Geneva Conference allocation of wave-lengths meant considerable sacrifice on the part of all countries, but he regarded it as extremely satisfactory that such an arrangement should have been come to.

Captain Eckersley visualised a future for wireless in which a combination of wireless and line telephony would enable the whole of the world to be linked, so that public men speaking in any part upon world topics would be heard simultaneously all over the world, which would be a great factor in maintaining world peace. This prospect might be possible in 10 or 15 years, but why stop at linking various parts of one country; why should not countries be linked in the same way? It was there that one of the great possibilities of wireless in conjunction with line telephony was to be looked for.

We understand that a new edition of *Herbert's Telegraphy* is in course of preparation and that its well-known author is hard at work in bringing this standard work absolutely up-to-date. This will be no mean feat in these days of rapid changes in the design of high-speed machine telegraphy.

The struggles of our colleagues at the other end of the foreign telegraph circuits are no less intense when it comes to languages than are our own at times, especially if, as happened recently, a launch is made into the grandiose, thus: "We are already considerably amassed assist please" or on the same day, "We used urgently four arms and are in a scrape owing of much work aid please."

Needless to say extra staff was hurried to the scene!

Our foreign colleagues will pardon the insertion of the following delicious extract from an article on "Lighting the Village," by V. C. Sampson, contributed to *The Electrical Review*, which story could not but be puzzling to our Continental friends, written as it is in the Derbyshire *patois*.

"Tramping across a wild stretch of moorland one recent afternoon, a call for refreshments was made at a well-known hostelry which is situated at the crest of one of the magnificent peaks.

The inn is an interesting old place. The interior is low-ceiled and oak-panelled, and extremely picturesque, a reminder of the long-distant past. However, an excellent and very modern meal was served. Amid such surroundings satisfaction should have been complete, but one factor marred the enjoyment. Autumn dusk had descended over the land, and mine host obligingly "lit up" a very foul, although elaborately-ornate, oil-lamp.

Watching the thin clouds of black smoke belching against the fine old oak rafters, we could not forbear saying—"What a pity that you have to put up with a light of that description; that lamp must ruin the decorations in a week."

"Aye," agreed the landlord, "it tak's some fettleing doan in t' spring, I'll 'low! But what maun I do? Theree's noa gas raand here, mon."

"Electricity," we said, enthusiastically, "will do the trick for you easily."

He looked at us suspiciously. "Theree's bin monny a felly," he said, slowly, "raand here wanting to sell me one of them generating sets, as they calls 'em, but I'm noan having onny! Ingines is noan in my line! I'll use 'lectricity—and be glad to do it!—when they brings it raand on a caart, same as old Hawky brings us t' paraffin."

On the recommendation of the Radio Research Board of the Department of Scientific and Industrial Research, waves of accurately known frequency have been transmitted during the past three years from the National Physical Laboratory (5 HW) in order to provide means of checking the calibration of wave-meters and other apparatus. In order to increase the usefulness of this service, the present transmissions of eight waves covering a range of from 360 to 60 kilocycles per second (833 to 5,000 metres wave-length) between the hours of 15.00 and 16.00 G.m.t. on alternate Tuesdays are to be greatly augmented. The new transmissions commenced on Sept. 7, and includes 16 waves, transmitted in two sections, each once per calendar month between the above-mentioned hours. On the first Tuesday in each month the short-wave (960 to 260 kilocycles per second) programme will be radiated, and on the third Tuesday the long-wave (200 to 30 kilocycles per second) programme will be sent out.

The *Morning Post* recently gave particulars of a proposal put forward by Mr. J. D. Chisholm for the broadcasting, to consumers of electricity, of concerts, &c., by way of the supply mains. Mr. Chisholm pointed out that towns could be connected just as they are to-day for the purpose of relaying B.B.C. programmes. All that the recipient would require would be a loud-speaker or a pair of headphones, used in conjunction with a special attachment which ought not to cost more than 20s.; this would be connected to any electric lampholder or socket, d.c. or a.c. No tuning would be necessary; the apparatus could be used in any room, and would be set in operation by turning on a switch.

Mr. Chisholm stated that all the technical difficulties had been overcome, and it only remained to make arrangements with the electricity supply authorities and to set up studios in the principal towns, each controlled by a committee. He said:—"A group of bungalows is being supplied with broadcasting through an electric light power station, and wireless sets in these buildings have been put on one side. The reception is superior to that of any wireless set. It is unfortunate for the wireless manufacturers, but this system has got to come now that it has been perfected."

In *The Electrical Review* of September 21, 1923, a precisely similar system was described at some length and was also mentioned by the *T. and T. Journal*. It was there also stated by our contemporary that for 18 months the North American Co., through its subsidiary, Wired Radio, Inc., had been experimenting with a system of wired-radio broadcasting over electric light and power lines, under the patents of Major-General G. O. Squier. The system was being developed in co-operation with a number of large lighting and power companies. The sending apparatus was connected to one phase of the three-phase lines at the power house, and the receiver was plugged into a lampholder or other socket. Apparently the transmission was done at low power, as the receiving apparatus included an amplifier.

It is said in connexion with the Baird system of television that the inventor conducted many of his experiments, that is to say both transmitting and receiving single-handed despite the fact that the former apparatus was installed in the centre of London and his receiving set at Harrow. My informant maintains that by means of an automatic transmitter he set the London apparatus going, then dashed by motor car to Harrow where he was able to make the necessary adjustments to his receiving arrangements.

It is noted that a set was on sale at the recent Radio Exhibition at Olympia, London, and one of his first experimental sets have been presented to the Patent Museum, South Kensington.

An interesting incident, by-the-by, is related as having happened at Olympia during the above-mentioned exhibition, which is probably unique.

The thousands of visitors to the National Wireless Exhibition at Olympia were startled to hear a child's whimper come from the direction of the lofty ceiling, where the loudspeakers hang.

Then a tiny voice called, "Daddy, Daddy."

The Announcer followed with the information that if anybody present had lost a small boy, he could be found in the studio on the gallery.

The parents claimed the child within two minutes.

As an old telegraphist who commenced his career in the C.T.O., in 1881 and who, winning a position on the Engineering Staff until he became a Staff Engineer at the E.-in-C.'s headquarters, we offer our congratulations to Mr. F. L. Henley who retired well and hearty last month upon reaching the age limit. May your shadow never grow less, my dear Henley!

Maybe the fact that the International Telegraph Conference which took place in Paris this time last year is now considered by most of our readers as a completed fact. A fact no doubt, but its works surely follow it as witness the little noticed but nevertheless important Comité which sat at Cortina a month or two ago, which committee was actually a branch of the Conference proper. There is yet another offshoot of the Conference to be held next month in Berlin at which a number of specialised subjects will be dealt with, interesting alike to telegraph engineers and those responsible for the disposal of telegraph traffic. One very interesting item is likely to be the working of telegraph circuits in telephone cables. A subject particularly necessary as one for international discussion nowadays, at home and abroad.

I am afraid this month's notes will stretch themselves out beyond the patience of my colleagues on the Managing Committee not to speak of the Managing Editor. Anyway risks must be taken, and I would ask my readers what they would think of electrical facilities such as those which are afforded by the Electric Light Association of North Wales, North Dakota, at least one can only judge by the following letter sent out to its clients:—

"Regarding electric power on Tuesdays—the plant will put out only 20 amperes. An iron pulls about five amperes and a motor for washing about two amperes. The plant will thus handle only four irons at one time. There are eight who have them and the four to use it in the morning are: Mrs. Geo. H. Johnson, Mrs. Geo. Lachner, Mrs. J. Levin and Mrs. Platz. The four in the afternoon are: Mrs. Fischer, Mrs. Fraser, Mrs. Nelson, and Mrs. Wareburg. If any others want to use power at this time they will have to see the engineer. It is for your own good to observe these rules. If more go on than the plant will handle, you will not get the power you want, and besides, you might hurt the engine by overloading." It is probable adds *The Electrical Review* ironically, that this station is maintained to enable America to claim to have the smallest, as well as the largest undertaking.

And now to more serious matters!

AUSTRIA.—The international Law Association Conference opened in Vienna, Austria, on August 10. Lord Phillimore presided. According to *The Times*, the report of the Aerial Law Committee, of which Mr. H. F. Manisty, K.C., Recorder of Berwick, was chairman, pointed out that next spring a conference of the Powers would be held in Washington with regard to technical matters arising out of the use of the ether for wireless messages in peace time, and the Committee came to the conclusion that any concrete proposals on the problem of "interference" would be premature. It recommended that the principle of control of the ether should be incorporated in any wireless convention; that sanctions should be laid down, to be adopted in the municipal law of each contracting country, for enforcing obedience to international regulations embodied in the convention; and that any international dispute arising out of such convention be justiciable by the Permanent Court of International Justice at The Hague. Upon the doctrine of air sovereignty *usque ad coelum* as applied to the use of the ether for wireless, the Committee was divided. As regarded wireless in war, it came to the conclusion that it would be premature to make any recommendations in view of the rapid development of wireless.

The recommendations of the Committee were adopted with unanimity, with the amendment that the principle of air sovereignty as laid down in the 1919 Aerial Navigation Convention should in any future drafting embrace wireless also.

AUSTRALIA.—It is officially announced from Melbourne that the "beam" wireless-telegraph station in Australia will commence testing operations in October, and general working soon afterwards at rates not exceeding 2s. per word.

The Electrical Review states that satisfactory progress is being made in Melbourne city with the construction of pneumatic tubes between the various branch post offices and the new central telegraph office, and the tubes should be operating when the new electric telegraph office opens for business about March, 1927. The tubes will carry telegrams handed in at the branch offices direct to the central telegraph office.

In conjunction with Amalgamated Wireless (Australasia), Ltd., the Commonwealth Lighthouse Service proposes to experiment with wireless-telephony as a means of breaking down the isolation of some of the more distant lighthouses. Owing to the high cost of land and submarine cables, many lighthouses have at present no means of communication with the mainland whatever. The first experiments are to be made at the lighthouses on Clifty Island and Deal Island, in Bass Strait. A third station will be erected on Wilson's Promontory, and communication will be established through this station. The wavelength will probably be about 800 metres.

In July last, the Premier (Mr. Bruce) had a long conference with the Postmaster-General (Mr. Gibson) with regard to requests for an alteration of the existing wavelengths and alleged excessive charges for patent royalties and copyright. The wavelength question was being examined, and a definite pronouncement was to have been made by the Government before the end of last month. The patent royalty question, he said, was being taken up with the Government directors on the Amalgamated Wireless Board, and with regard to copyright charges, a conference was being convened by the Government.

Broadcast radio receiving licences issued in June numbered in: New South Wales, 2,582; Victoria, 8,525; Queensland, 1,742; South Australia, 969; Western Australia, 318; Tasmania, 109; the total for the Commonwealth being 14,245. The number of licences held in Australia at the end of June was 125,047, of which 63,494 were held in Victoria; those held in other States were: New South Wales, 36,929; Queensland, 8,100; South Australia, 12,105; Western Australia, 3,886; Tasmania, 1,170. The totals at the end of June, 1925, were: New South Wales, 35,209; Victoria, 20,491; Queensland, 1,328; South Australia, 3,399; Western Australia, 3,621; Tasmania, 588; the total for the Commonwealth being 64,636. At present there are 3.8 licences in Victoria per 100 of the population, the Commonwealth average being 2.1. The figures for other States are: New South Wales, 1.6; Queensland, .9; South Australia, 2.2; Western Australia, .1; Tasmania, .5.

Suggestions emanating from Sydney and Brisbane that there should be a variation of the wavelengths of the "A" class broadcasting stations in Australia have been investigated by the Postmaster-General's Department, and it is almost certain that a widening of the margins between the various stations will be agreed to. Another report says there is every possibility of the wavelengths of the stations being so varied that all will be brought under 600 metres.

Reuter's Trade Service, Melbourne, reports that a proposal was discussed at a meeting held at Ballarat (Victoria) which was called to consider a proposed relay station in the city. It was eventually agreed that a public demand under the wireless regulations be made to the Postmaster-General for an additional "A" class station at Ballarat to relay the 3LO (Melbourne) service. One speaker said it would not be long before there were 250,000 licences in Australia. Victoria had 60,000 licences now which, after the payment of royalties and administrative fees, meant £60,000 a year to the broadcasting services. Melbourne had a wireless installation to every 17½ people; Ballarat had approximately one to 90. He added that a 500-watt station could be established for approximately £1,000.

BELGIUM.—It is announced from Brussels that an official wireless-telegraph service will be opened shortly between Belgium and the Congo, and vice versa.

CANADA.—According to *Commerce Reports* the total Canadian production of radio apparatus, accessories, and batteries during 1925 was valued at \$5,548,660. The statistics for the year show a steady development of the industry and a tendency toward production of complete sets rather than parts. About 48,500 complete sets, valued at \$2,196,000, were made. The production of valves was double that of the previous year, and amounted to \$1,299,680, the value of all other parts being lower than in 1924. Of firms manufacturing radio apparatus and equipment, six engage solely in that production, nine make them in conjunction with the manufacture of other electrical goods, and 12 battery manufacturers report production for radio service. Imports of radio apparatus and parts into Canada during 1925 totalled \$3,552,530, of which the United States supplied \$3,358,300. As exports were practically negligible, the apparent consumption of radio apparatus amounted to \$9,101,200.

CHINA.—Reuter's Trade Service, Shanghai, reports that the wireless telegraph station at Kalgan which has been transmitting commercial messages for a number of years, is encouraging the use of wireless by the public. Notification has been issued to the effect that the station will charge the same rates as the Telegraph Administration, with a free service for coding and decoding. The latter probably refers to the necessity for translating the Chinese language into figure groups before it can be transmitted by the telegraph instruments, with the necessary sequence of reversing the process before it can be delivered to the public, a service for which a fee is generally exacted both from the sender and the receiver!

CUBA.—(See Mexico).

CZECHO-SLOVAKIA.—*The Gazette de Prague* says that for two years the radio-telephone industry has been well represented at the Prague Fair and that this section is extending more and more as the Czecho-Slovak industry develops. In the radiophonic section of the Prague Autumn Fair, which was held from August 29 to September 5, more than 60 Czecho-Slovak, French, British and Italian radio firms were represented.

FERNANDO PO.—From Madrid, Reuter's announce that the Director-General of the Colonies and Morocco (Madrid) has been authorised to invite tenders for the construction and erection of a radio-telegraph station at Santa Isabel, Fernando Po, or in the vicinity.

GERMANY.—According to the *Tägliche Rundschau* (Berlin) employment in the German radio industry has been very favourable during the past few weeks, in spite of the fact that in former years August has usually brought with it a slackening in demand. The increase in the number of users has led to a considerable improvement in sales, in crystal sets especially. On the other hand, business in valve sets has been somewhat smaller than was expected, mainly owing to the reserve of country buyers. The difference in business in crystal and valve sets is particularly clearly illustrated by the fact that the number of firms manufacturing crystal sets and parts has further increased during the past few months, while a decrease has taken place in the number of firms manufacturing valve sets owing to bankruptcies and suspensions of activity. Export business is said to be but small on account of the patent licences which have been granted to foreign firms by the Telefunken-Gesellschaft. Great hopes are entertained regarding the results of this year's wireless exhibition.

The new high-power station which is being erected at Langenberg is expected to be in a sufficiently advanced state to commence test transmissions towards the end of the year. Its power will be 60 kw.

HOLLAND.—Perhaps the most astounding situation that has yet arisen in connexion with broadcasting is that related by *The Electrical Review* which writes as follows:—"The Netherlands station at Hilversum, one of the oldest stations in Europe, has always belonged to a private technical enterprise and was intended to advertise amateur activities. As this method turned out to be very expensive, it was proposed to close the station; thereupon a committee of listeners collected subscriptions among Dutch radio amateurs to pay the programme costs (fees, copyright, &c.). Meanwhile the organisation has still to bear all technical expenses, a situation that cannot last. More than once the Committee urged the Government at The Hague to regulate the matter by law, and *The Times* explains that Ministers in succession created Royal Commissions, composed mainly of political leaders, but the reports have been of so little practical use that the Government has been unable to base a Bill upon them. The matter, however, has become urgent in view of the International Radio Conference to be held at Washington in 1927. If (so it is urged) Holland does not adopt at once wavelengths of between the margins allowed for broadcasting purposes by the Geneva conference, then the Netherlands will be unable to claim any useful wavelength. Wishing to rally enthusiasm for the sake of a really national service, the former Minister of "Waterstaat" (the Government office for dyking, posts, telegraphs, and telephones) composed his Royal Commission of representatives from all political and religious quarters. The Commission's report, recently published, has been severely criticised by the Press, yet it is the only base upon which his successor can found the Bill which he will introduce for regulating broadcasting in Holland. Last year the manager of the Hilversum station, yielding to pressure from the orthodox Christian (Protestant) group, consented to allow it a weekly transmission, which stimulated at once the formation of a Roman Catholic radio association and of a Social Democratic broadcasting group, each of which obtained one special sending evening a week. In consequence tendentious programmes are forced on the Dutch listener, and the lesser social, political, and religious sects are besieging the management with demands and requests."

The Dutch Minister in Vienna, Jonkheer Van Nispen tot Sevenaer, officially inaugurated on August 9, a wireless-telegraph service between

Vienna and Amsterdam. A few minutes after communication was established, Vienna transmitted its first telegram.

HUNGARY.—*World Radio* relates that the unexplained explosions which occurred some weeks ago on Csepel Island, in the Danube, a few miles south of Budapest, have damaged the transmitter erected on the island, and a new station will therefore be erected of sufficient power to enable anyone in Hungary to listen with the simplest crystal set. The new plant should increase the popularity of broadcasting in Hungary, which country is backward as compared with western Europe.

IRISH FREE STATE.—The Free State Department of Posts and Telegraphs recently announced that the licence fee for the use of wireless receiving apparatus, both valve and crystal sets, had been reduced from 20s. to 10s. a year. The new licences can now be obtained at any Post Office in the Free State at which money order business is transacted.

MEXICO.—A treaty has been signed, but not yet ratified, between the Governments of Cuba and Mexico, providing for connecting the telegraph systems of the two countries by wireless and instituting a system of transmission for public and private purposes.

POLAND.—All restrictions hitherto in force have been abolished, except that the authorities still reserve the right to withdraw or refuse permission to grant licences to foreigners living within the frontier. The procedure for obtaining licences has been made simpler; nevertheless, registration remains compulsory, and "piracy" will be dealt with by fines, or imprisonment.

PORTUGUESE EAST AFRICA.—According to a communication from Mozambique, via Lisbon, there has been constructed on the island of Bazaruto a wireless-telegraph station working on a wavelength of 600 metres and with a range of 100 miles, which is open for public service and for navigation.

SCOTLAND.—In the annual report of the Fishery Board of Scotland for 1925, it is suggested that to reduce the costs of herring fishing a greater use should be made of wireless, so that trawlers might be saved the trouble of steaming for, sometimes, 100 miles in search of fish.

SOUTH AFRICA.—The Radio Act, 1926, includes, among other things a schedule of licence fees for transmitting and receiving sets, ranging from £1 for an experimenter to £6 5s. for a hotel, or other premises licensed for the sale of liquor. It is reported that the financial position of several broadcasting stations in the S.A. Union is not as satisfactory as might be desired.

According to the *Daily Mail's* Johannesburg correspondent, broadcasting is in jeopardy in South Africa. In the year just concluded a private broadcasting company in Johannesburg lost more than £4,000, and the Durban (Natal) municipal station nearly £9,000; the Capetown station was also run at a loss. A conference is being held to discuss nationalisation, or, alternatively, a Government subsidy. In this connexion the Editor of the *British and South African Export Gazette* says: "Because the Union imported wireless sets, parts, &c., to the value of only £102,375 in 1925, as compared with £284,565 in the previous year, a lot of nonsense is being talked about the trade being no longer worth the serious attention of the larger merchant houses who have concerned themselves with it during the past year or so. My personal belief is that we have not yet experienced the full strength of the demand which exists in South Africa for wireless apparatus of all kinds, and I base it on the fact that broadcasting, as such, has never been developed to anything approaching its limits. All credit, of course, is due to the organisations in Cape Town, Johannesburg, and Durban, which have been "on the other" for the past three years or more, but they will be the first to admit that they have not been able to maintain public interest in the programmes to the fullest possible extent. This latter point is obviously the governing factor in the wireless trade, and it remains to be seen whether the complete reorganisation of the broadcasting services in the Union which the public are demanding will bring about a revival. I think it will, for the basic interest in the science is undoubtedly there, and the sales saturation point is far distant. Meanwhile, although the imports of British apparatus were affected by the marked decline in the total value of the Union's purchases from overseas, some other countries actually did more business in 1925 than in 1924. True, the entire amounts done by such countries were not comparable with the £84,000 which went to British manufacturers, but the indication that competition is increasing is obvious."

Another phase of the question is to be found in a letter to the *Wireless Trader* in which a member of a Durban firm of radio apparatus dealers draws attention to the size of the Union of South Africa and the futility of appointing an agent in, say, Johannesburg, to deal with business for the whole of the country. He says that Americans, who have studied the market, do not make this mistake. Again, it is pointed out that distributors' costs in South Africa are so heavy that the ordinary English retail prices provide an inadequate margin; these prices should therefore not be printed in catalogues &c., for public information.

SOUTH AMERICA.—Marconi apparatus is part of the equipment of British settlers who left England early in September to open up tracts of country in Bolivia, South America, in accordance with an agreement recently made between the Bolivian Government and Bolivian Concessions, Ltd. They fitted it up on the vessel in which they sailed, the 600-ton *President Sevedra*, and will thus enjoy all the advantages of wireless communication throughout the journey. The 500-watt telephone and telegraph transmitter (type YC5) is to be used under normal conditions as a land station; the receiver (type RP4b) mounts five valves, one for reaction, two for high-frequency amplification, one for rectification, and one for low-frequency magnification. Its all-round utility either as a portable, or "semi-portable" model should make it very suitable for the purpose of the settlers.

SPAIN.—Reuter's Trade Service at Madrid says that a radio club has been formed at Almeria. It will meet the cost of running the transmission station installed at the port. Trials at the new station, it is reported, have yielded excellent results.

The Union Radio, which recently celebrated its first birthday, has taken over the control of the Cadiz station and the two stations in Seville, which is a step further towards the long-desired aim of a single broadcasting company in Spain, which will put an end to the existing conflict of interests, says *World Radio*. Radio-Castilla has applied for the necessary official permission to introduce various technical improvements, and while these are being carried out, it will be necessary for transmission to be temporarily suspended.

SWEDEN.—The new broadcasting station owned by the Radio Club of Helsingborg, which has commenced operation with a wavelength of 235 metres, will serve as a link for relaying Stockholm and Malmo programmes. Sales of radio materials have been good during the winter months, says *Commerce Reports*, especially large sets which permit reception from European stations. An increased number of radio licences was issued during the first quarter of 1926.

SWITZERLAND.—During last year the Swiss Marconi Co. transmitted 411,000 wireless telegrams, or about four times as many as in 1924. It is noteworthy that 61% of the messages were despatched to London. A special department has recently been opened at the central telegraph office in Zurich where business men may telephone wireless telegrams to the transmitting station at Munchen-buchsee.

U.S.A.—PATENT INFRINGEMENT.—The United States District Court for the Eastern District of Pennsylvania has found for the plaintiff in the case of the De Forest Radio Telephone and Telegraph Co. v. Westinghouse Electric and Manufacturing Co., a radio patent suit concerning alleged infringement of the plaintiff's patents on the so-called "feed-back" or "regenerative" circuit arrangement employed with a three-electrode vacuum valve. The question of priority as between the De Forest and the Armstrong patents was at issue, and the effect of conflicting decrees of the District Court for the Southern District of New York, affirmed by the Circuit Court of Appeals of the Second Circuit, and of the Court of Appeals of the District of Columbia was squarely raised, says the *Electrical World*. The two courts first named sustained the Armstrong claims, and the defendant maintained that the question was, therefore, *res adjudicata* and could not be reopened. The court in Pennsylvania refused to accept this view, holding that these decrees were interlocutory in nature and that the decision of the Court of Appeals of the District of Columbia must control, unless additional testimony carried conviction that that court was in error. After analysis of such testimony, the Pennsylvania court held that this was not the case, and declared that De Forest was the first and original inventor of the feed-back circuit and the oscillating audion, and that claims Nos. 1, 2, 3, 5, 8, 9, 12, 14, 15, 16, 17, and 18 of Armstrong patent No. 1,113,149 are invalid.

Autumn.—Ye storm-winds of Autumn !
 Who rush by, who shake
 The window, and ruffle
 The gleam-lighted lake :
 Who cross to the hill-side
 Thin sprinkled with farms,
 Where the high woods strip sadly
 Their yellowing arms—
 Ye are bound for the mountains !—*Matthew Arnold.*

J. J. T.

THE POST OFFICE TELEPHONE AND TELEGRAPH SOCIETY OF LONDON.

SESSION 1926-1927.

The opening meeting of this Society takes place on Monday, October 18, at 5.30 p.m. at the Institution of Electrical Engineers, Savoy Place, Victoria Embankment, when the Chairman for the Session, Mr. E. H. Shaughnessy, O.B.E., M.I.E.E. (Assistant Engineer-in-Chief, G.P.O.) will give an address on "Developments in Wireless Telephony." Tea and light refreshments will be provided prior to the meeting in a convenient room adjoining the Lecture Hall.

The other meetings and addresses during the session are as follows:—

Date 1926		
Nov. 15	"Some considerations of the possibilities of Automatic Telephony in London as foreseen from a traffic viewpoint."	Mr. Horace Dive, M.B.E. (Superintendent, London Telephone Service).
Dec. 20	"Overseas communication—its origin and development."	Mr. H. G. Sellars (Overseer, Cable Room, Central Telegraph Office).
1927		
Jan. 17	"The design and erection of Post Office buildings."	Mr. H. G. Warren, A.R.I.B.A. (2nd Architectural Assistant, G.P.O.)

Date 1927

Feb. 21	"Telephony from many viewpoints."	Miss A. E. Cox (Superintendent, Exchange Staff, London Telephone Service).
Mar. 21	"London Postal Service."	Lt.-Col. W. T. Brain (Assistant Controller, London Postal Service).
April 25	"The Telegraph Service Past and Present."	Mr. A. W. Edwards, O.B.E. (late Deputy Controller, Central Telegraph Office).

We should like to remind our readers that all members of the Staff of the Post Office are eligible for membership of this Society on approval by the Committee and that by permission of the governing bodies members of the Society may attend the meetings of the Post Office Institution of Electrical Engineers and of the London Telephonists' Society. Particulars of such meetings can be obtained on application to the Agents.

The subscription is, Women 1s. 6d., Men 2s. 6d. per annum, payable in advance, and membership booklets may be obtained on application to any Agent in the following list:—

	OFFICE OR DISTRICT	AGENT
Secretary's Office	- - - -	Mr. G. Bowthorpe (Offl. 211), Mr. A. J. Wadey (Offl. 681), Mr. F. Kemp (Offl. 414).
Accountant-General's Department	-	Miss K. A. Boulding (T.B.E.) Regent 6600).
Central Telegraph Office	- -	Miss A. J. McCarthy (Offl. 324), Mr. W. G. Hodgson, Mr. F. Mitchell, Mr. F. J. Symes (Cable Room), Mr. W. G. Wood, Mr. A. J. Rowlands.
Engineer-in-Chief's Office	- -	Mr. William Day (Offl. 811) and Mr. R. Greenstreet (Offl. 634), Mr. A. Hansard (Willesden 3376) P.O. Engineering Research Station, Dollis Hill, N.W.2.

LONDON ENGINEERING DISTRICT.

- Mr. E. Tidd (Victoria 101), Centre External: 116, Victoria Street, S.W.1.
- Mr. E. H. Robins (Gerrard 101), Centre Internal: 34, Gerrard Street, W.1.
- Mr. C. E. Griffiths (Willesden 101), N.W. External: Willesden Exchange, St. Andrew's Road, Willesden Green, N.W.10.
- Mr. C. H. Connor (Paddington 101), N.W. Internal: 77, Market Street, W.2.
- Mr. S. Copp (Park 101), West External: Park Telephone Exchange, Portobello Road, W.11.
- Mr. H. Smith (Hop 101, Extn. 169), S.E. External: Denham Street, S.E.1.
- Mr. H. M. Taylor (London Wall 101) City Internal: Moorgate Buildings, Telegraph Street, E.C.2.
- Mr. F. J. Paine (Hop 101, Extn. 73), City External: Denham Street, S.E.1.
- Mr. A. J. Gardner (Paddington 101), West Internal: 77, Market Street, W.2.
- Mr. G. C. Geisler (Clerkenwell 9601), N. External: Dalston Exchange, Kingsland Green, Dalston, E.8.
- M. A. Wright (Hop 101, Extn. 150), S.E. Internal: Denham Street, S.E.1.
- Mr. J. H. Gwyer (Battersea 101), S.W. External: 66, North Side, S.W.18.
- Mr. P. J. Garrett (Battersea 101), S.W. Internal: 66, North Side, S.W.18.
- Capt. F. Bruton Haywood (Official 631), Superintending Engineer's Office: Denham Street, S.E.1.
- Mr. H. Deaves (East 101, Extn. 22), East External: 17, West India Dock Road, E.
- Mr. J. Paddon (Maryland 1101), N.E. Internal: Maryland Exchange, Jupp Road, E.15.
- London Postal Service: Mr. W. H. Cripps (Offl. 570) (Cont. Office).
- London Telephone Service: Mr. M. C. Pink, Cont. Office (City 2000, Extn. 278).
- Metropolitan Power District: Mr. H. W. Fulcher (City 6607).
- Stores Department: Mr. J. Mairs, Studd Street, N.1. (Offl. 634), Mr. J. K. Waters, 17, Bedford Street, W.C.2. (Offl. 638), Mr. W. H. Shinn, Holloway Factory, N.7. (Offl. 619).

or from the Registrar Treasurer, Mr. W. K. Cherry, London Telephone Service, G.P.O. South, London, E.C.4. (Telephone: City 2000, Extension 276) and the Hon. Secretary, Mr. D. H. Thomson, Secretary's Office, G.P.O. North, London, E.C.1. (Telephone: Official 298).

The latest editions of the undermentioned books have recently been added to the Society's library:—

Elements of Statistics	... ..	Bowley
Herbert's Telegraphy	... ..	...
"Telephony	... ..	...
Modern Finance and Industry	... ..	Wade
An Introduction to Practical Mathematics	... ..	Savelby
The Internal Combustion Engine	... ..	Wimperis
Modern Electricity and Magnetism	... ..	Shackel
Elementary Practical Mathematics	... ..	Perry
The Inspection and Testing of Materials, Apparatus, and Lines	... ..	Henley
A Course in Practical Mathematics	... ..	Savelby
The Admiralty Handbook of Wireless Telegraphy	... ..	...
Technical Electricity	... ..	Davidge and Hutchinson

Application for books should be forwarded to the Hon. Librarian, Mr. H. Booker, Wireless Telegraph Section, Secretary's Office, G.P.O. North, E.C.1.

CORRESPONDENCE.

"THE FUTURE OF TELEGRAPHY."

TO THE EDITOR OF "THE TELEGRAPH AND TELEPHONE JOURNAL."

SIR,—I should like to tender my congratulations to Mr. Archibald for his paper on "The future of the Telegraphs."

The facts of the existing situation are faced quite boldly and there is no attempt to ignore them, unpleasant as they are to all old telegraph men. But, what I wish specially to direct attention to, is the fact that Mr. Archibald has arrived at the same conclusion which I reached in my paper on "The problem of the Telegraphs," namely, that the way of progress lies in the formation of Local Study Circles. Personally, I believe that the telegraphs have a future, and I will even venture to prophesy that the problem can, and will be solved, and I wish to call special and earnest attention to the judgment pronounced by Mr. Archibald.—Yours faithfully,

T. E. HERBERT.

Manchester, September, 1926.

[We have very much pleasure in publishing these few appreciative and optimistic lines from our esteemed friend.—Ed. T. & T. Journal.]

TO THE EDITOR OF "THE TELEGRAPH AND TELEPHONE JOURNAL."

SIR,—I was much amused to read Mr. Archibald's paper on "The Future of Telegraphy" and am wondering how many of his audience realised he was "pulling their leg?"

"I can see no better means of displaying our interest than in taking pride in putting forward any suggestion, however unimportant it may seem," is a real gem.

As one who has put forward many suggestions to the department, and received varying rewards from "mind your own business" to the "Secretary's thanks," I can claim to have a fair idea of how suggestions are received. Experience of the reception of suggestions over a period of years has convinced me that unimportant trifling suggestions are rewarded but all others turned down. If on engineering matters—a mere telegraphist cannot teach an engineer anything. If the suggestion touches administration—again turned down. (The idea of a telegraphist suggesting improvements in administration!) In fact, there is hardly a suggestion possible that would not be condemned by someone interested in turning it down.

My suggestion that before a suggestion was finally turned down, the one who suggested it should be allowed to see the comments and reply to same has also found the W.P.B.

The present Baudot typewheel emanated from the traffic section, an improvement on it was submitted by me before it reached the galleries. This was not only turned down with thanks, but the papers were lost so that when it was referred to after the wheels had been in use and found fault with, I had to supply a copy.

The author also says "Our circulation arrangements are not yet perfect and they are expensive. Can anyone offer a suggestion." My reply is "If you refer to the C.T.O. the answer is in the affirmative."

In conclusion. If the department wants suggestions it must treat them with more respect. If an impartial tribunal were appointed with power to override departmental chiefs and others who object to fresh methods, then the suggestions will be forthcoming. C. YOUNG, C.T.O.

[We insert this letter gladly. Our own belief is that suggestions of all kinds are carefully considered, and more than that, in some of the larger offices special organisation exists for considering suggestions. It may be the case that from the point of view of an officer making a suggestion there may at times appear to be an undue conservatism, an impression which it is very difficult to remove. There is also the undoubted fact that individuals making suggestions cannot always see the "cons" as well as the "pros" of the case.—Ed., T. & T. Journal.]

PRESENTATION TO MR. PRATT, HIGHER CLERICAL OFFICER.

On leaving the North Midland District for the position of Chief Clerk at St. Albans, Mr. Pratt was the recipient of a handsome gold Albert chain and a silver cigarette box, the gift of the staff.

The presentation was made by Mr. Haley, the District Manager, who expressed on behalf of the staff regret that Mr. Pratt was severing his connexion with the North Midland District, and stated that he would carry with him the good wishes of the whole of the staff in his new sphere.

Mr. Pratt suitably replied.

C.T.O. AMATEUR GARDENING ASSOCIATION.

THE Central Telegraph Office Amateur Gardening Association held their 19th annual Autumn Show on Sept. 15. The exhibition showed that the high standard of excellence usually to be noted was, on this occasion, too, well maintained. Owing, no doubt, to the unfavourable season the exhibits were not so numerous as usual, but the freshness of the exhibits and skill shown by the competitors in staging their produce, made the exhibition a notable one. The chief interest of the show was the remarkable

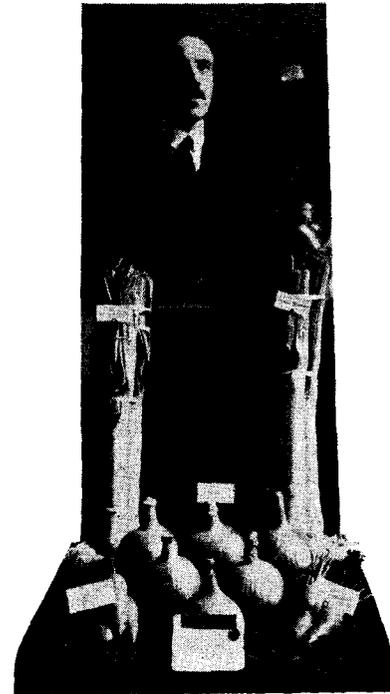


exhibit of Mr. H. Savage (of the Cable Room) in the class for a Collection of Vegetables. Each of the various vegetables shown, leeks, onions and carrots, displayed evidence of the highest culture. The judges themselves were delighted both in the superlative quality and the excellent method of staging of the exhibits. In the opinion of many competent old-time members and exhibitors, it was the finest exhibit ever seen at the C.T.O. Shows.

During the day the exhibition was visited by the Controller and the Assistant Controllers, who always show a lively interest in these competitions.

"FLUTE" FOR "FIFE."

A correspondent writes to the *Westminster Gazette*:—

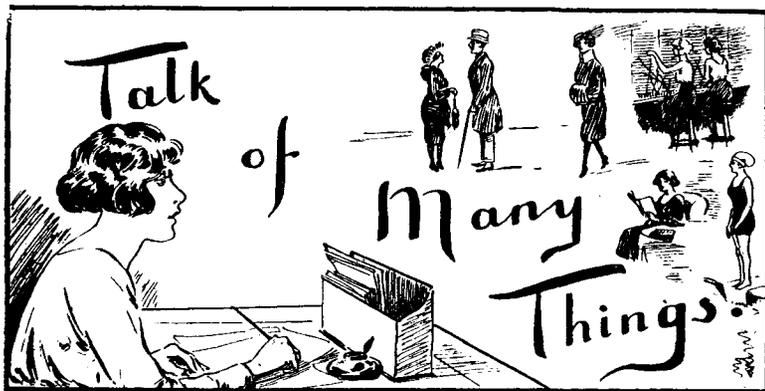
Sir,—As there seemed to be the greatest difficulty in distinguishing "five" from "nine" on the telephone the Post Office adopted the expedient of substituting "fife" for "five." In actual practice, however, this is no improvement. Numbers with "nine" in them still come through for those with "five," and vice versa.

May I suggest an easy way out of the quandary? "Fife" is present in everybody's mind as a musical (more or less) instrument, rather than the name of the constituency for which Lord Oxford and Asquith sat for so many years. The twin brother to the fife is the flute.

Why not substitute "flute" for "fife"? To call up 5,205 you would say, "Flute two oh flute," and there could be no mistake. The nines would cease to be troubled and the weary telephonist would have a little rest from the complaint, "Wrong number, Miss." Perhaps if you give publicity to my suggestion the Post Office will be induced seriously to consider it.—Yours, &c., F. O.

[Seeing such luxuriant humour in the full glory of print might tempt even the most sober-minded to wallow in soul-destroying puns. We are moved to remark that "flute" does not seem to us a particular good "cymbal" for "five."]

WE TELEPHONISTS



"If that one Ship. . . ."

Slowly, majestically, relentlessly the ship sailed. The excitement and confusion of the last few moments died down. She had been with us—a part of us, indivisible as it seemed—but now she had become suddenly and horribly a thing apart, bearing away, away, and severing grievously the ties of affection. Dark fear gripped the soul; memory surged and we were pierced with the pain of its sweetness. The heart beat wildly and the hand reached out involuntarily but unavailingly. Each throb of the engine, each beat of the screw added immeasurable distance and intensified the feeling of separation. The great adventure, the supreme trial, so often and so fearfully rehearsed in imagination was now an inevitable and irrevocable fact—no going back, no turning from the plough in unworthiness. And she—was she regretful, would she even now return if she could? No! How proud and how calm and dignified she had been at the last. Will she return or shall we never meet again? Will mere distance become instead the vaster separation of time and will that lengthen again into the unbridgeable infinity? Still the ship bears on. The stimulus of excitement is gone and there is left only a loneliness filled with phantom fancies and vain regrets.

The news spread from mouth to mouth with the fleet wing of evil tidings the ship had sunk in a collision in a raging waste of waters: she went down like a log, a total loss. Poignant grief succeeds a numbed stupefaction, the heart bursts, manhood is forgotten in stifled sobs.

"Hard luck, old chap, that swan sinking your new steamer! Never mind, old boy, father will buy you another. The swans ought to be kept off the boat pond." And so a tearful lad went home to tea with a sympathetic pal of a father—stopping en route for one of Mr. Wall's solacing creams.

PERCY FLAGE.

"Oh, Wad some Power the Giftie gie us, to see Oursels as Ithers see us."

True for you, Rabbie Burns! I wonder how many of us can read those lines and remain smug and complacent; how many can look round smilingly and say "Aha, my friend—if there's one thing I am sure about it's what others think of me!"

Take a business man—a bank manager, for instance—He strides into his office—looks round importantly and waits for the junior clerk to rush over and open the door of his private sanctum. The cashier and other clerks stand respectfully to attention until the august gentleman is safely in his room.

"Just as it should be," thinks the bank manager, if he thinks about it at all.

What of his staff?

"Old boy late again," says the cashier.

"Doesn't his tie shout!" grins another, while the junior is trying on the "old man's" hat, and comparing it unfavourably with his own.

However, the bank manager doesn't know all this, and so his self-respect remains unshaken.

A well meaning and charitable young lady goes down into the slums to brighten the lives of the inhabitants. She provides woollen comforters for the women, boots for the children, tobacco for the men: then drives off in a perfectly justified glow of satisfaction at having done something for her poorer neighbour.

Those people—who should be saying, "Ah, the dear young lady, bless her bonny, bright face—" What are they saying?"

"If I'd her money, I'd buy myself a decent hat!"—from the girls.

"Fancy her trying to teach me how to cook!" says the mother of a family.

"Boo-hoo!" cry the little ones, "Can't climb up de lamppost wiv dese boots on!"

Still, the young lady doesn't hear all this and she also retains her self-satisfaction.

But, Rabbie, those lines of yours do not apply to the telephonist, do they?

That young person labours under no delusions as to her brains, capabilities or personal appearance. If she never reads the newspapers, then the subscriber obligingly keeps her *au fait* with the latest about herself. Trips she to work in the morning happy as a lark and at peace with the world, speedily is she brought back to normal with the words, "Don't be ridiculous—they *must* answer—I'm a Director!" Says she in a voice of honey, "I am sorry the number is engaged"; she is crushed with "Give me the supervisor—they've been engaged one and a half minutes."

She is seated in the train, weary after an afternoon of "rushy" work. What is the man on her left saying?

"I tried to get you this afternoon, old chap. Couldn't! Suppose the exchange girl was having a cup of tea. Ha! ha! ha! I cleared off to Lyons without you—was thirsty, b'jove." She wonders vaguely why it should be humorous for her to go to tea and not for him.

On reaching home, she props a newspaper up against the teapot. The word "telephone" catches her eye and she reads that owing to a telephonist's cockney accent, an address is taken as "Clothes Line" instead of "Cloves Lane." Her mind wanders back to that first interview, when she had to read a long passage from a book before she was considered as a candidate, and she wonders if "Cockneyism" is catching and if this "Clothes Line" telephonist has to deal with subscribers whose accent perhaps is not that of Oxford!

To cheer her drooping spirits she goes to the "Movies," and there, to her horror, she sees a "Hello Girl." A gum-chewing, frizzle-headed damsel with roving eyes and a mania for dealing (telephonically) with anybody's business but her own.

You have all seen her—oh, my sisters—this travesty of an exchange girl—the like of which was never seen in an exchange! Where does the outside world get its ideas? Does a small and frivolous minority let us down, or do we have too many apologies made for us! Whatever the reason, adverse criticism seems to have agreed with us. Where in London will you find healthier, jollier, wittier girls than in the L.T.S.? Where will you get such a quick response to a charitable appeal? Without trying to set up a Mutual Admiration Society I venture to state that we are of business London's best and that if the Press does criticise us it is because we are interesting enough to be criticised.

W. M. G., Albert Dock Exchange.

We print below extracts from a poem in an American paper *The Christian Science Monitor* :—

The roads of "Merrie England"
Are the loveliest I know—
They lie across the moorland
Where gorse and heather grow.
They creep between the hedges,
They twist and turn, and here
They race up to the sky-line
And pretend to disappear.
And if you follow quickly
You find they still are there,
Leading onwards, ever onwards,
Through the villages and towns
Like an endless ribbon stretching
Over honey-coloured downs;
Rough and stony on the fell-lands,
Scrambling up the mountain steep,
Curling in between the boulders,
All among the mountain sheep. . . .
They may beckon through the beeches,
Silver beeches in the sun,
On through pine trees, scented pine trees
(Like a sentinel each one).

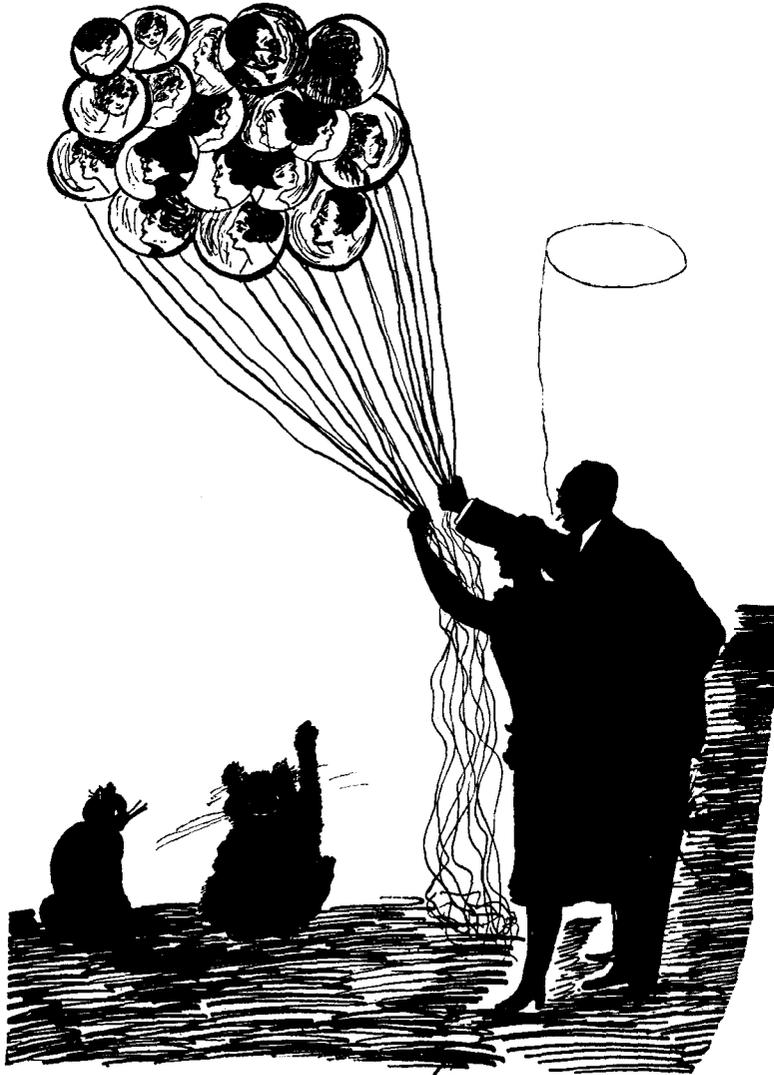
The roads of "Merrie England"
Are like a motley throng—
For some are rather short roads,
And others rather long—
Then some are soft and sandy
Wandering to and fro,
As if they feel uncertain
Of just the way to go.
Some roads are black and shiny
And new as new can be,
But other roads are old roads
O'erhung with mystery,
All peopled with the shades
Of Britain's ancient history.

The roads of "Merry England"
Are never twice the same,
And every time you follow them
You thank the Lord you came.

Coming Events ?

[" Rehearsals are shortly to take place at Gerrard. . . ."]

Then up and spake the Gerrard cat,
 " Oh, girl, say, what a brain !
 Oh, gee, now can you beat it,
 They've hauled them in again.
 Our chief must be told in news concise
 That they'll ruin our trade with the Gerrard mice." C. A. S.



Mr. P. (log.): All I ask is a long, clear "call,"
 And Thou beside me at St. George's Hall.

[Drawing by M. C.]

Popesgrove Exchange.

It is fitting that Twickenham, now a borough, should have its own telephone exchange, and this, under the name of Popesgrove, was opened on September 11 last. The first call was made by Councillor J. Mitchell, M.A., J.R., Chairman of the Council.

Owing to phonetic difficulties it was not possible to name the exchange Twickenham, and Popesgrove was decided upon as appropriate to the borough, inasmuch as Alexander Pope, poet and satirist, lived in Twickenham for 25 years. He is interred in a vault in Twickenham Church.

Steadily the old-world charm of the Twickenham that he knew is vanishing, never to return, before the onward march of the material Progress of to-day ; but, as Pope himself says :—

" . . . Still to-morrow's wiser than to day ;
 We think our fathers fools, so wise we grow ;
 Our wiser sons, no doubt, will think us so."

Contributions to this column should be addressed : THE EDITRESS,
 "Talk of Many Things," *Telegraph and Telephone Journal*, Secretary's Office,
 G.P.O. (North), London, E.C.

TELEPHONE NOTES.

ACCORDING to a Reuter's Trade Service report quoted by *The Electrical Review*, the conversion of the telephone system to automatic working is being gradually effected by the German postal authorities. At present the transition is being made or prepared in about twenty towns.

* * * * *

Passengers crossing the Atlantic Ocean in the United States liner *Leviathan* can, through the ship's high-power radio-telephone outfit of the duplex type, carry on a conversation with friends on shore. Thus, when the liner is 2,000 miles east of New York on her way to Southampton, connexions can be obtained with towns and cities as far distant as Los Angeles and San Francisco, 5,000 miles away, says the *Daily Mail*, which explains that the ship's operator gets into communication with Deal Beach, New Jersey, the shore station, and the usual land line connexions are made. For the facility afforded a passenger who speaks from mid-Atlantic to someone in New York, the caller has to pay £2 for three minutes, while for every additional 1,000 miles roughly another £1 has to be added for the minimum conversation.

* * * * *

According to a report in *The Electrical Review*, it will be possible on completion of a new telephone exchange in Berlin, for subscribers in Berlin and Hamburg to obtain each other on a "no delay" basis.

* * * * *

The following extract from a report on "Electric Communication" by a committee of the American Institute of Electrical Engineers gives an interesting résumé of the position with regard to machine switching telephony in the United States.

MACHINE-SWITCHING TELEPHONY.

With the continued steady growth in the application throughout the country of machine-switching telephone apparatus have come further developments in this form of apparatus. In the panel system, which is the type of system used for large cities, a simplified form of tandem switch has been developed by which, after one selection at the calling office, the final selection of the called office can be made by apparatus located at a distance from the originating office, and used to collect traffic from a number of offices routed over common groups of trunks. This results in a material saving in the trunk plant.

A more efficient method of associating a sender with the calling subscriber has been developed. This results in an appreciable saving in the number of senders required, uses more economical apparatus, and reduces the number of types of apparatus required in an office.

In the step-by-step system, which is the type usually used for the medium and smaller sized cities, a line-finder system has been developed which is similar in principle to that being used with success in panel offices. This employs the same selector that is used in the rest of the switching train, effects an improvement in service to the subscriber, and lends itself more readily to efficient equipment layout.

A machine-switching tandem system, employing step-by-step equipment, has been developed for completing toll calls within a 50-mile radius of any given central office area. All calls completed through this system are handled directly by the originating operator over dialing trunks. A tandem system of this kind probably will find its principal application in areas employing step-by-step machine-switching equipment. An installation of this type recently has been put into service in Los Angeles and serves some 75 central offices having a total of approximately 400,000 subscribers. The principal new engineering feature of this system is the means which was developed for dialling and signalling over phantom toll lines.

New types of frames for mounting step-by-step equipment have been developed which take advantage of the ceiling heights ordinarily found in central office buildings, thus effecting a material reduction in floor space requirements.

A cordless "B" switchboard has been developed for completing calls from manual offices to machine offices where the number of manual offices involved makes the use of dialling devices at the manual offices prohibitive in cost. This switchboard employs new trunking principles which result in very efficient and simplified operating equipment.

* * * * *

The special correspondent of *The Electrical Review* reports that, owing to a number of disadvantages now disclosed in the working of the automatic telephone system, the Government of India has abandoned its intention of extending the system to places where it has still to be introduced. The principal defect found is that the system requires intelligent operation and mishandling is likely to result in wrong numbers being obtained, the subscriber having to pay for his mistake. On this account the system is not considered to be quite suited to India. The care needed to "dial" a number often proves too exacting for the average native. It is further stated that they are unpopular and that the anticipated economies in the reduction of the number of operators are counterbalanced by the necessity of employing highly-paid experts to adjust the apparatus. We seem, however, to have seen this statement flatly contradicted elsewhere, and we are inclined to believe that the automatic is the ideal telephone exchange for Oriental countries, where many languages are used by the subscribers.

H. J. E. S.

LONDON TELEPHONE SERVICE NOTES.

Telephonists' Society.

By the time these notes appear the first meeting of the new session will have been held and an account of the proceedings will be given in the next issue. It is not too early, however, to give a reminder regarding the annual competitions. They are three in number. First, there is the usual papers competition divided into three classes with awards of two and a half guineas in each class. Competitors may choose any subject they please. Secondly, there will be a repetition of the "Happy Holiday" photograph competition which proved so popular last year. The third competition is a new one and will appeal to budding dramatists. A prize of three guineas will be awarded for the best short play or sketch which should take not less than half-an-hour to perform and its main interest should be telephones. A point to be noted is that the competitions are only open to members of the Society.

* * * *

Swimming Gala.

The Annual Gala will be held at the Pitfield Street Baths on Friday, October 8. The "Pounds Cup" will be competed for by teams from many exchanges, the "Prossor Cup" competition will take place and the diving championship and many other events will be decided. An account of the contests with the results will be given in these notes next month.

* * * *

Sports Association.

The Sports Association has commenced its work by bringing together the various cricket clubs in the service with a view to arranging regular inter-club matches on the Chiswick Sports Ground. It is the intention to arrange representative games with other departments, and dates will be reserved for trial matches to be played in order that the best possible L.T.S. team can be built up. It is hoped that a real interest will be created by these games and that they will attract a fair measure of support. Arrangements are in hand for the game of tennis to be dealt with on similar lines.

* * * *

Visitors.

From time to time it is the pleasant duty of the writer of these notes to conduct visitors on a tour of telephone exchanges, and it is always a matter

of great interest to observe the features which impress the different visitors. Recently, an American lady who is connected with the commercial side of telephony in the United States was shown over some exchanges, and when asked what impressed her most, referred to the floral decorations in the switchrooms. She thought that the introduction of Nature's colours and form into workrooms was a stroke of genius, and her admiration increased when she learned that the staff themselves provided the decorations.

Within a few days of this visit a German professor was conducted round some exchanges. He observed the flowers but said that he was most impressed with the air of alertness in the switchrooms, and remarked on the speed with which the calls were dispatched yet with an absence of flurry.

PERSONALIA.

LONDON TELEPHONE SERVICE.

Resignations on account of marriage :—

Miss E. L. WHITING, Assistant Supervisor, Class II, of North Exchange.
Miss M. G. SAXTON, Teletypewriter, of London Wall Exchange.
Miss C. D. A. DEACKES, Teletypewriter, of London Wall Exchange.
Miss W. COPE, Teletypewriter, of Mount View Exchange.
Miss ALICE M. WEBB, Teletypewriter, of New Cross Exchange.
Miss VERA E. FRENCH, Teletypewriter, of New Cross Exchange.
Miss K. E. CLARKE, Teletypewriter, of North Exchange.
Miss G. O. MOUNT, Teletypewriter, of Paddington Exchange.
Miss D. E. HYNNE, Teletypewriter, of Riverside Exchange.
Miss B. G. DURRANT, Teletypewriter, of Trunk Exchange.
Miss M. L. MCGOVERN, Teletypewriter, of Trunk Exchange.
Miss F. A. E. K. CHORLEY, Teletypewriter, of Victoria Exchange.

Traffic Staff promotions :—

Mr. P. W. H. MAYCOCK, Assistant Supervisor of Traffic, Class I, to Superintendent.
Mr. A. H. DYER, Assistant Supervisor of Traffic, Class II to Class I.

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SECRETARY'S OFFICE CRICKET CLUB INTER-BRANCH COMPETITION. FINAL ROUND.

Some sketches of the match between the Telegraph Branches and the Traffic Section.

"THE G.P.O. PLAYERS" DRAMATIC SOCIETY.

ANNOUNCEMENTS and critiques of productions by "The G.P.O. Players" have now become a periodical feature of Service Journals. Seemingly the Post Office has no intention of leaving the realms of dramatic art entirely to other Government departments—a spirit to be applauded; for friendly rivalry gives birth to good fellowship.

Since their production of "Julius Caesar" in December last, "The G.P.O. Players," confident in the support of Service colleagues, have formed, under their old title, a Dramatic Society independent of The City Literary Institute. They are fortunate in obtaining the services of a very able professional, Major Hodgson-Bentley (founder and director of the Southend Repertory Theatre) to produce "Thomas More," an original play of singular merit, of which a brief outline by the author appears in the October issue of *St. Martins-le-Grand*. This will be the first production of the play in London. Major Hodgson-Bentley has, however, already produced it professionally at the Southend Repertory Theatre, where it was enthusiastically received.

The Society's production of the play will take place at King George's Hall, Caroline Street, Great Russell Street, W.C., on Friday and Saturday, Oct. 29 and 30, commencing at 7.30 p.m. This hall possesses an excellent stage and is furnished with comfortable tip-up seats. Tickets, 5s. 9d., 3s. 6d.,

2s. 6d., and 1s. 6d. (all reserved) may be obtained from any member of the Society, its Secretary (Mr. Cyril Leigh, Mails Branch, Secretary's Office, G.P.O. North, E.C.1), or through local representatives of the Rowland Hill Benevolent Fund, to which (by arrangement with the Secretary of that Fund) the proceeds will be given. Apart from the assured excellence of the production, the Society's desire to assist a deserving Service organisation is commendable.

The Postmaster-General, Sir W. L. Mitchell-Thomson, Bart., K.B.E., M.P., is President of the Society, with Viscount Wolmer, M.P. (Assistant Postmaster-General), Sir G. E. P. Murray, K.C.B. (Secretary to the G.P.O.), Sir H. N. Bunbury, K.C.B. (Comptroller and Accountant-General) and the Chiefs of other Headquarters Departments as Vice-Presidents. The Society is fortunate in having Mr. L. Simon as Working Chairman.

NEW TELEPHONE CABLE IN HUNGARY.

Work is about to be commenced on the erection of a long-distance telephone cable between Budapest, Hungary, and Prague, Czecho-Slovakia. The line will run via Raab, Ung.-Altenburg, and Pressburg.