

# THE Telegraph and Telephone Journal.

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## TELEGRAPH AND TELEPHONE MEN AND WOMEN.

XXXIV.—

MR. GEORGE HENRY  
TAYLOR.

THE absorption of the National Telephone Company by the Post Office at the end of 1911 brought to the service of the State many men whose natural abilities and technical qualifications were assets which have been of no small value in the great telephone development of this country since that time, and of these the subject of our photograph this month is an outstanding example.

Mr. George Henry Taylor, A.M.I.E.E., graduated as M.Sc. (Tech.) in Victoria University, Manchester, in 1908, and entered the service of the Company in the Traffic Department of the District Manager, Manchester, in that year. His marked ability and his high technical knowledge quickly brought his work under notice, with the result that in 1911 he



was transferred to the Headquarters traffic department of the Engineer-in-Chief of the Company, and in that capacity passed to the Post Office service as a member of the little band which was later, in company with the traffic staff of the Department, to become the Traffic Section of the Secretary's Office.

In the course of his duties in the Secretary's Office, Mr. Taylor became widely known and respected for his genial manner, his willingness to help at all times, and his personal efficiency, and it was with great regret that his colleagues at Headquarters said "Good-bye" to him on his recent promotion to the post of District Manager, Edinburgh.

Mr. Taylor has interests in many directions, and his hobbies include photography, motoring, cricket, and, needless to say now that he has crossed the Border, golf.

It is the hope and confident expectation of all who know him that he will travel far in the Service.

## EDINBURGH AUTOMATIC EXCHANGE.

FIVE minutes before midnight on Saturday, Oct. 2, the Edinburgh Central Exchange was not at the service of its subscribers for the first time since its opening in 1906. Together with its relief exchange, Museum, its connections were cleared and it was closed at midnight, and the subscribers working on the two exchanges were transferred to the new automatic exchange. By 12.10 a.m. on Sunday, Oct. 3, all lines had been disconnected from their old exchanges and were connected to the new automatic equipment, and the first call over the new system was being made by the Lord Provost of Edinburgh to Col. T. F. Purves, O.B.E., M.I.E.E., the Engineer-in-Chief.

All subscribers who were working on the Central and Museum exchanges now have new 5-digit numbers on the new "Edinburgh" Exchange. For convenience in plant lay-out there are four separate units comprising the new exchange, the main unit in the Central Exchange building in Rose Street, and satellite units at Morningside, Murrayfield and Newington. The Central unit has been equipped for 7,820 lines and the initial installation will be completed by equipment for a further 900 lines on the second floor when the old Test Room is dismantled.

So far, only the inner portion of the city has been dealt with. In addition to the two exchanges which have been closed, the complete scheme provides for the conversion to automatic working of all exchanges within a 5-mile radius of the centre of the city, viz.: Colinton, Corstorphine, Davidson's Mains, Granton, Leith and Portobello. These exchanges will be closed and replaced by sub-exchanges on the Edinburgh system as it becomes necessary to replace the existing equipment. In the meantime, it will be possible for subscribers working on the automatic plant to obtain direct communication with the telephonists at these exchanges by dialling the code numbers assigned for the purpose. For calls to all other exchanges the subscribers are requested to dial "O" by which means they are connected to telephonists at the Manual Board associated with the automatic system. Other dialling codes are:—

- 90—for passing telegrams by telephone.
- 91—for making enquiries or complaints.
- 92—for Service calls.

In addition to the automatic service given to subscribers, nearly 50 exchanges which have direct communication with Edinburgh have been provided with dials, and the telephonists at these exchanges can dial direct to subscribers on the automatic system without the intervention of a telephonist at Edinburgh.

The adaptation of the telephone exchange building in Rose Street has already involved considerable structural alteration and strengthening, and further alterations will be put in hand to complete the lay-out of the building under the new conditions. The District Manager's and the Sectional Engineer's offices were removed to other quarters in order to clear the ground floor for the first instalment of the automatic equipment, which is now being used. Alterations on the second floor were made to accommodate a temporary Manual Board, and a temporary Monitors' Desk is accommodated on the first floor. The old Test Room on the second floor will now be dismantled and as soon as the space can be prepared the installation of additional apparatus will be begun. The third floor, where the Central and Museum switchboards are placed, will be used for the new permanent Manual Board. Recent estimates indicate that the building, large as it is, will not be large enough to house the total plant required for the Central unit, the Manual Board and the necessary staff quarters. Negotiations are taking place with a view to the acquisition of a building at the back of the exchange to augment the accommodation.

The restrictions on the Manual Board due to its temporary character in their turn gave rise to a pressure of work on the board which is unusual in transfers from one method of operating to another, and the experience of the first working day led to the improvisation of means to relieve the "A" positions of a portion of their work. The temporary Manual Board consists of the following:—

- 1 Cordless key-sender order wire position.
- 7 Trunk signalling positions.
- 2 Special control positions.
- 5 Jack-ended junction positions.
- 15 "A" positions.
- 1 Service P.B.X. position.

—  
31  
—

Of these, three trunk signalling and the two special control positions were not equipped with working lines and it is interesting to note that the remaining 26 positions compare with 87 staffed positions at the old Central and Museum exchanges. The cordless key-sender position equipped with five sets of digit keys is used for direct traffic between Glasgow Central Exchange and Edinburgh Automatic Exchange.

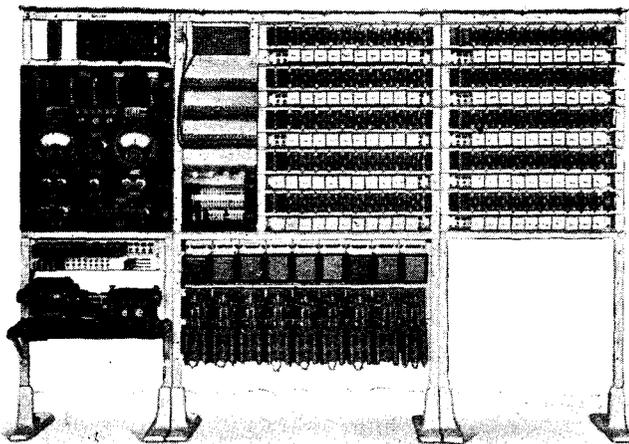
All service P.B.X.'s, with the exception of that at the G.P.O., have been replaced by direct exchange lines and members of the public are instructed to dial "92" when requiring connection to a service number. The telephonist at the service P.B.X. position, which is part of the Manual Board, ascertains the department or officer required and completes the call by dialling over one of the junctions to the automatic plant. This position is connected to the G.P.O. P.B.X. by tie lines. Service callers are provided with a list of service numbers and dial direct to service lines.

The Edinburgh transfer is the largest simultaneous transfer that has yet been undertaken in this country, and the fact that the percentage of faults revealed was well below the average for previous transfers reflects the quality of the engineering preparations.

Hall multi-coin prepayment boxes have been introduced on all call offices within the area which is being served by the automatic plant. Callers can obtain connection to a subscriber on the automatic system by dialling direct, and can obtain a junction or trunk call by dialling "O" and passing the call to the answering telephonist. For the first few days instructors were stationed at the busy suites of call offices to assist callers, if necessary, in the new methods.

The traffic preparations were on a scale commensurate with the rest of the work. A maximum of about 50 visiting officers were employed in calling on subscribers before the transfer to explain the system and demonstrate the method of dialling. For this purpose the subscribers' lines were connected temporarily, as required, to the automatic plant and typical calls were passed; a demonstration of the various tones introduced was given at the same time. In order that the visiting officers should be trained and acquainted with the equipment and operation of all kinds of subscribers' installations, a hall was rented and typical sets of all kinds were exhibited. In addition to personal visits to subscribers, a demonstration automatic set was installed before the transfer in the public office at the G.P.O., and a lively interest in the new system was shown by members of the public. The passing of a test call as soon as possible after the transfer to all subscribers to ensure that their lines were in working order was a task which engaged the surplus operating staff on the Sunday and the Monday. The visiting officers had ascertained from subscribers whether there would be anybody in attendance at the telephone on the Sunday, in order that as many tests as possible should be made on that day. Well over 3,000 successful tests were made before the Monday morning and by Monday evening 9,600 lines had been tested successfully.

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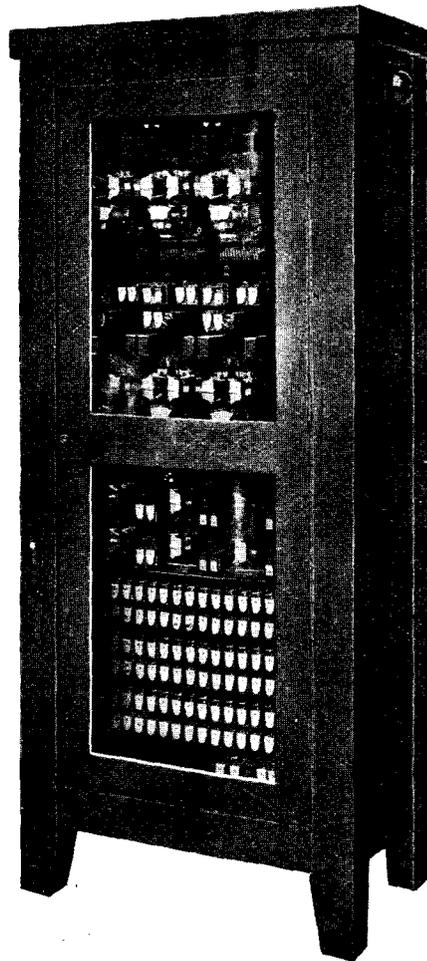
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The Edinburgh automatic system, with its 11,750 working lines, is now the largest automatic system in operation in this country. A fresh survey of the area has been undertaken with a view to determining the telephone requirements of the whole area in the future, and it is expected that the system will have to provide for a total of 40,000 lines within the next 20 years.

The installation work was carried out by Messrs. Siemens Bros. & Co., Ltd., employing their No. 16 system, which embodies a number of features which have been introduced by them and are peculiar to their systems. Ten-point first and second preselectors are employed, and at the satellite units discriminating selectors and repeaters are used to discriminate between local and other calls. At the Central and Murrayfield units, certain blocks of 100 numbers have been provided with special final selectors of the Siemens pattern to enable auxiliary working to be provided over more than one level of 10 lines. The equipment installed includes 13,740 first preselectors and multiple banks for 14,600 lines.

On Monday, Oct. 4, when the new equipment stood its trial under the searching conditions of a busy day, all the preliminary estimating and calculating, and the actual design and erection of the equipment reached their fulfilment, and the fact that the equipment stood such a test so well indicates the care and forethought which had been given by everybody who had to do with its design, erection and operation.

## SOUTH AFRICAN TELEPHONES THIRTY-SIX YEARS AGO.

BY OLD TIMER, IN THE "LIVE WIRE," JOHANNESBURG.

THE telephone system in South Africa thirty-six years ago would be viewed by the telephone workman of to-day as something in the nature of a museum. Only two towns in the Cape Province could boast of a telephone system—namely, Cape Town and Port Elizabeth. Cape Town had three switchboards (Siemens), each of fifty line capacity. The phones were of Gower-Bell and the Hunnington cone types, and Karl Lithman (the Swedish Consul) had a magneto Ericsson which he imported from Sweden as a sample.

The system was earth return and battery ringing, wet Leclanchés No. 2 being used. Copper wire and phosphor bronze were used as conductors, most routes consisting partly of both, and all wires of whatever gauge were terminated on shackles. Four wire oak arms were used, and in the central area 28-ft. poles of the cemented type were general.

The exchange at Cape Town was located in the old Dutch Stock Exchange, a flat-roofed building which stood on the site of the present Post Office.

There was only one operator, the late Mr. Bassett. During the later months of 1892, having just returned from the Free State, I was entrusted with the shifting of the exchange to temporary premises (now the Wellington Fruit Store) to enable the old building to be demolished, as the site was required for the present G.P.O.

During the process of demolition I was walking over one of the partition walls, which was 3 feet thick, to cut away a temporary earth we had been using, when I felt the wall sway. I ran and reached the other side just as the wall collapsed, killing three workmen.

Kimberley had no telephone system, but Messrs. E. W. Tarry and Peach & Co. had phones from their business premises to their workshops, and the Waterworks had a phone from their offices to the mid-pumping station, with an extension to the Vaal River. These phones were maintained by the G.P.O.

Johannesburg was canvassed for subscribers early in 1893, and the net result was 127. Owing to this the Volksraad would grant only £60,000 for material and accessories. The plan was to erect a tower on the Market Square, on the site of the present Town Hall; the Fire Brigade was to have the basement with the use of the stairway for lookout purposes; and wires were to radiate from the tower to the top of buildings, as the business portion of the town centred round the Market Square. The Market Co. had a concession, and would not agree to the tower. The Government had no site except where the tower now stands, which was then a public park.

In September, 1893, the material began to arrive. I had to check it and clear it at the Customs, and see it transported to an open space, afterwards the Market Street Compound. I had a tent there, and tons of copper wire under my care. There was not even a wire fence round the place, but nothing was stolen.

From Sauer Street West the town had no lights, and the blocks in the neighbourhood were inhabited by some of the most desperate crooks in the world and ladies of all colours and easy virtue by the hundred. Policemen never ventured west of Sauer Street after nightfall, until about 1895, and then only in pairs and fully armed. Nearly every door was a bar, and dancing was always going on. I had perforce to go up town for my meals or amusement, and it was a nightly occurrence to be grabbed by the arms and have a revolver pressed behind my ear. On a match being lighted I was recognised as one of the residents and allowed to pass unmolested.

Often I would be dragged into a bar and have to waltz with one of the "ladies." Drinks were not asked for, but you had to dance and smile, otherwise it would have meant oblivion. I always treated this as a good joke. It was safest.

Woe betide the stranger who went sightseeing in those parts after nightfall. Murders were of nightly occurrence, and even during the day it was none too quiet. I have seen shindies on a Sunday that would have made a Portuguese revolution look like a Bethel Mission.

But to return to the construction which was in charge of Mr. Hugh Smith, and began about January, 1894. Before the work was half finished the main routes had to be telescoped owing to the number of applications for phones. Joubert Street route alone carried 278 wires. There were 32 wires on each arm, 16 standing and 16 hanging insulators.

Prior to the Boer War, it became a matter of difficulty to bring a pair of wires to the exchange owing to the wires being below the regulation height at street crossings. A survey for U.G. cable was made, but the war intervened.

When I was in Pretoria in 1893 that town had the most modern telephone system in South Africa, but I was on telegraphs so I do not remember the class of instruments used.

Before 1898 none of the mines on the Reef was connected by phone. The construction began about December, 1897, and the East Rand to Van Ryn was completed the following June. Work was then begun on the West Rand, the furthest mine being the Princess Estate.

The mines were debited with construction costs according to distance, that of the Van Ryn being £500. Two instruments were supplied to each mine. They were of French make, and cost approximately £30 each. Berthon was the maker's name. In the event of an instrument becoming faulty the other could be switched in.

## NOTES ON TELEGRAPH PRACTICE.

BY G. T. ARCHIBALD.

*(Continued from page 7.)*XXI.—*Concerning the Treatment of Press Traffic.—(Continued.)*

THE convenience of newspaper editors has always been the prime consideration in the treatment of press telegrams. In an instruction to the staff, issued in 1870, operators at the sending and receiving offices were enjoined "always to come to a clear understanding with regard to the manner in which the work is to be divided between the different wires. If this is not done" continues the instruction, "there is some risk of the messages being received and delivered out of order, a result which must necessarily cause a considerable amount of trouble and annoyance to the newspaper editors. . . . It is most essential that press messages should be delivered in batches containing not more than 200 or 250 words at a time, as the work of preparing a newspaper for the press is always performed under pressure: and it is, therefore, absolutely necessary that the news should be handed over to the editors in small quantities. Nothing so much annoys and irritates an editor as to have a large quantity of copy delivered to him just as his paper is going to press, when he knows that it might have been delivered to him little by little throughout the evening. Of course, the annoyance and irritation thus created are sure to recoil on the department."

It may truthfully be said that although this instruction disappeared from the regulations many years ago it is still faithfully observed. Early issues of the press regulations abound with similar references to the need for the rapid transmission of press telegrams, yet some of the rules regarding the treatment of such telegrams were, to use a well-known official expression "calculated to defeat rather than promote the object in view."

The treatment of press telegrams at the handing-in stage does not differ greatly from that of ordinary inland telegrams. The time of handing in is recorded on the "A" form and is signalled as part of the message. The number of words is not signalled; the office of origin is sent at the end of the message and not in the preamble, and all press telegrams passing through the Central Telegraph Office, London, are serially numbered with the object of facilitating the tracing of forms, &c.

The order of signalling of press telegrams laid down in 1870, and which has never been amended, is:—

- Time of handing in.
- TS serial number (if any).
- Name of sender.
- Class of news (if classified).
- Letter of section of report (if any).
- Number of page.
- Address (if not classified).
- Text of message.

It has always been the practice to divide into small sections, for convenience of disposal, long messages concerning events at which two or more reporters are employed by the same sender. The sections are indicated by the letters A, B, C, &c., AA, BB, CC, &c., which precede the number of the page, the words "End of Section . . ." being signalled at the end of the last page of each section of the message.

Printed matter handed in in large quantities is divided for signalling purposes into pages of about 100 words in length. In all cases where a news item consists of more than one page the words "End of page . . ." are signalled at the end of each

page except the last; in this case the words "End of Message" are signalled, followed by the name of the office of origin.

In the preparation of punched Wheatstone slip contractions "hitherto peculiar to certain circuits or to particular clerks"—the quotation is from the original Post Office press regulations—were prohibited in 1870. When two or more items of news were punched on the same slip it was customary to allow a space of about six inches of "dots" between each item so that the different offices might be able easily to distinguish between them and be assisted in looking out for the items proper to the offices concerned. With the growth of press traffic and the increased working speed of Wheatstone circuits, the practice of handing consecutive pages to punchers was abandoned and as a general rule it now seldom happens that more than two inches of "dots" or reversals appear between two pages.

At the outset press traffic was dealt with largely at the ordinary commercial circuits, but it was ultimately found necessary to provide separate news wires between the Central Telegraph Office, London—which deals with the major portion of the forwarded press traffic—and provincial towns taking a large amount of press matter from news agencies, &c. Three, four or five offices may be included in a news circuit fitted with automatic Wheatstone apparatus.

Continuous attention was given at news circuits at the receiving offices. The telegraphist in charge of a circuit at the sending station was responsible for seeing that all offices required to take items of news included in any batch about to be transmitted were included in the call signal. The procedure to-day is that laid down in the 'seventies. If every office is concerned, the terminal office alone is called. On receiving the signal "G" the sending operator signals "CQ" (all stations) three times before proceeding to feed Wheatstone slip into the transmitter. If, on the other hand, all offices are not wanted, the key clerk, after receiving the signal "G" from the terminal office required, signals "YQ" followed by the code indicators of the offices included in the batch, and then proceeds to feed the slip into the transmitter.

Continuous attention is still the standard method of operating news wires, but the heavy reduction in press traffic since the war has rendered it uneconomical, except during peak pressure periods, and it is not now unusual for stations to be called as required at other times.

The telegraphist at the sending station was also required to record on a slip the particulars of each item transmitted; this procedure is still followed at the Central Telegraph Office, London.

A Wheatstone-punched slip which had to pass through two or more transmitters, was placed first at the fastest running circuit so that no time might be lost in serving all the circuits concerned. Not more than 500 words was transmitted without a break, in order that the most distant office should signal "G," but a second or two were allowed in case any intermediate office required a repetition.

Immediately after each batch had been completed the key clerk at the sending office signalled by Morse the "TS" numbers and description of each item included in the batch and the codes of the stations for which they were intended. Thus, in the case of a batch of seven items sent on the London-Birmingham-Manchester-Liverpool news wire, containing:—

|                         |             |
|-------------------------|-------------|
| P.A. Nos. 41 and 42 for | BM, MR, LV. |
| P.A. „ 43 „ 44 „        | MR, LV.     |
| C.N. „ 25 „             | MR, LV.     |
| P.A. „ 45 „             | BM, MR, LV. |
| S.P. Code EA „          | LV.         |

the key clerk was required to signal the following summary:—

|                  |               |               |
|------------------|---------------|---------------|
| P.A. 41, 42 CQ : | P.A. 43, 44 : | CN 25 MR LV : |
| P.A. 45 CQ :     | SP EA, LV.    |               |

The receiving clerk was required to check the description against the entries recorded on his "RD" slip as the items were received and to call attention to any discrepancy. Acknowledgments were sent on a regular and uniform system which is still in operation. The most distant station on the YQ news circuit gives the "RD" signal first, followed by the code "RQ" if a correction is required, the last office to give the signal being the one nearest the sending office. When all the offices concerned have acknowledged the batch they proceed in the same order to ask for corrections if only one circuit is available: if two news circuits serve the offices concerned, all corrections are asked for and given on the second circuit.

In 1883, by which time fast-speed Wheatstone working had been extensively developed (see Chapter XII) the elaborate system of checking the "sent" items was ripe for modification, and it was decided that receiving offices should be held responsible for the reception of every message signalled over continuously-worked news circuits: the summary signalled by the sending office at the conclusion of each batch was, therefore, abolished.

Abstracts were used at receiving ends of news wires until 1876, when they were replaced by "RD" slips, upon which skeleton particulars only were recorded. The abstract contained spaces for the number of the message, handing in time code, TS serial number (if any), time of receipt, office from which the message was received, sender's name, time message sent out for delivery, name of addressee and the nature and class of news.

At offices dealing with a large quantity of received press work it was arranged to make up in advance sets of news flimsies of quarto size, interleaved with carbon paper, in order to avoid the delay which would necessarily arise if the writers were called upon to prepare the requisite number of sheets. This work has always been performed by messengers.

At the receiving offices the items for transcription are dealt with by one or more writers. As far as possible the work is dealt with strictly in code time order; the key clerk passes the first item received to the transcriber farthest away from him and then to each of the other writers in rotation. Every effort is made also to deliver at approximately the same time all news items addressed to more than one newspaper.

At the larger offices where it was frequently necessary to prepare from six to ten copies of a news item the work of transcription was formerly a very heavy tax on the writers, and, although the use of typewriters afforded some relief, it was not until the Creed perforator and printer came to be developed that telegraphists were enabled to deal with press work in an easy and convenient fashion. Slip transcription has now been reduced to a minimum at offices where printing apparatus can be justified, the work being dealt with on Creed apparatus. During the slacker periods one telegraphist gums the printed slip to a form and checks the matter before releasing it for delivery; at other times one telegraphist gums the slip to the forms, the matter being checked by a second telegraphist.

Normally, the Creed printer produces only one copy, and it was at first necessary to re-run the perforated slip to obtain additional copies. A simple device, invented by a telegraphist at the Central Telegraph Office, London, which enables three printed slips to be obtained at one and the same time has, however, been fitted to the Creed printers at offices where multiple address news telegrams are frequently received. The arrangement has had the effect of greatly expediting the disposal of the traffic. When a press message for onward transmission is received over a Creed Wheatstone circuit, the perforated slip is enclosed in a suitably headed form and transferred to the forwarding circuit after the required number of copies for delivery, &c., has been made on the printer.

An office copy of each received news item was prepared until the successful abolition of office copies of ordinary telegrams showed

that they might be dispensed with (see Chapter XVI), and in 1919 press telegrams were brought within the scope of the arrangement.

At the larger offices the news traffic is dealt with in a self-contained section or division. At the Central Telegraph Office, London, which deals with about 50% of the forwarded press of the country, the news division is a position of some importance. News circuits serving every important newspaper-publishing centre radiate from this office, and the Controller is consulted by surveyors and postmaster-surveyors on the question of the disposal of press traffic handed in at offices in their districts.

The news divisions are usually fitted with their own addressing table and separate tubes to the delivery room, and many newspapers are connected with the news divisions by means of tubes in order to avoid the delay occasioned by hand delivery.

Until quite recently press traffic was an important feature of telegraph business and, as had been shown, the Post Office, notwithstanding the unprofitable nature of the traffic, left no stone unturned in order to provide a first-rate service.

Under the Telegraph Acts, 1863 to 1921, and the Acts of Parliament, charters, grants and agreements therein referred to, the Postmaster-General has power to grant licences to news agencies for the distribution of news by telegraph to the proprietors of newspapers, clubs, newsrooms, &c., in London and in the Provinces, and agreements of this kind have been concluded with three news agencies.

The licensee may be empowered:—

- (i) to erect, maintain and work between their distributing office in any town and the offices of subscribers within the municipal boundaries of the same town, telegraph wires and apparatus for the purpose of transmitting licensed news simultaneously to such subscribers and for no other purpose, and
- (ii) to connect telegraphically by means of private wires, provided by the Postmaster-General on rental terms, the distributing offices of the agency and subscribers in other towns.

The News Agencies concerned pay royalties under various headings. Service messages may be transmitted between them and their subscribers, but, with this exception, no message or signal other than the news messages may be sent over the Companies' systems.

The Postmaster-General is also empowered to provide on rental terms private telegraph circuits, and many provincial newspapers are connected by this means with their London editorial offices. The Postmaster-General reserves the right to take possession of rented lines on account of the interruption of public circuits or of national emergency; the renter is entitled to a return of the equivalent portion of the annual rental should a private wire be taken for public purposes.

The steady growth in the number of private news wires is reflected in the volume of press traffic dealt with by the Post Office. The daily number of pages of press has fallen from 9,000 in 1919, to 3,500 in 1925, and the traffic continues to decline.

(To be continued.)

#### NEW BROADCASTING STATION FOR DENMARK.

The Danish Telegraph Administration have just placed an order for a 5-kw. broadcasting station equipment to be erected at Kallundborg.

It is interesting to note that the equipment will be manufactured in England by Standard Telephones & Cables, Limited, at their works in London.

## TELEGRAPHIC MEMORABILIA.

THE "Beam," as applied to short-wave telegraphy is with us and will have to be reckoned as a considerable rival to long-distance cable telegraphy. The results of the trials between this country and Canada, of which the writer has been a privileged witness, were from the personal point of view and without exaggeration—one may write the word—"thrilling"! To see the revival of the old days of Wheatstone wire-working at anything up to 200 words per minute and over, with mixed code, cypher, figures and plain language on "clean" blue slip, or to examine critically the undulator signals at the same rate, to an old telegraphist, could not be less than a thrill.

Of course, there were R.Q.s., but they were not unduly heavy and were not by any means attributable to electrical causes. In fact as attempts were made to raise the speed, it was at times quite evident that the refinement of the mechanical apparatus will be one of the future necessities. When one comes to study the matter with the knowledge of certain fundamental principles of radio transmission, one can quite calmly affirm that the speed of transmission and reception through the medium of the ether is only limited at the moment by the mechanical fineness of construction and adjustment of the apparatus. This should cause no surprise when one ponders over the fact that with radic transmission there is no attenuation. The "lag" of an ordinary submarine cable is in fact absent from wireless at whatever may be the speed. Nevertheless, lest readers should be overanxious regarding the millions of capital sunk in the submarine telegraph cables of the world, expert opinion, even of wireless engineers, is still prepared to declare that, "where satisfactory telegraph communication from an economic point of view is obtainable by metal conductors, it is to be preferred to radio communication for stability, every time.

The result of the coming rivalry between the two systems can only be one of discovering the economic spheres of each.

To say, however, as some of our friends in the daily press have apparently recently been declaring that the "Beam" is immune from "atmospherics" is simply not in accordance with facts.

This is quite apart from incidents such as the recent sun-spot effects which stopped both wire and wireless communication in Canada for hours and hours together—simply blotting-out both! It is not, however, to be inferred from this that the "Beam" may not eventually solve the atmospheric disturbance difficulty, and all that may be said at the present stage is that, at the moment, no one has evolved a remedy.

Returning to my more jubilant note, one feels impelled to say that October 1926 marks an historic event when the C.T.O. London opened the direct wireless two-way communication with Montreal, no human hand intervening in that long stretch of land and ocean. Evidence of the effective closeness of this touch was witnessed at the Press demonstration whenever it became necessary to interrupt Montreal's transmission for a few seconds. Just the word S T O P once signalled by London, and Montreal's transmitter was immediately shut off.

Telegraphy is supposed to be a dying industry in certain quarters, and those quarters are not confined to our own little island. Recently reading through certain official documents, the following sentence struck this same Cinderella note concerning the poor sister of the Communication family:—"la télégraphie n'est pour ainsi dire qu'une étrangère dans les cables téléphoniques." Telegraphy, the unwanted foreigner in the land of the Telephone! Turning to another administration the same idea was expressed, though in less unkindly terms, thus, "Die Telegraphie im Fernsprechkabel gleichsam nur zu Gast ist." This time my readers will note, Telegraphy has become a guest, but in our own tongue I was recently briefly and bluntly told that, "Telegraphy is in fact an intruder in Telephone cables."

Here again is an economic question which scientific development and time should settle. The interests of both Telegraphy and Telephony are decidedly difficult to meet at times when both are packed in the same cable, especially when the former requires high speed and comparatively high voltages. The possibilities of the question of interference of Telephone efficiency by the Telegraphs would appear to be well within sight, and although these matters move slowly, the time may be envisaged when it will be an everyday event, part of the daily routine, for Telegraph circuits to be working at 100 w.p.m., or more, with voltages which would now appear as ridiculously low, but a state of affairs, however, which would permit the Telegraph lamb to work without the slightest interference or disturbance beside the Telephone in the same paper lead-sheathed bed.

The following much condensed account of Mr. Baird's "Popular Talk" in aid of King Edward's Hospital Fund should prove interesting:—Mr. Baird maintained that "seeing by wireless at a distance was no more strange than hearing at a distance, and went on to describe how sound waves were converted into fluctuating electric currents, and reconverted into sound waves at the receiving station, he said that television involved very much the same process; all that passed through the wires or the ether was a fluctuating current of electricity, in either case. Mr. Baird showed a photograph of an image seen on the screen of the first televisor that he had made, and proceeded to review the history of the subject, pointing out that selenium was too sluggish in its reaction to light, and too insensitive, to be of service in television, which consequently remained at a standstill for 30 years. The invention of photo-electric cells, instantaneous in their action, aroused renewed interest in the problem, and for the past four years he had

devoted the whole of his attention to its solution. The first public demonstration of his process was given in 1925; since then his apparatus had been entirely remodelled, and the clearness of the images had been greatly improved, but although much more sharp and distinct, they still remained mere black and white effects, without detail and without gradation of light and shade. He made many attempts to improve the light-sensitive cell, including the construction of a cell made from "visual purple" out of a human eye. This cell when first constructed gave an appreciable reaction to light. He was not at liberty to give technical details of the device finally developed, but towards the end of 1925 the difficulties were successfully overcome, and the images of various objects, including the living human face, were transmitted with half-tones and details. The images were at that time very defective, comparable with the earliest kinematographs, but the defects, chiefly due to mechanical and electrical imperfections, were being steadily eliminated, and he expected to place on the market a commercial machine within the next twelve months.

I have been asked the question many times: "How does the crystal detector work? What happens in the crystal? What does it do?" and my own slow brain has been much put to it at times to vocalise my own conception of the business to the satisfaction of the layman. Therefore it was with some avidity that the writer seized upon the following reply to similar enquiries in the *Westminster Gazette*. It is *multum in parvo* with high efficiency of information. Here it is:—

"The received signals travel up and down the aerial at a speed of around one million times a second. The current is called 'positive' when it travels in one direction, and 'negative' when it travels in the other direction. If these impulses were applied directly to the headphones the diaphragm would not be able to respond, since the velocity or speed of the impulses would be too great for the diaphragm to follow.

"The detector has the peculiar property of being a conductor of electricity when the current is passing one way through it, and an insulator—a non-conductor—when the current is applied to it in the opposite direction.

"In the wireless set, therefore, all the positive, say, impulses, pass through, and the negative impulses are stopped. The result is that of every train of oscillations sent out by the transmitter only the positive impulses reach the telephones of the receiver, and being all in the same direction, and following one another so rapidly, the result is one big positive impulse in the telephones per train of oscillations in the aerial. This positive impulse causes a single click in the telephones, but the rate of the trains of oscillations is perhaps 1,000 per second, so that for one click per train, or 1,000 clicks per second, the telephone diaphragm produces quite a musical note."

Quite appropriate at this historic juncture are some of the most recent observations of Dr. W. H. Eccles at the first meeting of the 1926-7 session of the Radio Society of Great Britain on long and short waves.

They had now had 20 years' experience of long waves and four years of short waves in long-distance radio-telegraphy, said the doctor. In the case of very long waves, say, over 15,000 metres, the facts were relatively simple: such waves travelled almost equally well by day and night, and the distance to which good signals could be transmitted depended merely on the power employed, but waves of medium length, say, 1,000 metres, were different, for they travelled much better by night than by day. In both cases the strength of the signals fell off steadily as distance increased, at any rate, after the first few hundred miles, and so a thousand kilowatts power was needed to send signals to the Antipodes for 24 hours in the day. As a broad rule the number of hours of service could always be increased by increasing the horse-power.

Their four years' experience of short waves, that was, waves shorter than 200 metres, had been crystallised in the recent writings of a number of technical men, chief among whom might be mentioned Hoyt Taylor (of the American Navy), and Heising, Schelleng, and Southworth (of the Bell Telephone Co., of New York). Taylor had classified the reports which hundreds of amateurs sent to him about his station; his results with a power of five kilowatts might be summarised as follows: In the daytime a wave 100 metres long could be picked up so far as 200 miles away; a wave 50 metres long, at 100 miles; a wave 30 metres long could be picked up at all distances up to 50 miles, but was often inaudible at points between 50 and 500 miles, yet was readable again at all distances between 500 and 1,500 miles. The space over which signals were inaudible formed a circular silent zone over which the signals jumped; it was called the "skip." Shorter waves had a longer skip; for instance, 15-metre waves ceased to be audible at 10 miles, skipped 1,500 miles, and were then audible with some uncertainty up to 3,000 miles. All the above data related to daylight transmission.

At night time in winter 100-metre waves with 5 kilowatts output had been heard at all distances up to 8,000 miles; 50-metre waves up to 10,000 miles, while 40-metre waves skipped 500 miles and went to all distances beyond; 30-metre waves skipped 4,000 miles, 20-metre waves skipped 7,000 miles, and both could be heard at all distances beyond; but the 15-metre wave, after travelling a few miles, skipped off the earth for good!

ALGERIA.—The French Colonial Post and Telegraph Administration has established a broadcasting station in Algiers. The plant operates on 310 metres and 100 watts, and, in addition to a local programme, will relay the Eiffel Tower transmission.

AUSTRALIA.—There is some concern, says Reuters, Melbourne, among amateurs lest experimental work will be curtailed by the "Beam" wireless

service between Australia and Great Britain. At present Australian amateurs have allotted for their use, with others, the wave-length band extending from 32 to 37 metres and, though no definite announcement of the wave-length to be used by the "beam" stations has yet been made, it is understood that an application will be made for a wave about 30 metres long.

After having been in use since 1912, reports the same agency, the wireless station in Melbourne, known as the "Domain" station, whose call letters are VIM, is to be closed down. Amalgamated Wireless (Australasia), Ltd., which took over the station some years ago from the Post Office, intends to build a new station at Braybrook, near Melbourne.

**AZORES, THE.**—Various new wireless stations are being erected in Madeira and the Azores. Hitherto these islands have maintained communication with the mainland and with each other by submarine cable and inadequate wireless. On some occasions both these means have broken down, and some of the islands have been completely isolated until repairs could be carried out. Both *Commerce Reports* and *Reuter's* Lisbon correspondent confirm this news.

**CZECHO-SLOVAKIA.**—The *Trade Service* of *Reuter* states that a new broadcasting station is being constructed at Satalice, near Prague, to be reserved exclusively for the emission of speeches, lectures, agricultural reports, &c.; it will have a power of 5 kilowatts and will be managed by an experienced staff from the Kbely station, which will now be exclusively reserved for military use. The equipment used at the Satalice station will be that at present in service at the Podedbrady station.

**DENMARK.**—The *Commercial Secretary* at Copenhagen has forwarded to the Department of Overseas Trade a translation of a decree which reduces the tax to be paid during the period April 1, 1926, to March 31, 1927, to the Radio Broadcasting Fund for use of receiving sets. The amounts are for apparatus acquired or constructed after Oct. 1, 1926:—For a crystal set, 5 kroner; for a valve set, or set in which valves are used as amplifiers, 7.50 kroner. Formerly the amounts were kroner 10 and 15, respectively.

**EGYPT.**—The Egyptian Government has voted a sum of £52,000 towards the cost of linking-up Cairo and Alexandria by means of an underground telephone cable: the total expenditure of £250,000 will be spread over a period of several years.

**FRANCE.**—*New Radio-Telegraph Apparatus.*—The French postal authorities are conducting tests at the Croix d'Hins wireless station, near Bordeaux, of telegraph apparatus which, it is claimed, will, if successful, effect a considerable reduction in rates. The preliminary tests are being made with Antananarivo, Madagascar, and they are described as having so far given excellent results. It would appear that the apparatus is an application of wireless to the existing Baudot system; transmission by the new apparatus is said to be fifteen times faster than is possible by present methods, while none of the present security or secrecy is sacrificed. The messages are automatically transmitted and printed at the receiving end.

The experiments are the result of the investigations of a Strasburg engineer, M. Verdan, who is using ordinary Baudot apparatus, with a special arrangement by which messages may be repeated two or three times to ensure correct reception. The postal administration proposes to use the new mode of transmission for communication between France and the French colonies. The speed of a wireless Baudot is slightly less than that of a telegraph Baudot, but is more than wireless transmission by the old method; moreover, interruptions due to atmospheric and other disturbances are eliminated. The first experiments with M. Verdan's apparatus were carried out between Nice and Corsica, and the post office engineer at Nice has been sent to Madagascar and is conducting the experiments from that end. M. Verdan has just been awarded the Legion of Honour for his "services in the cause of progress."

The International Congress of Postal, Telegraph, and Telephone Workers, which opened at Paris, France, on Sept. 20, was attended by 69 delegates, representing fifteen countries and half a million employees. Since the last congress was held Ireland, Australia, Austria, and Esthonia have become affiliated, while the United States and Canada were represented for the first time. The sittings were presided over by Mr. J. W. Bowen, general secretary of the British Union of Post Office Workers and president of the Postal International.

**GERMANY.**—Although the new station on the fairgrounds just outside the city of Leipzig has a maximum input power of 9,000 watts, but 2,000 to 3,000 watts on a wave-length of 452 metres will be used for general broadcasting. Leipzig ranks third among German cities in the number of listeners, 121,423 having been registered by the post office.

The official length of the Berlin short-wave transmitter has not yet been determined: for the time being it is operating on 52 m., and *World Radio* finds it difficult to express an opinion about the efficiency of the plant.

The masts of new Langenberg station are 100 m. high and 220 m. apart; its power will be 20kw. in the aerial, the largest in Europe, and it will possibly use a 468.8-m. wave.

The Minister of the Interior, taking advantage of a safeguarding clause in the contract permitting the wireless stations of the German Post Office to be used for broadcasting, has set up what amounts to a political censorship, says *The Times*. He has appointed an official of his Ministry and two members of the Prussian Diet to act as a "Political Committee of Supervision," whose duty it will be to keep an eye on all political items in the broadcasting programmes, both news and lectures. This Committee alone apparently will decide whether any particular broadcast verging on the political, shall be permitted.

**HOLLAND.**—As a possible solution of the present difficulties with regard to political and religious differences, the Katholieke Radio Omroep and the Nederlandsche Christelijke Radio-vereening have made a joint application for a licence to acquire, or erect, a new transmitting station. The application has been granted for a preliminary term of one year, and the new station will have the call letters PX9; it will probably be situated at The Hague.

**INDIA.**—One is afraid to say that wireless broadcasting is looking up in India, but amongst the wireless dealers in Bombay there is evidence of a more optimistic feeling than has been the case for many months past, writes our correspondent in India. Actual sales are at the moment almost nil, but since the publication of the prospectus of the Indian Broadcasting Company, with its entire initial issue of capital underwritten by responsible people, traders have received a steady flow of inquiries regarding wireless sets, and it is noteworthy that a very large proportion of the potential buyers are hankering after powerful apparatus which will enable them to tune in not only the new station at Calcutta, but also the programmes broadcast in England and America. There is also a distinct boom in orders for the overhaul and repair of sets which have been put "on the shelf" during the past few months. The immediate effect is a reorganisation of selling methods, a typical example of which is the announcement that Messrs. Fazalbhoy & Sons are separating their wireless and motor-car departments and are housing the former in new premises; it will be operated as a separate concern to be known as the Bombay Radio Co., Ltd., with showrooms wherein wireless apparatus can be demonstrated. Simultaneously, another well-known firm is negotiating for showrooms, and a British firm hitherto unknown in India has similar ideas.

**ITALY.**—A regular radio-telegraph service between Italy and Austria was inaugurated on the 4th of last month, says *The Electrical Review*.

**JAPAN.**—Through the Department of Overseas Trade we learn that the three independent broadcasting associations hitherto existing at Tokyo, Osaka, and Nagoya have been merged in the Shadan Hojin Nihon Hoso Kyokai (Incorporated Japan Broadcasting Association) as from Aug. 20. The three stations already in use will henceforth be operated by the Incorporated Association, under the title of the Tokyo, Osaka, and Nagoya Central Broadcasting Bureaux respectively. The arrangements established with subscribers are being continued by the new Association, and for the present the broadcasting services are being conducted as before. The amalgamation was organised by the Ministry of Communications with a view to the exercise of closer supervision.

**LATIN-AMERICA.**—*Reuter's Trade Service* in Mexico City states that the Governments of Mexico and Cuba have entered into a reciprocal arrangement for the connection of their respective telegraph systems by wireless and the institution of a transmission service for public and private purposes. All messages must be transmitted in Spanish, no use of code being permissible. The revenues derived from the services are to be divided equally between the two States, and accounts are to be kept in United States currency.

**LONDON.**—It is reported that the traffic receipts for the past year fell by £81,416 to £453,596. The decrease is attributed to the loss of United States business and to rate reductions.

**MOROCCO.**—New apparatus, devised by G. M. Carrat, Inspector of Telegraphs, of Paris, has recently been installed in connexion with the telegraph cable between Brest (France) and Casablanca (Morocco), a distance of 1,600 miles, by means of which it is stated that the efficiency of the line has been increased 80%.

**SOUTH AFRICA.**—The demise of radio-broadcasting in the Union has lately been prophesied in some quarters. *World Radio* states that the expenditure of the Johannesburg station, which is operated by a private company, amounted to £17,139 last year, the orchestra absorbing £7,596 while the revenue was £12,973, so that there was a loss of £4,166. The number of licenses dropped from 8,281 to 5,268. Durban's position is worse. The station is run by the municipality, and the deficit for the current year is estimated at no less than £7,600. Hitherto this state of affairs has been attributed to the "pirates," and there has been an outcry for their prosecution under the new Radio Act. The fees now range from 7s. 6d. to 35s.

**SWITZERLAND.**—A report lately issued shows that the length of the telegraph and telephone wires in use in Switzerland at the end of last year amounted to 567,365 miles, of which 434,375 miles are underground. The number of telegrams dealt with last year, excluding transit messages, amounted to 5,100,000; the use of telegraphy is, however, declining, while there is a growing use of the telephone, the number of instruments in use increasing last year from 189,429 to 200,211.

**TRINIDAD.**—The Finance Committee of the Legislative Council of Trinidad recommends the sale of the wireless stations belonging to the Government to the Pacific Cable Board, but advises that the price be raised to £7,000, says *The Times*, failing which that a minimum royalty of £1,000 per annum be paid by the Board for five years.

**UNITED STATES.**—Senator Dill, of Washington State, when asked about the National Broadcasting Co. announced by the Radio Corporation of America, said, according to the *Electrical World*: "I welcome such an undertaking because if it is properly directed the public in general will benefit by better radio service. Provision is made in both the Dill Bill, which has passed the Senate, and the White Bill, which has passed the House, that wave-length licenses can be revoked should there be any earmarks

of monopoly." Senator Dill expects radio legislation to be passed before Christmas. He points out that, despite the decision by the Department of Justice that Secretary Hoover has no authority under existing laws to regulate wave-length, power output, and "time on the air," the self-control of the broadcasting stations, stimulated by the nature of the radio business, compels stations to remain on the wave-lengths assigned by the Department of Commerce.

The "Radio World's Fair" opened at New York on Sept. 13 and closed on Sept. 18. Three hundred manufacturers displayed their wares. The general tendency in design was toward the batteryless set, and in cabinets the trend was toward the console pattern. More than 140,000 people had visited the show by Sept. 17 according to semi-official estimates. An English boy, William Tricker, of Andover, won the first prize in a competition for the best one- or two-valve sets made by amateurs: four other English boys won prizes for skill in building receivers.

It cannot be said whether the writer of the following paragraph, culled from the columns of a London paper, has had any personal experience of the Telephone Service in France, but in any case he is not, apparently, an ultra-optimist!

"The proposed institution in France of urgent telephone calls at three times the ordinary rates, which are to take precedence over all others, is not welcomed by telephone subscribers. For it is suspected that in practice it will simply mean that the cost of the telephone will be trebled.

"Anybody unfortunate enough to have experience of the French telephone system must share that suspicion. It will become impossible to get any communication that is not urgent, and in a very short time the telephone subscribers will find that they are paying three times as much and getting through no more quickly than before."

The development of cable-making, whether of the overhead, underground, or subaqueous type, and whether for high or low-power transmission, have for years been worth following, and the following piece of news regarding a high-power type constructed for submarine use is a recent example of what can be done in this direction. A New York correspondent of *The Times Trade and Engineering Supplement* says that three 33,000-volt submarine cables have recently been laid under the Mississippi River between the Cahokia plant of the Union Electric Light & Power Company at East Street, Louis, Ill., and the west bank of the river. A "record" for length, size, and weight of high-voltage lead-covered and armoured submarine cable manufactured and installed in single lengths is believed to be established by this installation. The cables, which were manufactured by the Standard Underground Cable Company in lengths of 2,500 ft., weigh over 27 tons and are approximately 4½ in. in diameter. Shipment was made on specially constructed iron reels weighing 5 tons each, making the gross shipping weight for each length in excess of 32 tons. Before the production of these cables the maximum length that could be manufactured was approximately 1,200 ft. A splice in midstream was accordingly necessary, and 21 cables of two lengths each had previously been installed at this point. The company proposes to lay 24 more of the 2,500 ft. single-length cables during the next three years, making a total of 48 cables at the Cahokia crossing.

We regret to announce the death of Mr. Neasmith, formerly of the old Foreign Gallery, C.T.O., and later Overseer in the Cable Room, who retired quite a number of years ago. The respectful sympathy of those of his colleagues who still remain is tendered to his relatives.

The C.O.D.O.C. again! The Centels Operatic, Dramatic and Orchestral Club were no less successful with their performance of Gilbert and Sullivan's "Iolanthe" on Oct. 18 and 19, at the Cripplegate Institute, than they were with that of "The Gondoliers" twelve months ago. There was the same whole-heartedness and enthusiasm, the same co-operation, and the same appreciation of the atmosphere in which he or she had to play their part.

Mr. Bertie Figg was inimitable as The Lord Chancellor; Miss Winifred Lenthall made a sweetly sympathetic Iolanthe. Having written so much, it seems invidious to have picked out anyone where everyone did so well. The male choruses came well across the footlights, but it rather seemed to the writer that the orchestra was a wee bit too strong for the ladies. Maybe the defect was due to the stage itself, and this may possibly be remedied, so I am given to understand, by a change of address for their next musical item.

I hear that dear old Tom Charter is leaving the C.T.O. next month on pension, and the genial atmosphere which has always surrounded one of the most retiring and conscientious of the supervising staff will be missed by not a few. To leave a huge office such as is G.P.O. West, with the affection of men and women with whom you have been associated in at times, the very trying duties of the Telegraph craft is a reward that can only be bought by something much rarer even than hard cash! That he may long retain his present health and soon be relieved of his present family anxieties is the heartfelt wish of us all.

*The Elizabethan Barber.*—The barber's shop was a favourite resort and debating place, where a guitar lay always ready for use. An interesting variety of styles were for the customer's selection. The poor man had his head trimmed round like a cheese; the courtier could select from the Italian style, the French cut, the Spanish, or the Dutch cut, the bravado fashion, the mean fashion, the gentleman's cut, the common cut, and the Court and the county fashions. The habit of smoking tobacco was greatly on the increase. Silver tongs were treasured accessories of the fashionable smoker who often attended a professed master to learn the art of blowing rings.—"Shakspeare's London," by John Munro. J. J. T.

## REVIEWS.

"*First Course in Wireless.*" By Robert W. Hutchinson, M.Sc., A.M.I.E.E. (Published by University Tutorial Press, Ltd., London. 262 pp. Price 3s. 6d.)

During the last few years the market has been flooded with elementary books on wireless, to meet the demand for information on that subject which has been created by the advent of broadcasting. Most of these books have been frankly popular, dealing little, if at all, with the theory of the subject, and confining themselves to descriptions of apparatus, and to simple instructions designed to enable a person entirely without knowledge of matters electrical to construct and operate a receiving set.

The present book is of an entirely different class. Its object is to give a reader, starting with absolutely no electrical knowledge, a clear insight into the fundamental scientific principles of wireless telegraphy and telephony, and the practical working of wireless apparatus.

The whole ground is covered. The first six chapters are devoted to simple electrical theory as far as the elements of alternating currents.

Then follows a chapter on the production, propagation and detection of electromagnetic waves, after which are given chapters on the theory of crystals and valves, aerials and earths, and crystal and valve receiving sets, with a final chapter on valve transmitters, directional work and television.

The printing and paper are good, the diagrams are very clear, and we can confidently recommend the book as one of the cheapest and best of the elementary books on the subject at present on the market.

"*Junior Technical Electricity.*" By Robert W. Hutchinson, M.Sc., A.M.I.E.E. (Published by University Tutorial Press, Ltd., London. Second Edition. 385 pp. Price 4s. 6d.)

Many of our readers are probably acquainted with "Technical Electricity," by Davidge and Hutchinson. The present book, by the second of these authors, is an introduction to the larger work. The general arrangement of the subject matter is the same, but the ground covered is not so wide, the fundamentals are dealt with in somewhat greater detail, and the treatment is more elementary and experimental.

The first four chapters deal with elementary magnetic theory and its practical applications, and the next with terrestrial magnetism.

In the following two chapters the fundamental phenomena of electrostatics and their elementary theory are described, and in the next three the subject of current electricity is similarly dealt with.

The eleventh chapter deals with the magnetic effects of a current, and the next two with its chemical and heating effects. In each case various practical applications of the phenomena are described.

The fourteenth chapter is devoted to simple electrical measurements, the next three to electromagnetic induction and its practical applications in connection with generators and motors, and the following one to commercial measuring instruments.

The last two chapters deal respectively with transmission, distribution and indoor wiring, and with telegraphy and telephony, both wired and wireless.

In an appendix are given a few miscellaneous points in electrical theory which could not conveniently be included in the text, and also a few simple notes on alternating currents.

The treatment of the subject throughout is lucid, the diagrams are well drawn and clearly printed, and the book can be recommended to anyone who wishes to obtain a good elementary knowledge of modern electrical engineering.

“Advanced Text-Book of Magnetism and Electricity.” By Robert W. Hutchinson, M.Sc., A.M.I.E.E. (Published by University Tutorial Press, Ltd., London. Two volumes: Vol. I, 372 + xii pp.; Vol. II, 511 + xii pp. Price (both volumes), 12s. 6d.)

In these two volumes a clear and comprehensive account is given of the main principles of electricity and magnetism, up to the standard of the Final B.Sc. examination. The mathematics involved are elementary, but the notation and first principles of the calculus are introduced whenever a distinct advantage is to be gained thereby. Students unacquainted with the calculus, however, would have no difficulty in acquiring the necessary knowledge to enable them to follow the discussions in which calculus methods are employed.

The first volume deals with magnetism and electrostatics, the second one with current electricity, electrical measurements, alternating currents, electro-magnetic waves, discharge through gases, radio-activity and electronic theories and the new physics.

The style is very clear throughout, and anyone desirous of obtaining a good general and up-to-date knowledge of electricity and magnetism would find the volumes under review very suitable for their purpose.

“Intermediate Text-Book of Magnetism and Electricity.” By Robert W. Hutchinson, M.Sc., A.M.I.E.E. (Published by University Tutorial Press, Ltd., London. 630 pp. Price 9s. 6d.)

This book covers the same ground as that covered in the Advanced Text-Book of Magnetism and Electricity, of which a review appears above, but, naturally, in a more elementary manner.

The paper and printing are of a similar high quality, and the text is in Mr. Hutchinson’s usual lucid style.

The book can be recommended to the reader who desires to obtain a general view of the modern position of electricity and magnetism, including the recent advances in radio-activity and atomic physics, without going into the detailed mathematical treatment accorded to the subject in the advanced book.

## WIRELESS AT THE FAIR.

### DAILY BOOKING OF SPACE DESPITE HANDICAPS.

DESPITE the holiday season and the serious effects of the coal stoppage, applications for space in the London Section of the British Industries Fair, which is to be held at the White City from Feb. 21 to March 4 next, have been reaching the Department of Overseas Trade daily. The total area applied for already considerably exceeds the whole area occupied at the last Fair, and there is every indication that additional buildings will have to be linked up with those previously used. Early arrangements will have to be made for any such extension, however, and firms are advised to make their requirements known at once.

Among firms who have applied for space in the Wireless section are:—

- Harold Ashton, A.M.I.E.E.
- Beard & Fitch, Ltd.
- Sydney S. Bird & Sons.
- British Electrical Sales Organisation.
- British General Manufacturing Co., Ltd.
- S. G. Brown, Ltd.
- Brownie Wireless Co. (of Great Britain), Ltd.
- J. J. Eastick & Sons.
- The Ever-Ready Co. (Gt. Britain), Ltd.
- The Formo. Co. (Arthur Preen, Ltd.).
- R. F. Graham & Co.
- The Haleyon Wireless Co., Ltd.
- Hart Accumulator Co. Ltd.
- Kemps Mills, Ltd.
- J. W. See & Sons, Ltd.
- Spauldings, Ltd.
- Technical Agencies Co.
- Telegraph Condenser Co., Ltd.
- Tungstone Accumulator Co., Ltd.
- Watmel Wireless Co., Ltd.
- Western Laboratories, Ltd.
- Whittingham, Smith & Co.
- M. & A. Wolff.

## PROGRESS OF THE TELEPHONE SYSTEM.

THE total number of telephone stations working at August 31 last was 1,434,617. During August 16,338 new telephones were added to the system, counterbalanced by 7,777 cessations.

The growth for the month is summarised as follows:—

| Telephone Stations—                                    | London. | Provinces. |
|--|---------|------------|
| Total at August 31 ... ..                              | 503,558 | 931,059    |
| Net increase ... ..                                    | 2,665   | 5,896      |
| Residence Rate Installations                           |         |            |
| Total ... ..   | 103,574 | 172,706    |
| Net increase ... ..                                    | 952     | 1,734      |
| Exchanges—   |         |            |
| Total ... ..   | 110     | 3,980      |
| Net increase ... ..                                    | —       | 26         |
| Call Office Stations                                   |         |            |
| Total ... ..   | 4,579   | 16,328     |
| Net increase ... ..                                    | 45      | 110        |
| Kiosks—  |         |            |
| Total ... ..   | 328     | 1,981      |
| Net increase ... ..                                    | 22      | 57         |
| New exchanges opened under Rural Development Scheme—   |         |            |
| Total ... ..   | —       | 948        |
| Net increase ... ..                                    | —       | 24         |
| Rural Party Lines—                                     |         |            |
| Total ... ..   | —       | 9,925      |
| Net increase ... ..                                    | —       | 17         |
| Rural Railway Stations connected with Exchange System— |         |            |
| Total ... ..   | —       | 784        |
| Net increase ... ..                                    | —       | 11         |

The number of inland trunk calls made during July—the latest statistics available—was 8,359,489, an increase of 578,540, or 7% over the figure for the corresponding month last year.

Calls made to the Continent during July numbered 22,985, or 4,348 (23%) more than in July last year. Calls from the Continent numbered 25,752, an increase of 2,982 (13%) over July, 1925.

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

LONDON—Popesgrove (Twickenham).

PROVINCES—Cheltenham (opened in August)—Automatic.

Chesterfield—Automatic.

Staveley „

Hartlepool „

West Hartlepool „

Churchtown Manual Ex.

And among the more important exchanges extended were:—

LONDON—Avenue, Hayes, Molesey, Mountview, Park, Sloane, Sydenham, Wallington.

PROVINCES—Folkestone, Belfast, Erdington, Windsor.

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

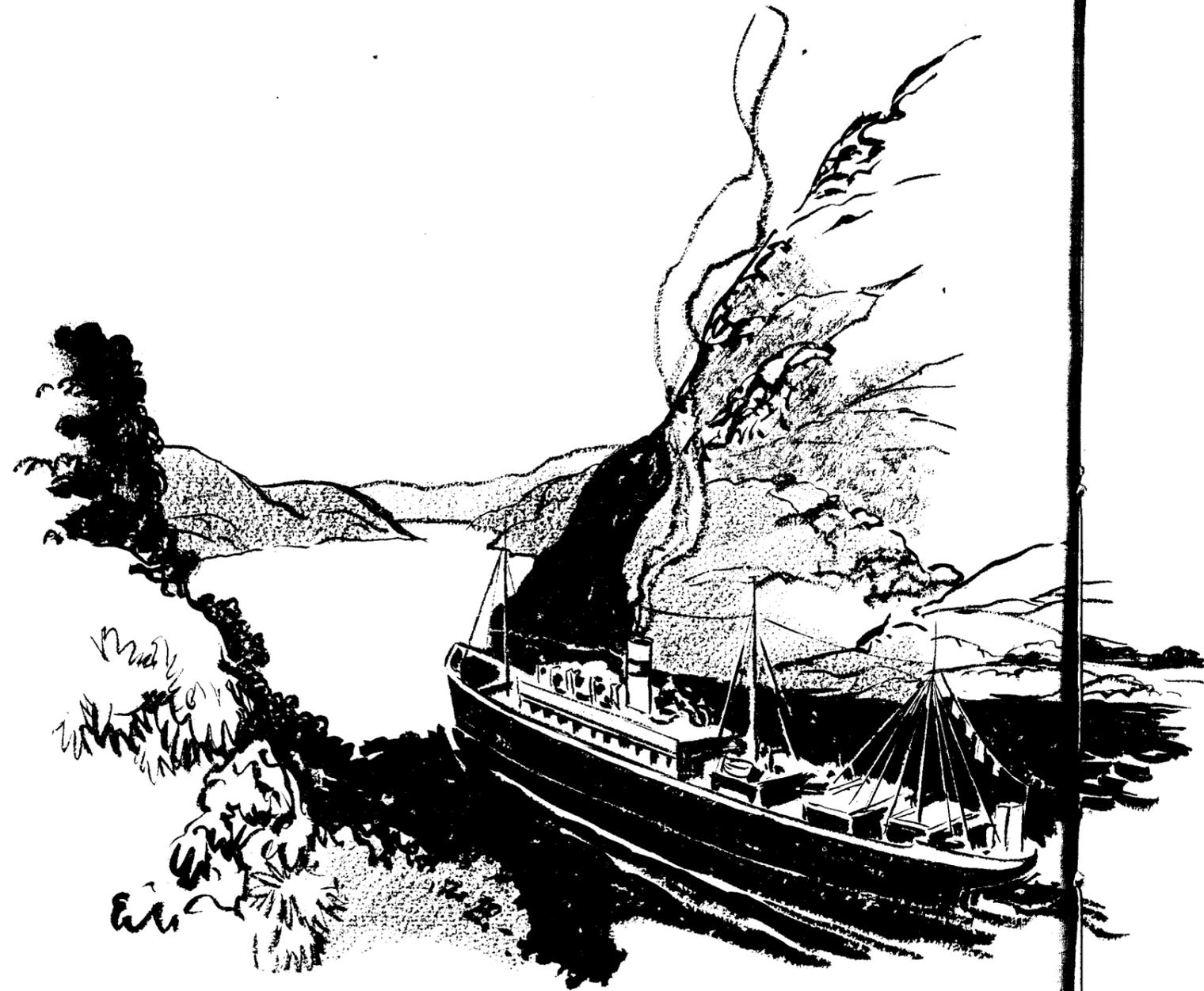
Brentwood—Marks Tey—Ipswich.

London—Dartford—Farningham.

Swansea—Ammanford.

Leamington—Warwick.

while 80 new overhead trunk circuits were completed, and 91 additional circuits were provided by means of spare wires in underground cables.



# Where Atlantic meets Pacific



**T**HE Panama Canal is the world's greatest time saver. Ships now pass from ocean to ocean in a few days where in times past weeks and months were consumed in making the long and arduous journey around Cape Horn.

It is entirely fitting that Strowger Automatic equipment, the most effective time saver in the realm of telephonic communication, has been installed by Automatic Electric Inc. for all exchanges of the Panama Canal Zone.

That Strowger Automatic equipment meets the high standards and rigid requirements of the Panama Canal Zone Commission and, in spite of unusually severe climatic conditions, is now operating in a highly successful manner, adds increased weight to the reputation this equipment has established as the most efficient means of meeting present and future telephone requirements that it is possible to obtain.

## 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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### "LOOK ON THIS PICTURE AND ON THAT."

PEOPLE interested in the progress of long distance telephony who glean their information from the lay press must often suffer strange bewilderment from the varying accounts which are put before them. On the one hand we find widely disseminated paragraphs stating that the habit of using the telephone for swift long-distance business communication (which is commonplace in America, we are told) is almost exceptional in Europe, that the average delay between Zurich and Milan is three hours and a quarter and between London and Paris seventy minutes. This, we believe, is only too true, although it is perhaps an unfavourable time for enlarging on the theme when an increased number of direct underground circuits between London and Paris are on the eve of being put into operation, and when the French Government have just finished laying their new Paris—Strasbourg cables, and new cables are nearing completion on many other important trans-European routes. On the other hand (and on the same day), a flamboyant article in a large provincial paper informs us that a "call of the distance from Manchester to London is child's play on the Continent, where politicians, business men and journalists hourly speak not only from one city to another, but from one country to another, and often across two or three frontiers to remote capitals." Deep calls, as it were, unto deep. Antwerp calls to Madrid, Brussels to Poland, and all is so clear and bell like

at a hundred words a minute that every word has been recorded in shorthand!

"Nor," we are told, "are these calls mere experimental freaks. They are part of the daily life of a Continent where you can 'say' it by telephone across such long distances that the man at the other end may not even guess what language you are speaking."

The courteous reader who has paid his money for his newspaper can take his choice. If he suffers from one of those "headaches for historians," of which *Punch* so often gives instructive examples, who shall wonder! It may, perhaps, occur to the reflective to ask himself what is the underlying principle or idea which inspires these two contradictory types of article. We think it is this. The first school of thought wishes to disparage European telephone conditions by a comparison with those existing in America, cocking a benign eye on the introduction of American methods into Europe: the other school of thought wishes to disparage this country at the expense of the Continent. Possibly it casts an unbenign eye on State telephone systems, forgetful that they prevail on the Continent also. This, however, is all *vieux jeu*, and is losing some of its novelty. As regards long distance telephony we are hopeful that in a few months' time such criticism will also lose what point it ever had.

### WIRELESS BROADCASTING.

THERE were approximately 2,104,000 licensed wireless receiving stations in Great Britain and Northern Ireland at the end of September last, but that number, large as it is, does not of course represent more than a fraction of the potential listeners. When the public interest is aroused, as for instance at a general election, huge crowds assemble in the streets to hear the results, even though the roads be muddy and the heavens overflowing. May we not assume that a similar effect is produced when the broadcasting services present, in the comfort and cosiness of the home fireside, a great personality in music or song, fact or fiction, thought or action? Is it not natural that whole households should listen on their wireless receiving sets?

A wireless licence covers only the use of apparatus in the premises occupied by the licensee, but there is no restriction on the number of receiving sets or on the number of telephones or loudspeakers used. It is proven fact that few sets are fitted with only one pair of headphones. Moreover, in the case of hospitals and other similar charitable institutions, one licence covers any number of installations in the same building, and full advantage is taken of this concession, many hospitals having been equipped throughout with wireless receiving gear. The fitting of loudspeakers is common in cafés, restaurants and cinemas, and in many private houses two distinct sets are fitted so that the "parlour" (if I may use that term) can listen to a concert

party or a "jazz" band while the kitchen seeks its recreation by taking "highbrow" music or an "uplift" educational course. You can put it the other way round if that is more to your liking!

According to the 1911 statistics, the average number of persons in each family was 4.50 for England and Wales, 4.58 for Scotland and 4.82 for Ireland. The housing difficulty has certainly not reduced the number of persons in each house or helped married sons and daughters to set up separate establishments, and we are therefore erring on the safe side in suggesting that there are at least  $4\frac{1}{2}$  potential listeners, on an average, at each licensed station, an audience of 9,500,000 in this country alone, and we know that the British programmes are heard in many other countries, especially in Western Europe.

The population of Great Britain and Northern Ireland in 1921 is estimated at approximately 44,100,000, and may now be nearly 46,000,000. So that more than one in every five persons is a potential listener. Small wonder that we hear so much talk of wireless gadgets in the morning train or bus.

There are, of course, those others who listen by stealth in their pirate's caves. We might leave them unnumbered to the enjoyment of their stolen delights with the full knowledge that sooner or later they will be dragged into the unsympathetic atmosphere of the local police-court and deprived of their petty cash.

### HIC ET UBIQUE.

MR J. J. TYRRELL, who has contributed the column known as "Telegraphic Memorabilia" to this journal since June, 1915, is due to retire at the end of this year. At their last meeting, the Editing Committee of the *Journal* passed the following resolution:—

"The Editing Committee desire to record their appreciation of Mr. Tyrrell's services, and especially of his invaluable monthly column in the *Journal*. They hope he may be prevailed upon to contribute this popular and widely-read column."

Since the above resolution was passed, the Editing Committee has heard from Mr. Tyrrell that he is prepared to accede to the Committee's request.

When a new exchange was opened, the humourist formerly looked upon it as a new storehouse of wrong numbers. The opening of "Rodney" and "Reliance" exchanges in Walworth, however, inspired the *Evening News* reporter with the caption: "More R's to roll." We are glad, however, of a change.

A gentleman at Havering-atte-Bower, Essex, writes thus to the *Daily Express*:

Sir,—With reference to advertisements periodically booming the telephone service, is it not time that the Post Office took steps to serve outlying villages more adequately?

A "service" which entirely cuts off outlying communities from the rest of the country for at least fourteen hours out of twenty-four on every day of the week cannot be considered a credit to the department concerned.

We wonder what this gentleman would write if he lived in a country where not only outlying villages but even fair-sized provincial towns only enjoyed the service from 8 till noon and 2 p.m. till 8, 9 or 10 p.m. (according to its size), as in the case of many European countries. England and America are the only countries where over 99% of the subscribers obtain a full day and night service all the year round.

A modiste (or firm of modistes) in London sent the Postmaster-General the following notice:—

"We wish to exterminate the use of our extension, from this date."

Last month we rashly quoted a paragraph from a daily paper about a certain high-power radio-telephone outfit on the United States liner *Leviathan* which afforded telephonic communication between the vessel and places 5,000 miles away. This outfit appears, on enquiry, to be non-existent, and the whole story, like so many other interesting tales of wonder, the figment of some bright journalistic brain.

The *Sporting Times*, or "Pink 'Un," has lately been consulting the new telephone directory, and does not like it as well as the old style. "True," it remarks, "there is something to be said for the plan of printing the first three letters of the name of the exchange in thick heavy type, so as to catch the eye readily. But, no doubt to economise space, very few occupations of subscribers are given. Calling up a man you do not know very well, you have no indication as to whether he is a butcher, a baker, or a candlestick-maker."

It must be decidedly awkward to ring up a perfect stranger and ask him to make a fourth at bridge, or come out for a round of golf, or put a fiver on a horse for you, and not to be able to learn whether he is a candlestick-maker, cordwainer or loriner, taxidermist, cubist or revivalist.

According to *Reuter's Trade Service*, a project has been approved by the Italian Government for the laying of a telephone cable between Naples, Rome and Milan. The cable, which will be composed of 400 circuits placed underground, is estimated to cost 500,000,000 lire, including construction work, which is expected to take between four and five years.

At the present time the Jugo-Slavia telegraph system extends to 13,030 miles and the telephone system to 9,295 miles of line. Automatic telephone exchanges are to be established in the towns of Zagreb, Ljubljana, and Novi-sad. A number of new telephone cables are being laid, and one is to be established between Belgrade and Soiebotissa.

From a recent article in a Manchester paper about the interesting French experiments with Baudot apparatus for wireless transmission, we learn of the French engineer that "his aim was to eliminate parasites."

Very laudable and very useful as a general proposition. We have, however, Capt. Eckersley as an authority for the view that the chief parasites afflicting wireless are oscillators and—except perhaps to the gallant captain—elimination seems rather a drastic remedy.

On second thoughts perhaps our contemporary has erred in its rendering of "des courants parasites."

## ARTHUR BINGHAM WALKLEY.

THE Editorial Board of this Journal permits me and encourages me to write of Arthur Bingham Walkley. He retired from the Post Office, holding the position of Assistant Secretary, Telegraphs, at the end of June, 1919. I could claim intimate friendship with him, one of the proud things of my life. We were thrown together, as may be said, at the time that he became assistant secretary. It was of the irony of things to me that I became Controller of the Central Telegraph Office the day after he retired, keeping up afterwards, so far as the exigencies of our very different lives permitted, the old intimacy. Of his indisputable brilliance, his wide reading, his insight, his swiftness and surety of judgment in the art which he made his own, others have written. I would venture to say that one of the most brilliant of his contributions appeared in this Journal. It was a paper which he read at a meeting of the Telegraph and Telephone Society of London, in which he castigated, in his own delightful fashion, the excessive use of technical language in the description of aspects of our day-by-day work.

Therein lay his contribution to official life. Familiarity with technical words and phrases leads us to forget, at times, that we are dealing with pros and cons which must be weighed in other scales, the scales of trained judgment. He brought us to earth. It was he, I think, who first used the phrase "machine telegraphs" to indicate the departure from the manual formation of signals. He passed through the minute studies of the High Speed Committee, never tempted to miss the wood in the trees. He kept the issues from complexity and where the minds of those to whom they are familiar hugged the technical formulæ he directed them to the appropriate end. It was a salutary lesson. It was salutary, too, to put our judgments of our own craft into relation with the outer world. There are many insularities possible to human minds and he protested against them all. It has been said, on the other hand, that he invented the word "dirigeur." On the contrary he regarded it, in English, as an unfortunate choice. He tried to find a more suitable word, but I never heard him announce it.

It fell to my lot to travel with him on inspection work. I remember a train journey once on which we worked out a complicated diagram—a severe exercise for me under the judgment of such an acute mind. His dual capacity sometimes brought humours of its own. On one Saturday we stayed at Ambleside on the way from Liverpool to Glasgow. The hotel was crowded and a kindly Lancashire lady took pity upon us. "Tha' should see t' film o' 'Grumpy'": she said to Walkley, "it is at t' Victoria Hall. It wer' a play i' London." With ineffable charm he thanked her for the suggestion. It had its influence though, for in Edinburgh we went to a film. It was, I think, his first film. He passed no comment on it, so far as I can remember, but in Aberdeen he suggested another visit. It was a Wild West affair not in the least likely to appeal to him, but he confessed that he "loved the Sheriff."

There was a curious shyness about him in his technical work as if he thought that no-one would give him credit for mastering it. It was this and not boredom (I hope the Editor of the *Post* will let me add this to his kindly notice) which affected his mind. Those of us who have grown up on what I will call the operative side will do well to remember that on the administrative side there is often a shyness, *vis-à-vis* the technique of the work, which is born of the sense of a different angle of knowledge. We shall do well also to remember that there are on the administrative side those who shrink from the apparent dichotomy, not out of fear or indifference, but simply because it is a dichotomy. They would fain understand and fain would they sympathise, but the very organisation itself checks, and must check, articulation and even self-realisation. When the bomb fell on the C.T.O. in July, 1917, he stood by his window, seized by anxiety, as the stretchers were carried into the C.T.O. He turned and spake his devout thanks when they came out again empty. For to him these colleagues of his, men and women, were real human units with lives of their own of which he wished to know more. To him (if I may be allowed

to say so) it was Life which mattered. He has said so in his writings, but I think it was more deeply true than he realised. Arts of expressing Life engrossed him but as vehicles only. So the young men in his branch learned to know that he cared for them and in all the wealth of precious things which came to him he treasured nothing more than the carefully-chosen books they gave to him on his retirement.

The day has come, I think, when his rich gifts would find a more appropriate place than formerly in our system. I say this in no sense of criticism, for times have changed, the pace is more eager, the great institution demands of all of us—the corporate life demands of all of us—that whatever it is that we may have to offer in public service it is ours to offer it and it is the rôle of the public service to require it. The older conception of Civil Servant is passing and so far as we can fit into the mosaic there is no richness of colouring (if happily that richness be ours) which we may not bring. It had its tragedy, perhaps, that ever this should not have been so, but we will do well not to judge the past; we know as little of it as of the future. The vast changes of the past ten years have affected the whole round of our citizen life and it is not alone the Post Office which has burst some of the older bonds. We are coming to the time, I think, when we shall regard our own calling as in itself an opportunity for the exercise of every talent which any of us may possess, and when it will be first in interest because, paradoxically, there will be no first and last.

But of this I am sure. He taught me, in birth and education and in career so different from him as I was bound to be, that there are sympathies and desires for understanding of which we never dream. If, towards the close of a long career, I should be tempted to lose faith in men and women either to the left of me or to the right of me, I shall think of Arthur Bingham Walkley and of what I believe he would have been proudest to have his brethren know of him, and I shall arise rebuked and refreshed.

JOHN LEE.

## HOW IT STRUCK A CONTEMPORARY.

*Freeling's Railway Companion*, published in 1839 or 1840, on the opening of the London and Birmingham Railway, gives the following enthusiastic description of the newly-invented electric telegraph, in terms which we are sure will find an echo in the hearts of our telegraphic confrères:—

To the spirited enterprise of this Company is the public indebted for the introduction and *practical use* of the electro-magnetic telegraph, which has been established on the London terminus for several months—an obligation, indeed, which will not be estimated until all the advantages it offers become known—until the security and certainty it will impart to railway travelling has been experienced. By means of this instrument, the situation of every train may be instantly known at the most distant station. If a train has not arrived at its proper time, a communication is made to know the reason; if it has left the last station, and still does not arrive, it is a presumption that assistance of some sort is wanted, which can immediately be sent off by another engine. The train which is succeeding it on the same line is also warned and thus the possibility of collision avoided. Thus, all the delays arising from accident, which have attended the infant state of this mode of travelling, will be avoided. The electro-magnetic telegraph will in fact enable the heads of the coach or carrying departments at both London and Birmingham to have a constant communication with the trains—it will enable them to have an actual superintendence of their progress; and this fact being known to the subordinate officers, will insure that attention and regularity which alone will give confidence to the public.

As this is a work not only interesting to the British public, but to the world—as it must become a political and commercial agent

of the first importance, the following slight sketch may not be considered either irrelative or uninteresting.

The ELECTRO-MAGNETIC TELEGRAPH is the joint invention of Wm. Cooke, Esq., of Hastings, and of Professor Wheatstone, and was patented by them in June, 1837: shortly after which, the attention of the chairman of the London and Birmingham Railway Company (George Carr Glynn, Esq.) and the secretary, was directed to its importance as applicable to railway purposes: and they at once requested the engineer-in-chief (Robert Stephenson, Esq.) to afford Mr. Cooke every facility in testing the invention on that railway, to such an extent as might satisfy him (Mr. Stephenson) of its *practical* efficacy. Under Mr. Stephenson's superintendence, the new telegraph was tried to the extent of nineteen miles, with results which far exceeded the most sanguine expectations. Orders were subsequently given that the wires, by which the electro agent acts on the telegraphic instruments, should be permanently laid down between the Euston and Camden Town stations. This was executed towards the close of the autumn of 1837, and they have ever since been in action. The season of the year being unfavourable to laying down the permanent wires, the telegraph is for the present limited to this distance: but the fact of its being the medium of *facile* communication at any distance is established beyond a doubt.

This instrument gives all the letters of the alphabet, the numerals, and a vast number of conventional signals; which follow each other with perfect distinctness at the rate of about thirty-five per minute, and can be read off with the greatest facility even by an unpractised eye.

Before the operator is placed an instrument, which gives the exact signals which he is conveying to a distance; if therefore, through carelessness, an error is committed, it is immediately perceived, and corrected by the succeeding signal. These signals are communicated from either terminus with equal facility, and *literally* with the speed of lightning, both instruments being synchronous in their action.

When the telegraph is about to be put into action, the person communicating rings an alarm bell by striking a key, or by the same motion he may release a weight, which can be attached to the wrist of the person who has the working of the instrument at the distant point. This, perhaps, will be the most effective mode of attracting attention, particularly at night, or if deaf and dumb persons were so employed.\*

By this simple contrivance, the unceasing vigilance necessary for every other description of telegraphs is dispensed with; whilst by night as well as by day, sunshine or rain, fog or storm, the electro-magnetic telegraph performs its silent mission, uninfluenced by those disturbing causes which render the ordinary telegraph useless during four-fifths of the year.†

To what may not this power of instantaneous communication lead! How invaluable will it prove to distant friends in sickness! how necessary to a great commercial nation! how essential an accompaniment to a railway! By its rapid warning, accidents will be avoided. The person at the head of the principal station will be possessed of a positive knowledge of the position and circumstances of every train along the far-extended line—of the arrival of each at every station. What expenses will it save the Company! how many journeys will be rendered unnecessary! what valuable

\* This idea may become of some national importance, if these telegraphs (as they, no doubt, will) obtain general adoption in the political and commercial world, as it offers a responsible employment to a class of persons particularly adapted for its performance, and who hitherto have been confined by their infirmities to the most ordinary occupations.

† As an illustration of the facility with which a fracture in a wire may be discovered and repaired, I record the following fact. When the telegraph line, which is now established, was about half completed, and the conducting trough with its wires was buried in the ground, one wire was discovered to be broken! To the uninitiated it appeared necessary that the whole line should be opened. Not so, however, for by a simple but unfailing method, applicable alike to the greatest or shortest distances, the fractured part was discovered and repaired in a few minutes, without disturbing more than three feet of the completed work.

time will be spared! The heads of the most remote departments (say Birmingham and London) may converse with almost the same facility as though face to face. This must become as certain an adjunct to a railway of any extent as the rails upon which the carriages pass: as soon as the public is convinced of the safety and certainty it assures, it will be imperious in this demand. By the introduction of Messrs. Cooke and Wheatstone's Telegraph, the Directors of this Company have secured to the public the acme of advantage of which this all-but-perfect mode of travelling is susceptible: its advantages, we are convinced, will not be overlooked by the directors of the other great works which are in progress.

## OPENING OF BEAM WIRELESS SERVICE TO CANADA.

THE Canadian Beam Service—the first of the new Imperial Wireless Services—was opened on Monday morning, Oct. 25. The new service, which supersedes the former Marconi Wireless service between London and Louisburg (Nova Scotia), is operated on an improved system directly between the Central Telegraph Office, London, and Montreal, thus eliminating any delay due to landline retransmission between the Atlantic coast and Montreal and reducing to this extent the transit time between the principal business centres in this country and in Canada.

The service is available for telegrams for all parts of Canada and also for Newfoundland, the West Indies, the United States and other countries reached through Canada. Telegrams intended for transmission by the new Beam route should be marked "VIA EMPIRADIO."

At the outset the rates of charge by the Canadian Beam Service will (except as regards Post Letter Telegrams which are referred to below) be the same as the rates previously charged by the Marconi Service which it supersedes.

In addition to the usual services with telegraphic transmission throughout, special facilities are offered "via Empiradio" at the exceptionally low rate of 1½d. a word (subject to a minimum of 2s. 6d. per telegram of twenty words or less) for Post Letter Telegrams, which are handled as telegrams between London and Montreal, but are collected and delivered as letters. The conditions governing this service are as follows:—

- (a) Post Letter Telegrams must be written in plain language and must bear the indication "PLT," chargeable as one word, prefixed to the address.
- (b) They may be either handed to the counter clerk at any Postal Telegraph Office or posted by the sender himself in an envelope marked "Urgent" to the Superintendent on Duty, Central Radio Office, Central Telegraph Office, London, W.C.I." Stamps to the relative amount (2s. 6d. or more according to the number of words) should be affixed to the form by the sender before posting.
- (c) The Post Letter Telegram service is limited to telegrams addressed to places in Canada and Newfoundland, delivery being effected by post from Montreal.
- (d) Registered abbreviated addresses, prepaid replies, and other special facilities are not admissible in connection with Post Letter Telegrams.
- (e) No guarantee can be given regarding the time of delivery; the transit times will vary with the postal transit times at each end.

All the supplementary facilities offered by other routes are available to users of the Empiradio Service—free receipts, credit accounts, abbreviated addresses, repetitions, &c.

## AUTOMATIC TELEPHONES AT CHELTENHAM.

There has just been completed for the British Post Office at Cheltenham, Gloucestershire, a new trunk and local telephone exchange embodying A.T.M. (Strowger) automatic telephone equipment for the service of Cheltenham telephone subscribers who will henceforth enjoy the amenities of dialing their required numbers instead of invoking the aid of an operator.

Cheltenham has an interesting if unexciting history, dating back to 863 when it was the site of a British village and burying ground, and boasted a church of its own even then. At that time the Manor belonged to the Crown. It was granted to Henry de Bohun, Earl of Hereford, late in the 12th century, but in 1199 was exchanged for other lands with the King. In 1219 it was granted to William de Longespee, Earl of Salisbury, who in 1223 leased the benefit of the markets, fair, and hundred of Cheltenham to the men of the town for three years. The lease was renewed by Henry III in 1226, and again in 1230.

Cheltenham remained an insignificant market town until early in the 18th century, when a saline spring was discovered in 1716 and proved the key to its future prosperity. In 1738 a Pump-room was erected, and the fame of Cheltenham as a Spa soon rendered it a fashionable resort. It reached the zenith of its prosperity in 1788 when the benefit derived by George III from its waters virtually established its reputation as the premier Spa of the Georgian era. To-day, Cheltenham has four Spas—the Royal Old Well, Mountpellier, Pittville and Cambay. The first three are saline, the last, Chalybeate. The Mountpellier and Pittville Springs supply handsome Pump-rooms, standing in public gardens and are the property of the Corporation.

In addition to its reputation as a health resort, Cheltenham is also an educational centre, Cheltenham College (1842) providing education for boys in three departments, classical, military and commercial. Its Ladies' College (1854) is one of the most successful in England. There is also the Normal Training College (1846) for training male and female teachers, and a Grammar School, founded in 1568 by Richard Pate, Recorder of Gloucester.



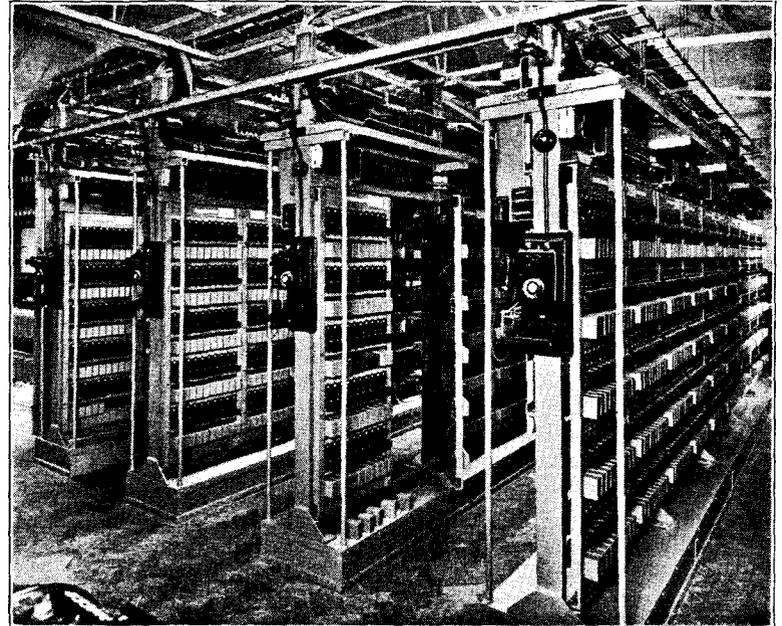
SELECTOR TRUNK BOARDS.

Cheltenham boasts a race-course and is the headquarters of the Cotswold Hunt.

The new Telephone Exchange is located at Wolsey House, Oriol Road, and both automatic and manual equipment was manufactured and installed for the British Post Office by Automatic Telephone Manufacturing Co., Ltd., Strowger Works, Liverpool. The present equipment of the automatic switchroom on the ground floor serves 1,520 subscribers' and 200 P.B.X. lines, with provision for ultimate extension to 2,000 lines.

There are 16 regular and two P.B.X. rotary lineswitch units of the usual standard type, the line switches being mounted on gates to facilitate inspection and adjustment. The final selectors are mounted on shelves at the opposite side of the lineswitch units, whilst the group selectors are accommodated on three selector trunk boards, each mounting six shelves per bay and accommodating 240 switches.

Auxiliary equipment includes an M.D.F. link distributing frame, and a 7-bay meter rack with capacity for 300 meters per bay. There is also a one-bay meter rack for traffic meters, comprising congestion, overflow, total traffic and time unit meters.



LINESWITCH UNITS.

The system at Cheltenham is 4-digit; subscribers numbers lying between 2100 and 2999, 3100 and 3299, 3300 and 3799; whilst P.B.X. lines are numbered from 2000-2099 and from 3000-3099.

Special numbers are as under :—

- 0.— Trunk Records and Junction Calls.
- 90.— Phonograms.
- 91.— Enquiries.
- 93.— Rural Party Lines.
- 99.— Test Clerk.

Calls from manual subscribers in outer areas are extended to Cheltenham automatic subscribers by the manual operators, whilst outgoing calls to the neighbouring Cleeve Hill district reach the manual operators there via auto to manual repeaters, the Cheltenham subscriber requiring a Cleeve Hill number dialing 5.

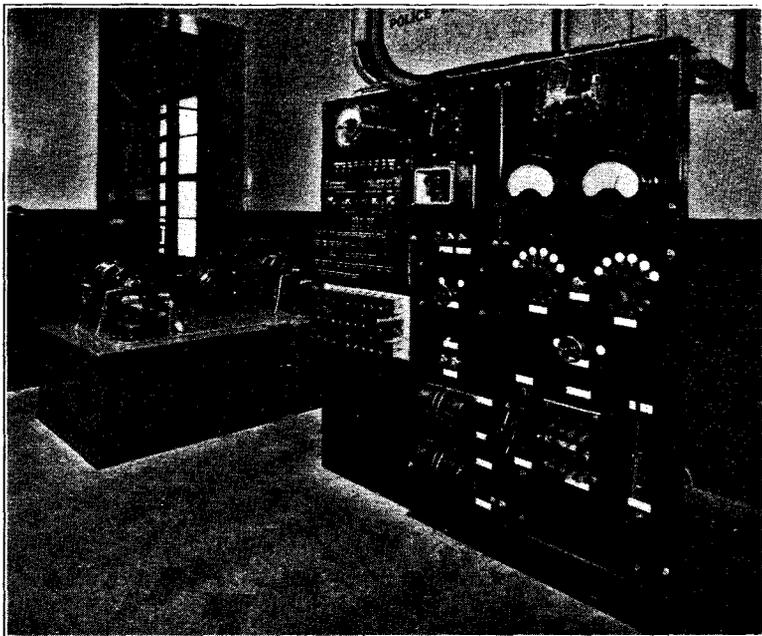
The manual equipment at Cheltenham, still necessary to maintain communication with other areas not yet converted to automatic working, comprises a suite of eleven 2-panel sections of which nine are at present equipped.

Commencing with a cable-turning section there are three Trunk signalling positions, each with 7-cord circuits; one jack-ended junction position, with 17 cord circuits; three regular "A" positions, with 14 cord circuits, and two enquiry positions with 8 cord circuits. Auxiliary manual equipment includes an M.D.F. special apparatus rack, a fuseboard and fuse alarm mounting board and a meter cabinet for manual and dial-in junctions and peg count meters. Current for operating both automatic, local and manual trunk exchanges at Cheltenham is controlled by a two-panel power board, one panel of which carries the supply-driven ringer starter, auto-control change-over switches and circuit breaker for controlling the duplicate ringing machines as described below. On the other panel are mounted the ammeter and voltmeter with associated multi-way switches, generator field rheostat; S.P. circuit breaker, and switches for controlling the charge and discharge of the main and booster meter batteries.

The main batteries are of Chloride Electrical Storage Company's manufacture and comprise two sets of 25 S.B.9 Chloride type elements in S.B.W. 15 lead-lined wood boxes. The present capacity of each battery, which is arranged on a single-tier rack, is 486 A.H. at the nine-hour rate, but the boxes provide for additional plates, when needed, to bring the capacity of the battery up to a maximum of 610 A.H. Burnt-in lead partitions at present limit the acid space in each cell to that required for the lower capacity.

The batteries are charged from the supply mains through the medium of a motor-generator having an output of 100 amps. at 57 volts with regulation between 50 and 68 volts. The motor is a protected type single-phase, slip-ring induction motor, designed for 200 volts S.P. 100 cycle A.C. supply and is direct-coupled to the shunt-wound generator. The normal speed of the set is 1440 r.p.m.

The ringing dynamotors are in duplicate and are mounted on a pier. One machine is designed to run off the supply mains and will normally run continuously, furnishing the exchange with the requisite current for ringing wanted subscribers and supplying the various "tones" which are a feature of automatic working.



CHELTENHAM AUTOMATIC EXCHANGE: POWER BOARD.

It will be appreciated that even a temporary failure of the ringing current and tones would seriously disorganise the working of an automatic exchange and to provide against such a contingency the duplicate ringing dynamotor, is provided as a stand-by, designed to run off the exchange battery, so that should the local electricity supply service fail the telephone service would be uninterrupted.

Moreover such a failure of the supply-driven machine is immediately and automatically compensated by the ingenious mechanism provided on the first panel of the power board, and previously referred to.

Failure of the ringing voltage immediately switches in the duplicate battery-driven machine and gives an alarm, calling attention to the breakdown. When the supply has been restored, normal conditions are brought about by re-set switches, also mounted on the power board. This is one of many of the highly ingenious features which render an A.T.M. (Strowger) Automatic Exchange practically infallible.

With a population of close upon 50,000, Cheltenham well merits improved telephone facilities, and we may confidently look forward to an appreciable growth in the number of subscribers in that area as soon as the advantages of the new system have had time to be appreciated.

## G.P.O. NORTH CHESS CLUB.

THE opening of the Chess season was rendered memorable by the visit to the Club of Mr. F. D. Yates, the British champion. Mr. Yates contested 22 games simultaneously against members of the Club and made the excellent score of 20 wins, 1 loss and 1 draw. The one win for the Club was secured by Mr. J. Y. Bell, and Mr. F. W. Viney, playing very steadily, secured the draw.

The G.P.O. North Chess Club meets on Wednesdays from 6 to 9.30 p.m., in the Refreshment Room, G.P.O. North Building. All members of the Post Office interested in the game will be heartily welcomed.

## TELEPHONE NOTES.

IN an interesting article in *Telephony* on the subject of "Science and Research in Telephony," there is striking evidence of the importance which the American Telephone & Telegraph Company attach to research work.

The Bell Telephone Laboratories occupy a 13-storey building, covering almost an entire city square. The personnel numbers about 3,600, of whom approximately 1,700 are members of the technical staff. Some 600 or 700 of the technical staff have college degrees.

In these Laboratories are undertaken investigations, research and experimentation in the development of plans, methods, systems, ideas and inventions designed to secure safety, economy, and efficiency in the equipment, construction, and operation of telephone or telegraph or other electrical plants and systems.

In comparing the organisation with that in existence in this country, it must be borne in mind that so far as coordinations of procedure and general research work are concerned, the Bell Laboratories occupy in respect of the numerous telephone and telegraph companies throughout the United States a somewhat similar position to that which Headquarters Departments occupy in the British Post Office.

\* \* \* \*

According to the *Electrical Review*, two direct telephone lines between Berlin and Paris have just been inaugurated. Instead of the cable passing via Strasburg, it is linked up via Frankfort, which reduces the distance by about 125 miles. The two new circuits have cost more than 20 million francs, but it is considered that the expenditure was well worth while, as urgent calls can be obtained within a minute.

\* \* \* \*

*Commerce Reports* states that the Soviet Government plans to consolidate into one Federal service the telegraph, radio, and telephone systems of the U.S.S.R., according to the Commissar of Posts and Telegraphs. The development of communication by telephone will be given primary consideration. On April 1, 1926, there were only 171,000 telephones in the Soviet Republic. At present, 67% of these are under the Commissariat of Posts and Telegraphs, and 33% are under local authorities. Telephones represent the most profitable branch of the Commissariat, but they are in a deplorable condition. In some towns telephones have not been repaired for 10 years, and the equipment of nearly all stations is out of date. In rebuilding these stations it is planned to install the automatic system. Inter-urban telephone lines are increasing rapidly. At the close of the fiscal year ended Sept. 30, 1925, they extended for 17,000 miles; on April 1, 1926, their length had reached 22,000 miles. Telephone connexions exist between Moscow and Rostov-on-Don, Moscow and Kiev, and Moscow and Kharkoff. During the coming year it is planned to extend lines to Tiflis and Baku.

\* \* \* \*

According to the *Electrical Review*, The Allmänna Telefonaktiebolaget L. M. Ericsson has recently received an order for the construction of an automatic telephone station at Rostov (Soviet Union) for 10,000 subscribers. No fewer than eighteen automatic telephone stations on the Ericsson system are at present under construction, namely, one at Gothenburg, two at Stockholm, eleven in Italy, one at Rotterdam, one at Johannesburg, one at Cracow, and one at Kristiansund (Norway).

H. J. E. S.

## THE HOLY ISLAND CABLE.

AN element of adventure marked the completion of the laying of the new telephone cable between Holy Island, off the Northumbrian coast, and the mainland; the work has taken several weeks to complete. The cable provides two wires for the Post Office and two for the coastguard; the single wire that previously served the island is being retained for emergency purposes. The trench to hold the cable was cut across the sands at Holy Island by two horse-drawn ploughs at low tide. The cable was wound on four drums, and had to be joined up in position. The tide comes in with a rush at this point, and it was often necessary for the men engaged in that operation to continue their work up to the last minute in order to get all clear and in position before the tide swept in. They were then picked up by motor-cars which raced for the land.—*Electrical Review*.

## CORRESPONDENCE.

## "THE FUTURE OF TELEGRAPHY."

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

SIR.—The subject of suggestions, mentioned by Mr. G. Archibald, and the letter from Mr. C. Young, touches a subject which the Staff regard with justifiable suspicion.

Although I have not received the treatment spoken of by Mr. Young—my suggestions being submitted through the proper channel—one reply received was the usual typed rejection, "It is regretted, however, that the usefulness of the suggestion does not warrant its adoption, nor an award being made."

A considerable period later the suggestion was embodied in an instruction to the Staff without acknowledgment.

Personally, I think that the official form for submitting a suggestion is unsatisfactory.

Why is it necessary for the officer, when reporting on a suggestion, to have at the head of the suggestion form—prominently displayed—the name, rank, office employed, and length of service of the suggester?

By a careful watching of the results of suggestions forwarded to the Awards Committee, it can safely be concluded, that if the suggestion is to be reported on outside the suggester's department it will be unsuccessful.

Detaching the officer's name, &c., and circulating the suggestion for observations, under its number only, would, I think, remove some of the suspicion that the Staff hold towards submitting suggestions.

F. C. CHIDLEY (Telegraphist).

C.T.O., Oct. 17.

## "FIVE AND NINE."

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

DEAR SIR.—May I thank you for reminding everybody that the "Five versus Nine" competition in Telephony is no laughing matter, really. There are three quite effective remedies for this alleged transposition already in being, without saying "Fife" or even "Saxophone."

During the War, a native interpreter of the Camel Transport, who 'phoned long-figure telegrams for daily rations of disinfectant, skin wash, scented sprays, and anti-gurgling mixture, never once caused this distressing error. He always said clearly "Fide, widda curly tail," or "Nine, widda straight 'ook."

The second remedy is to abolish the thing "Five" from mathematics altogether, as it is frequently misread as "Three" or "Six." If this suggestion is turned down by certain influential officials concerned, perhaps a Society for Prevention of the Use of the Figure "Nine" may be started forthwith. This awkward digit often looks like "Seven" and "Nought." Anyway, so many associations exist for prevention of nuisances, one more cannot matter.

The last remedy and, I think, the real solution, is to use the *Telegraph*.—

CHARLIE TOMMY, OLIVER.

C.T.O., Oct. 18.

## REDUCTION OF TRUNK CHARGES IN AMERICA.

ACCORDING to the *Telephone Engineer* of Chicago, important rate changes on messages to interstate points involving a general readjustment in long-distance rates, and in the evening and night periods, during which reduced rates apply, were announced by the Bell companies to take effect on Oct. 1. The net result will be a saving to the telephone users of America of approximately three million dollars a year. To points 150 miles or more distant the rates are substantially reduced. The greater the distance, the greater the reduction. For example, from Chicago to Detroit, the basic station-to-station rate will be \$1.35 instead of \$1.60; to St. Louis, \$1.45 instead of \$1.70; to Pittsburgh, \$2.10 instead of \$2.70; to New York, \$3.40 instead of \$4.65; to San Francisco, \$8.25 instead of \$11.90. New York to Pittsburgh will be \$1.70 instead of \$2.10, and New York to San Francisco \$11.30 instead of \$16.50. Long-distance cables, carrier systems, vacuum tube

repeaters, loading coils and other improved devices and methods, resulting from continuous scientific research and development applied to the telephone industry, have effected economies on the longer circuits, and have a share in making these reductions possible. A few rates for distances between 24 and 110 miles will be adjusted to make the schedule constant throughout, but in these cases the increase of the basic station-to-station rate will be only five cents.

One of the interesting changes from the public's viewpoint is that by which one and a half hours have been added to the reduced rate period. Reduced rates on station-to-station calls will begin at 7 p.m. instead of 8.30 p.m., as formerly. Between 7 p.m. and 8.30 p.m., the discount will be approximately 25% of the day station-to-station rates, and from 8.30 p.m. to 4.30 a.m. about 50% of the day rates. These discounts will apply where the day station-to-station rate is 40 cents or more, with a minimum reduced rate of 35 cents.

Because of the unsatisfactory service conditions which it brought about, the existing midnight discount, we learn, has been discontinued.

## CHESTERFIELD AUTOMATIC AREA.

CHESTERFIELD and Staveley exchanges were converted from Magneto to Automatic working at 2 p.m. on Saturday, September 25. The installations are Siemens No. 16 type, and equipment has been installed at the outset for 900 and 100 subscribers' lines respectively.

Claycross (Dial 5), Dronfield (Dial 6) and Old Whittington (Dial 8) are other exchanges included in the Chesterfield Automatic Area, but, as they are not due for conversion for some years, provision has been made to enable the Chesterfield and Staveley subscribers to dial those exchanges direct.

The manual switchboard associated with the automatic installation consists of three jack-ended junction, five "A" and two enquiry positions.

The whole of the equipment is "housed" in the head post office, where extensive structural alterations and additions have been carried out for this purpose.

Hall multi-coinboxes have been fitted in all the call offices.

An official opening ceremony, presided over by Mr. J. Tattersall, Postmaster of Chesterfield, took place on Tuesday, September 28, and the large company present included Alderman H. Cropper (Mayor of Chesterfield), Sir Ernest Shentall, Miss V. Markham (representing the civic and business interests of the town), Mr. A. Sirett (Postmaster-Surveyor), Mr. E. Gomersall (Superintending Engineer), Mr. S. C. Smith (District Manager), Mr. W. Lomas (Sectional Engineer), Mr. J. G. Ferguson (Traffic Superintendent), and Mr. E. Siddall (Headquarters Traffic Section).

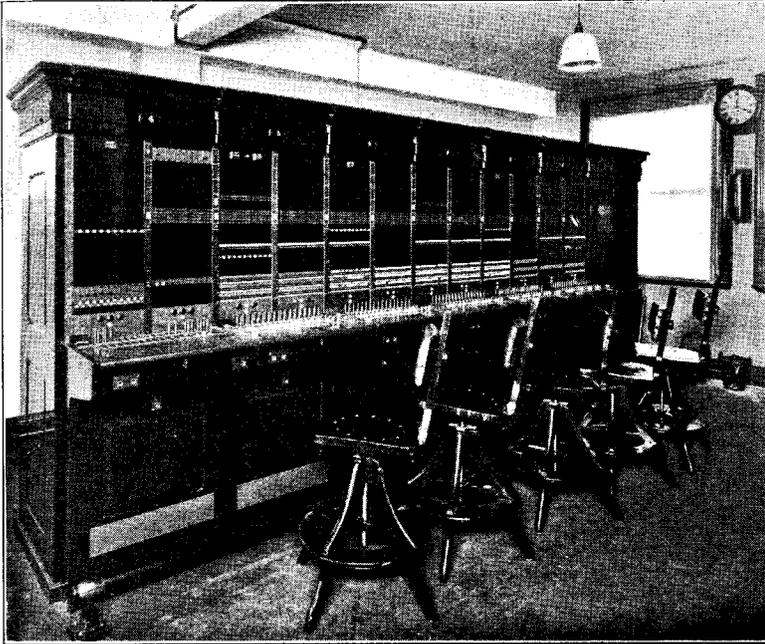
After an extremely interesting series of short speeches had been delivered, the Mayor formally opened the new exchange by completing the final link in the transfer from the old system to the new. The visitors were then conducted round the equipment and power rooms and the new manual exchange, before partaking of light refreshments.

Much satisfaction was expressed by the visitors at the entire absence of confusion and congestion in effecting the main transfer, and they admitted that they were proud to feel that Chesterfield was the first town in Derbyshire to be given an automatic telephone installation.

## NEW TELEPHONE EXCHANGE AT UPTON, BIRKENHEAD.

A New Manual Telephone Exchange at Upton, Birkenhead, in the Liverpool Telephone Area, was cut into service by the Post Office on Saturday, Oct. 9. The equipment, which is of the No. 10 C.B. type, is housed at "Inglefield," Church Road, Upton, and was manufactured and installed for the British Post Office by Automatic Telephone Manufacturing Co., Ltd., Strowger Works, Liverpool.

The decision to instal manual equipment in this instance was controlled by the fact that the main Liverpool area has not yet been converted to Automatic working, although a comprehensive scheme which will enable this to be accomplished is in course of preparation by the Post Office Engineering Department. The switchroom equipment at the new Upton



MANUAL SWITCHBOARD, UPTON EXCHANGE, BIRKENHEAD.

Exchange comprises six two-panel switchboard sections and a cable-turning section, affording accommodation for six operators in all. The equipment of the sections, from right to left, is as follows:—

- 1—two-panel Subscribers' Section, equipped with 20 jack-ended junctions.
- 1—two-panel Subscribers' Section equipped for 60 subscribers and 20 jack-ended junctions.
- 3—two-panel Subscribers' Sections, each equipped for 120 subscribers.
- 1—two-panel Subscribers' Section equipped for plugging-up circuits.

There is also a one-position Supervisor's Desk.

Auxiliary equipment in the apparatus room comprises a main and intermediate distributing frame; two-bay relay and meter rack; special apparatus rack; repeating coil and condenser rack; test case; fuse board, and fuse alarm mounting board. The present equipment of the new Upton Telephone Exchange is approximately 300 subscribers, and its initiation in a growing district affords additional evidence of the progressive spirit which now animates the Post Office Telephone Department in its endeavour to overtake the arrears of telephone construction and development work with which it is faced.

## RETIREMENT OF MISS JEFFRAY, GLASGOW.

A PLEASING ceremony took place in the Kirkintilloch Exchange, Glasgow District, on Friday, Sept. 10, when Miss E. Jeffray, telephonist, on her retiring under the age limit, was presented with a purse of Treasury Notes, by the Staff and friends in the Glasgow area, coupled with their heartiest good wishes for many happy years of retirement after so long and faithful service. Miss Jeffray, during her service of 38 years—all of which have been spent at Kirkintilloch—has seen the service grow from 6 or 7 subscribers to about 100.

In private life Miss Jeffray takes an active interest in the Mission and Temperance matters of her native town.

## ELEGY IN A BRADFORD SWITCHROOM.

(With Apologies to Gray's "Elegy.")

The Town clock tolls the hour of opening day,  
The eager girls walk quickly up the stairs,  
The duty-clerk then plods her weary way,  
And holds the watch, while they come up in pairs.

Now fades the glimmering landscape seen last night,  
And all the air a noisy bustle holds,  
Save, where the "dial" wheels its droning flight  
While calls for Leeds subscribers come in shoals.

Now from yon busy section, looking "glum,"  
A "moving girl" does to her chum complain,  
Of leaving her old board—until there come  
The welcome words of "Your relief" again.

The first-clerk, looking round her carefully  
To make sure all telephonists are there,  
Now draws her brows together fearfully,  
She sees that some positions still are spare.

The fourth-clerk then begins her troubles too,  
A patient super. reads the lunch-list long,  
The name of one who has a day "in lieu"  
Is entered there, and that is very wrong.

Let not ambition mock their youthful toil,  
The little "docket" girls work bravely on.  
What if the indian ink their hands must soil,  
Their busy feet n'er cease the whole day long.

There by the table stands with watchful eyes  
The Supervisor, on whose shoulders strong  
Is borne with cheerful patience (though some sighs),  
All things this very erring staff do wrong.

Far from the madding crowd's continuous strife  
The observation-clerk remains all day,  
Leading a concentrated, serious life,  
Wishing attention some slack girls would pay.

Full many a gem of purest ray serene,  
Those serviceable hard high chairs do bear  
And by the subs. are heard but yet unseen,  
And waste their sweetness on the switchroom air.

So when at last "off duty" comes to them  
And to their bright retiring-room they roam,  
Their listless lengths upon the chairs they stretch,  
And pore upon the books they brought from home.

The duty-clerk, through that part of the day  
(No matter how her head with counting whirls),  
Must watch the clock, or else you hear her say  
"Oh, dear! Oh, dear! I did forget my girls."

All afternoon, the staff, to work a prey,  
Some very happy, others just resigned,  
But most are glad to go at close of day,  
Nor cast one longing, lingering look behind.

The Town clock tolls the hour of parting day,  
The busy herd wind quickly home to tea,  
The "late staff" onward plod their patient way,  
But sometimes wish that they had "changed" to-day.

## PRESENTATION TO MR. RIDD.

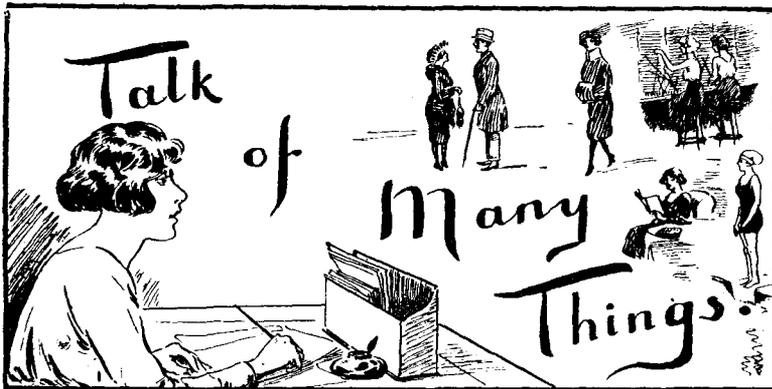
A HAPPY and interesting function took place at G.P.O. South on the evening of Oct. 5, when Mr. P. J. Ridd, late Sectional Engineer, City Internal Section, was presented with a handsome sectional bookcase, as a mark of appreciation, upon his promotion and transfer to the Research Section of the Engineer-in-Chief's Department.

The parting gift was from all grades of the City Internal Section, and quite a family gathering assembled to express regret at his departure, and to congratulate him upon his well-merited promotion.

In making the presentation Mr. W. Deane, Assistant Engineer, referred to the happy relations which had always existed between the Sectional Engineer and his staff, and his remarks were afterwards heartily endorsed by other members of the staff.

As an engineer, a chief and a friend, it has been a privilege for the staff to work under Mr. Ridd. They wish him every success in his new sphere, and will watch with interest his future career.

## WE TELEPHONISTS



## Exchange Names!

It is remarkable how many extraordinary things we accept as commonplace, and how disturbed we are at a departure from the usual in even the simplest items of daily life. No one is amazed at the sight of a postman in his individualistic uniform, but if anyone other than a postman were to wear a postman's hat what a fuss there would be. The postman's hat is peculiar—no other hat is quite like it. It could not be called a picture hat, except possibly by a neo-artist. Its design is apparently strictly utilitarian and is no doubt admirably suited to keep off the sun and the rain. It is indeed quite an excellent hat and one worthy of general adoption. But the ordinary man could not wear one because to wear an extraordinary hat is a crime even worse than that of wearing no hat at all. Custom has decreed that particular hats shall be worn by particular people and peculiar hats by peculiar people. The convention which forbids that "never the twain shall meet" is only flouted on Hampstead Heath on Bank Holiday, and then liberty rules joyously, gloriously and scandalously. No one knows quite why men should not wear dainty hats, flowered and feathered, or why women should not assume toppers and trillies. No one knows who first decreed that bowlers should be masculine, and toques\* feminine. Nevertheless, the distinction is observed and may not lawfully be altered except by special sanction for particular purposes.

In the same way we have always accepted as established beyond question that names such as Mary and Jane are the strict monopoly of the ladies and that Thomas and William can never be allotted to other than men without a serious upheaval of social custom. It is, of course, convenient and reassuring to know that whenever the name John is mentioned the reference is to a man and that if one speaks of Susan one has a woman in mind. Names have hitherto had no voice in their allocation—they have been distributed willy-nilly on conventional lines by god-parents. From the point of view of the names themselves this seems rather unfair. Thomas, Henry and William, for example, may never find themselves attached to persons who are dainty and charming, while such as Mary, Alice, and Jane may usually count upon association with grace and beauty. The name of Percy has for too long been coupled with wit, brilliance, and the virtues—let it take its chance of a place under a feather in the Old Kent Road. Let custom depart, therefore, and convention be ignored, and let us exchange names. The inconvenience would only be temporary and not a little amusing.

PERCY FLAGE.

[\* What are "toques" ?—ED.]

## When Autumn Comes.

B-z-z-z-z goes the alarm. Seven o'clock. Time to get up! But no, wait a minute, to-day is a holiday, one of those "odd days" which we store up, and partake of at intervals, during the year. What a relief! A whole day to do as one likes.

Our thoughts turn countrywards, and we find once more healing from the fret and jar, out in the open among the trees and fields.

The ripe autumn tints of the leaves and the freshness of the air cast their charm upon us.

As we walk along, we come suddenly upon some horse-chestnuts, or "Conkers" as we called them in our childhood. How they bring back memories, and as we pick some up we admire their beauty afresh.

All sense of boredom vanishes, and every breath we take seems to give us new life.

Once more we can take the long look; everywhere the eyes can behold beauty, and one can walk free and untrammelled.

The trees sway in the breeze, and hundreds of leaves come scampering through the air, seeming to enjoy their freedom.

Then the long ride home again on the top of a 'bus, happy in the knowledge that we have made the best of our "day." L.R.

## From Far Japan.

The impression which our service makes on the minds of our visitors from overseas is always a matter of interest, and we therefore make no apology for printing the following letter recently received by a London Traffic Officer from a Japanese visitor:—

"I am very happy to inform you that I am now here in Japan all safe after four months' tour of the Continent and the United States. Words fail me how to express adequately my gratitude for your kind attention and guidance extended to me during my long stay in your esteemed land for the study of the highly advanced British telephone system. The precious knowledge I could obtain through your courtesy will, I am sure, prove greatly useful for the improvement of the Japanese telephone service, for which my hearty thanks are due to you.

"Availing myself of this opportunity, I am to ask that you will be good enough to help me further in the study of the service, when occasion arises in future.

"Thanking you again and with kind regards,

Ever sincerely yours."

This is typical of the well-known courtesy of the great and ancient island Empire of the East, whose progress will always be watched with keen interest by Britons. Though East is East and West is West, nevertheless, the twain do meet in the brotherhood of Service.

P. D'A.

[Vide Post Office Circular.]

## A Lay of Malay.

Big Willy Flight and his smaller pal Wally  
Discovered a stunt which they thought rather jolly,  
To go to Malaya as great big white chiefs  
And confound the critics and all their beliefs.  
The pay wasn't bad, so the circular read  
And a nice motor-car was a thing, so they said,  
To consider, along with the servants so many  
Who do all the work for less than a penny.  
So they rang up the King, the bargee, the tailor,  
The dustman, the vicar, and even a sailor  
To ask of these various people "Oh, please,  
What do you know of this place overseas?  
And is it a fact that when I get there  
All I shall do is to sit in a chair  
And watch all those natives so wiry and brown  
Toiling away from sun-up to sun-down?  
And would you tell me if a twelve or a ten  
Is the bore for my gun when I'm shooting a hen?  
I want to know whether the Rhinoceroow  
Should be caught in a mousetrap or killed with a bow?  
There is also the question of joining the club,  
Is it like Lyons' "Pop" or more like a "pub" ?  
Do the members drink scotch or do they like water,  
Or both, and some others that they hadn't oughter?  
When I've treated 'em all till they're full to their collars  
Will much be then left of my four hundred dollars?  
When this information they'd gathered together  
They started collecting some books on the weather,  
The people, the pictures, the roads and the trees,  
The trains and the sewers, the food and the fleas.  
Their Traffic Branch colleagues soon learnt in a maze  
All there was to be known of Malay in two days.  
And even the two gallant gents, so it seems,  
At the close of the day spent the long night in dreams  
Of centipedes longer than any hose-pipe  
With millions of legs and mouths full of tripe,  
Of snakes red and blue and elephants singing  
And gnats with false teeth and boats that were swinging,  
Till poor Mrs. F. and poor Mrs. O.  
Asked themselves daily if they ought to go,  
But Willy and Wally had already mentioned  
"Provided we live, at fifty we're pensioned."

So all you young fellows who will stay behind,  
I put it to you—please bear it in mind,  
If ever they offer a job at the "Pole"  
Put in for it quickly and pack up your coal  
For I'm sure that the Service need men of your sort  
And they'll give you your pension before you leave port.

H.A.

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.

LONDON TELEPHONE SERVICE NOTES.

Telephonists' Society.

THE new president, Mr. J. Hinshelwood, gave his address, entitled "System," at the opening meeting of the session, on Oct. 1. The main theme of the speaker was that success can rarely be won by the unmethodical, and in the development of the address way and means were indicated by which methodical habits could be acquired. It was emphasised that there could be no "get-rich-quick" means of becoming methodical and systematic in thought and deed. This would only be achieved, said the speaker, by constant application to detail and by unswerving purpose.

Mr. Hinshelwood advocated the cultivation of the art of conversation, the study of mathematics, participation in games of chess, reading and writing, all of them assisting in the acquirement of method. Particular stress was laid on the necessity for concentrating always on the immediate matter on hand.

Another phase given prominence was the need for individuals to use their powers of observation to the fullest possible degree.

A discussion followed the address.

The second meeting of the session will be held on Friday, Nov. 5, when Mr. C. W. Brown, of the Engineer-in-Chief's Office, will give a lantern lecture entitled "Automatics in Being." As both the lecturer and his subject are very popular there is bound to be a good attendance and early arrivals will be entertained with music.

\* \* \* \*

Swimming Gala.

The Eighth Annual Gala of the L.T.S. Swimming Association was held at Pitfield Street Baths on Oct. 8, before the usual packed and enthusiastic attendance. The Association is probably the largest of its kind and it certainly sets a high standard as regards organisation and performance. This year

the gala attracted the attention of members of the Civil Service Sports Council, Miss Constantine and Mr. Curtis Bennett being present to witness the sport.

The contests resulted as follows:—

LEARNERS' RACE (1 WIDTH). "MISS COX" CUP.

|                                     |   |
|-------------------------------------|---|
| Miss Willbe (Gerrard) ... ..        | 1 |
| Miss Poppleton (Clerkenwell) ... .. | 2 |
| Miss Lyons (Royal) ... ..           | 3 |

The most striking feature of this race was the sight of a learner with less than a year's experience swimming a double over-arm stroke. She did not win.

TEAM RACE. "POUNDS" CHALLENGE CUP.

|  |   |
|--|---|
| Victoria (Misses Fern, Bailey, Amos and Drinkwater)<br>1 min. 44½ sec. ... ..      | 1 |
| Regent (Misses House, Williams, Amos and Brooms-<br>grove). 1 min. 45½ sec. ... .. | 2 |
| Gerrard (Misses Burt, Hayter, Farey and Davis).<br>1 min. 47½ sec. ... ..          | 3 |
| Avenue (Misses Willmott, Cates, Stevenson and<br>Brinsdon). 1 min. 49½ sec. ... .. | 4 |

Seventeen teams contested the heats, the fastest time being returned by Gerrard at 1 min. 43 sec. Regent were only ½ sec. longer and Victoria took 1 min. 45½ sec. Students of form had decided that Gerrard would win the final. The Victoria Team did not appear to be reconciled to this view and deservedly won a most exciting race.

SEALED HANDICAP (TEAMS).

|   |   |
|---|---|
| Bishopsgate (Misses Lloyd, Luxton, Long and Bowers).<br>2 min. 14 sec. ... .. | 1 |
| Regent ... ..   | 2 |
| Gerrard ... ..  | 3 |

The handicap was decided on the times returned in the heats for the "Pounds" Cup. The official handicapper publicly commended the teams on the fact that their performances so closely approximated to the times they submitted.

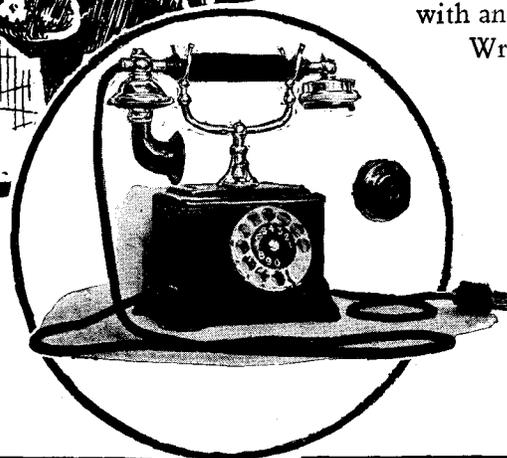


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TELEPHONE  
EXCHANGE  
EQUIPMENT

## TEAM RACE (MEN).

|   |     |     |     |   |
|---|-----|-----|-----|---|
| Argent (Messrs. Brenton, Warren, Skates and Creighton). |     |     |     |   |
| 1 min. 24 <sup>1</sup> sec.                             | ... | ... | ... | 1 |
| Lotos (Messrs. Waghorne, Frier, Thompson, Gregory).     |     |     |     |   |
| 1 min. 31 <sup>1</sup> sec.                             | ... | ... | ... | 2 |

## L.T.S. HANDICAP (33 YDS.).

|  |     |     |     |   |
|--|-----|-----|-----|---|
| Miss Long (Bishopsgate). 15 sec. start       | ... | ... | ... | 1 |
| Miss Thirwell                                | ... | ... | ... | 2 |
| Miss Hardingham (Clerkenwell). 12 sec. start | ... | ... | ... | 3 |
| Miss Hayward (Sydenham). 26 sec start        | ... | ... | ... | 4 |

There were 121 entrants for this race which had to be swum off in 15 heats and a semi-final before the final was reached.

## SUPERVISORS' CHAMPIONSHIP (33 YDS.).

|                                |     |     |     |   |
|--------------------------------|-----|-----|-----|---|
| Miss L. K. Davies (Trunks)     | ... | ... | ... | 1 |
| Miss Mc-Nee (Avenue)           | ... | ... | ... | 2 |
| Miss D. A. Jones (Clerkenwell) | ... | ... | ... | 3 |

## L.T.S. DIVING CHAMPIONSHIP.

|  |     |     |     |   |
|--|-----|-----|-----|---|
| Miss McBirney (Trunks). 56 <sup>1</sup> pts. | ... | ... | ... | 1 |
| Miss Williams (Regent). 53 pts.              | ... | ... | ... | 2 |
| Miss Amos (Victoria), 47 <sup>1</sup> pts.   | ... | ... | ... | 3 |

There were 25 competitions for the championship title and the diving was of a very high order.

Other items were, an obstacle race won by Miss S. Wilson (Gerrard), a display of high and fancy diving by Messrs. A. S. Coombs, D. H. Fairman, W. C. T. Burne and S. Mercer, and finally a water-polo match between City of Westminster and Cygnus.

The prizes will be presented by Miss A. Cox during a dance to be held at Westminster Palace Rooms on Friday, Nov. 12.

## FATAL ACCIDENT AT RUGBY WIRELESS STATION.

WITHIN a few hours of leaving his home at Folkestone, where he had been spending the week-end, a young electrician, Ralph Leang Oldfield, was electrocuted at the Radio Station at Hillmorton on Monday afternoon, Oct. 11.

At the inquest at Rugby the mystery of why Oldfield was inside the high-tension machinery enclosure, where he was found, was not cleared up satisfactorily.

It was stated that he had climbed inside by a ladder, although well aware of the risk he ran.

The inquest was attended by Mr. H. Faulkner (engineer-in-charge of the station), Mr. E. R. Marshall (solicitor for the Post Office), and Mr. Cackley (H.M. Inspector of Factories).

Amos William Oldfield, of 16, Dalvinghurst Road, Cheriton, near Folkestone, Kent, said his son was twenty years of age, and was in lodgings at 88, Murray Road, Rugby. He had been spending the week-end at home, and appeared to be in his usual health. He returned to Rugby on his motor-cycle on Monday. He had been interested in electricity for four or five years, and was previously employed by the Folkestone Electrical Supply Co., and at South London Power Station. He was fully cognisant of the danger attaching to the work.

Charles Edward Dunkley, of Hillmorton Wharf, Rugby, employed at the radio station, said about 3 p.m. on Monday he saw deceased, who had come on duty about an hour previously, inside the enclosure surrounding the high-tension machinery in the power-house. A ladder was placed against it.

The Coroner (Mr. E. F. Hadow) here explained that the room is roughly rectangular and the engines are ranged in the middle, guarded by a fence five feet high and about three feet distant. At one end there is a gate, which is always locked, the keys of which are kept in the office. If anyone wanted to get inside they had to apply for the keys at the office. The mere fact of opening the gate switches the current off. If this young man had any business inside the enclosure he would have had to fetch the keys from the office.

Continuing his evidence, Dunkley said he saw Oldfield in a crouching position under the handle of the earth switch. Witness advised him to come out, and then started to walk away. He had only gone two or three yards when he looked back and saw him kneeling down a few feet from his original position. He could see that he had had a shock. Witness switched off the

power and fetched assistance. Oldfield was found to be either unconscious or dead. Artificial respiration was tried without success, and he was taken to Rugby Hospital.

Answering the Coroner, witness said the ladder was kept a few feet away, and he understood it had been left there by a contractor.

Would his business take him at any time inside the enclosure?—No.

Did you ever see other people inside the enclosure?—No, never.

By the Foreman (Mr. Overton): He had no idea why he went inside.

The Coroner: He might have wanted to put a drop of oil somewhere?—

Witness: No; the machine is shut down periodically for that purpose.

Cyril Onslow Horne, assistant engineer-in-charge, explained that Oldfield's duty was to answer signals given by an inspector, his next superior officer. In the case of this particular machine he would either have to stop it or raise the voltage, and that was quite a safe undertaking, because he merely had to operate handles outside the cage. These were on about six feet of insulation. His work would not take him inside the enclosure, but was concerned solely with the handles outside. A hot bearing in the machine was indicated by a red lamp and a bell ringing, and Oldfield's job in that case was to shut down that machine and start up another one. One machine was always kept idle.

Witness was informed of the accident, and found deceased lying inside the enclosure, face downwards and with both arms outstretched. He got him out of the enclosure and the ambulance was sent for. Artificial respiration was attempted without success, both on the spot, on the way to the hospital, and after he was admitted.

In reply to questions, witness said they were "on traffic" at the time, and if Oldfield had applied for the key it would not have been given to him.

The Foreman: Did he have any conversation with anyone as regards any little matter?—Not with regard to the station. The only thing he was known to say was, What a good time he had had at the week-end.

Witness added that there was a notice up in red: "Danger, 18,000 Volts." Artificial respiration was commenced within about three minutes of the discovery.

The Coroner: You know no reason why he should be there?—None whatever. He had no business there.

How was the building heated?—There was a radiator on that particular machine. Witness agreed it was possible that he might have gone in to make an adjustment to that.

But to do that he should have come to the office for the key?—If he had come, it would have been refused. It would have meant shutting down the machine and losing traffic.

But this might be a possible solution?—It is a surmise.

Mr. Marshall: I suppose that the notice, "18,000 Volts" would be sufficient warning?—I think that the non-technical person would be frightened by 200 volts.

Are the precautions taken to prevent anyone getting near the machine good, in your opinion?—I don't think they could be bettered. It is absolutely fool-proof.

Detective Tame said he examined the scene of the accident, and was shown a plate about two feet from the ground holding up the spark-gap. The plate was three feet from the enclosure. It bore certain marks which corresponded with the marks on deceased's shoe, which was burnt in one place. Apparently the edge of the plate had cut along the sole of the shoe. There were also burns on three fingers of the left hand, and witness thought that Oldfield, in attempting to reach the ladder on his way out, put his right foot on the plate and his hand on the top of the earth enclosure, thus making a circuit of 3,200 volts.

In answer to Mr. Marshall, it was explained that the enclosure was not charged with electricity, but would act as a conductor when the circuit was made.

Mr. Marshall: I just wanted that made clear for the layman.

The Coroner: Oh, the people of Rugby are brought up on electricity. I think it was invented here.

Dr. W. S. Morgan, senior resident medical officer at the Hospital of St. Cross, Rugby, said he had no doubt that Oldfield was dead when admitted, but artificial respiration was applied for some time afterwards. It was quite probable that death was instantaneous. In America it was found that 500 volts were sufficient for the lethal chair.

After hearing further evidence as to Oldfield's condition, the Coroner agreed that death was probably instantaneous.

Summing up, the Coroner said there was a slight mystery as to why the boy went inside the enclosure, but he thought it possible he was not quite satisfied with one of the heating radiators.

In recording a verdict of "Death from electric shock," the jury said they were quite satisfied with the precautions taken by the Post Office to protect employees. They expressed sympathy with the relatives, and with this Mr. Marshall associated himself on behalf of the Postmaster-General, Mr. Faulkner, and the staff of the radio station.—(Rugby Advertiser.)