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INDEX TO VOL. XVI.

Shorter Paragraphs.

Presentations, Promotions and Retirements.

Obituary.

(NOTE.—For other Promotions, Presentations, and Obituary Notices *vide* also the various London and Provincial Notes.)

Telegraph and Telephone Men and Women.

Correspondence.

Reviews.

THE

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CONTENTS.

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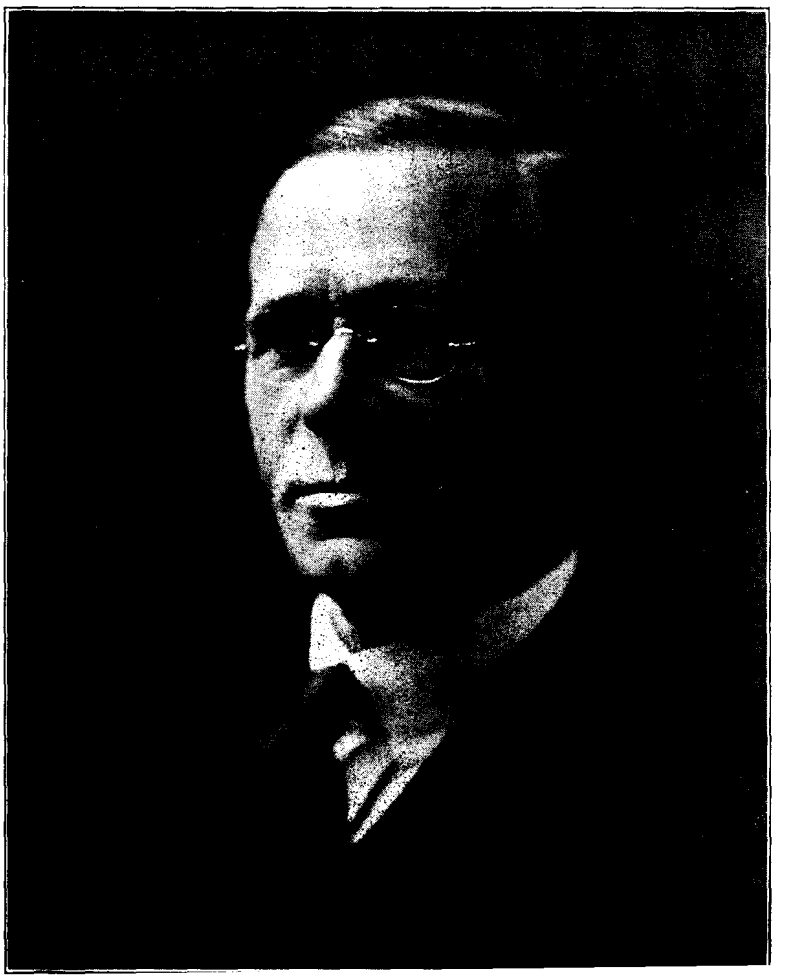
TELEGRAPH AND TELEPHONE MEN AND WOMEN.

LXIX.

MR. G. T. ARCHIBALD.

THE portrait this month is that of Mr. G. T. Archibald, who has recently been appointed to an Assistant Controllership of the Central Telegraph Office, and who previously was Inspector of Telegraphs in the Headquarters Telegraph and Telephone Traffic Section. In his former position he was thus in lineal official descent, though bearing a different title, from the Telegraph Traffic Managers whom, about 30 years ago, the Post Office Administration took the bold and novel step of appointing. The scope of responsibility of the early Traffic Managers was somewhat restricted, but a new conception of traffic management sprang from the union of the telegraph and telephone systems in 1912 under Post Office control, and led to the establishment in 1916 of the present Traffic Section with wider responsibilities than were accorded to the Traffic Managers.



Mr. Archibald, who had spent nearly twenty years in the telegraph service at Manchester, joined the Traffic Section on its formation and was promoted to Assistant Inspector, Class I, in February, 1920, and to Inspector in August, 1926.

Since the War, the machinery and operating methods of the telegraph service have undergone extensive changes, and in that process the energy and practical knowledge of Mr. Archibald have been of the utmost value. Mr. Archibald was a member of the Sanderson and Comber Committees, the two chief post-war revising committees, and also of the Simon Commission of enquiry into the American telegraph service.

We believe that Mr. Archibald finds recreation in bowls, and, in spite of his official activities and journeyings, has acquired much skill in that game.

UNDERCURRENTS.

How many readers of the *Journal*, outside those whose daily round brings them into close contact with the matter, realise the vast undercurrent of changes flowing constantly and in ever increasing volume among telephone subscribers?

Readers are kept well informed of the progress of the system in this and other countries, but behind these net gain figures are movements which, in the aggregate, involve a vast amount of work and which are altogether unsuspected by the general public.

Perhaps a little light shed, from a London point of view, on some of these less advertised but nevertheless extremely important forms of activity, might stimulate interest and add to the general knowledge of those who are connected directly or indirectly with the telephone business, and who, owing to the nature of their work, are unable to see the wood for the trees.

Subscribers move about from place to place or require some alteration to the position of their telephone or apparatus. In London 37,839 such cases were dealt with in the year ended June last. These cases necessitate getting a form signed, the issue of the necessary advice note to the engineers and exchanges where a change from one exchange to another is involved, alterations to records, an addition to the quarterly account, dealing with the payment, and so on.

Another item, involving much the same routine methods, consists of what are known as transfers. These are divided into two categories, called for official purposes A to A and A to B. A to A cases are those where, roughly, the control remains the same, such as the reconstruction of a limited company or the conversion of a firm into a limited company, dissolution of partnership, and so on. A to B transfers are those where there is a complete change of control, such as when the telephone service is taken over from an outgoing tenant by the new occupier of the premises, &c. These will be referred to later. The total number dealt with in London during the year already referred to was 24,880. As the system grows these cases grow with it, and this will go on without end so far as we can see at the present time.

The ever increasing volume of ceasements, that is of subscribers who for one reason or another give up their telephone service, is one which causes the staff of the Contract Branch no little anxiety, although it is a perfectly natural movement which has to be met by all telephone administrations the world over. To be faced with the unpleasant fact, however, that orders for two telephones have to be obtained in order to get a gain of one, is one which has caused much thought, with the result that no effort has been spared to retain every possible station. The truth of the matter is, however, that the percentage of cases where retention is possible is small, and that we must endeavour to increase the new business by every means in our power to keep the "new" and the "ceased" as far apart as possible.

It has been indicated that many of the ceasements and their causes are quite beyond our control, and it may be of interest if some details of an analysis of the reasons furnished by subscribers for relinquishing the service are given.

Quite a considerable percentage of the actual "recoveries" are accounted for by the A to B transfers previously referred to. These are merely book-keeping transactions, however, as the service in these cases is continuous. Generally, transfers prove among the most troublesome cases with which the Contract Branch is called upon to deal, and as they account for no less than 27.3% of the ceasements, the work involved, both before and after the issue of the advice note for the necessary alterations to be carried into effect, is considerable.

The death of subscribers accounts for 1.77% of the actual ceasements. It may be added, however, for their comfort, that telephone subscribers as a body are a fine healthy lot of people, although one would think from the newspapers that they were being worried to death by the service. The number of telephones lost through death in a year is only .14 per hundred of the total telephones existing. Obviously, therefore, everyone with any regard for their health and future welfare should have telephone service.

Of course, many of our subscribers are companies and corporations and they, having neither a body to be kicked nor a soul to be—well—lost, don't exactly die, but they do fade away sometimes, and that brings us to bankruptcies and such gloomy subjects.

Bankruptcies account for 9.26% of the ceasements. Service given up due to bad trade and closing down branches, &c., accounts for another 8.8%. Premises given up, probably in many instances for the same reason, and no new tenant coming in in time to save the recovery of the apparatus adds 14.27% to the total. Insufficient use, state of trade again, gives us a comparatively modest 9.8%.

Circuits provided for temporary purposes vary considerably, but the average over 12 months is 5.44%.

Subscribers who have departed for pastures new represent 8.90%.

The combination of firms and interests, known these days as rationalisation, effected largely for the sake of reducing overhead charges and for economy generally, is responsible for the grouping of individual telephone installations with a reduction in the number of stations in the process, and this adds its quota to the ceasements which have to be dealt with and made good.

Strange as it may seem to those people, journalists and others, who delight in decrying the telephone service, which, incidentally, they own, the number of subscribers who leave the fold because they can stand us no longer, is infinitesimal. This must be very disappointing to those who have done their best to increase the number.

The various reasons for disposing of the service which have been mentioned account for about 86% of the total ceasements, and the balance is made up of small items such as call offices given up, Government circuits recovered, and so on.

The urgent necessity, on economic grounds, of retaining every possible station is well understood by all concerned, but sometimes it is felt that there is a misconception of the number of cases where there is a possibility of persuading subscribers to withdraw their notices. An examination of the causes for notice to cease being given shows that only in such cases as "subscriber vacated premises and new tenant will not continue to rent the service," "bad trade and to reduce expenses," "insufficient use," and one or two others of microscopic dimensions, is there any hope of retaining the station. A calculation has been made and it is found that by canvassing the subscriber in these cases approximately 26% were retained, which when all the circumstances are considered seems a fair return for our labour but still leaves a margin for the exercise of our persuasive abilities, and not being content to rest on our laurels we hope as time goes on materially to better the position, although it must be admitted that there is an undoubtedly large residuum which will never be saved and which it would be a waste of time to press too far.

W. F. T.

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

THE G.P.O. Players open their seventh season at King George's Hall, Caroline Street, Great Russell Street, W.C., on Thursday, Friday and Saturday, Oct. 10, 11 and 12. They will present Bernard Shaw's "The Devil's Disciple," preceded by "Two Gentlemen of Soho," by A. P. Herbert (of *Punch*). The former is one of the more dramatic of Mr. Shaw's plays and the latter is an amusing burlesque of modern-dress productions of Shakespeare.

The production is under the professional direction of Mr. Reginald Purdell, at present playing in "The Middle Watch" at the Shaftesbury Theatre.

Tickets, 5*s*. 9*d*., 3*s*. 6*d*. and 2*s*. 4*d*. (all reserved), are obtainable from Mr. W. L. Gartland, Room 8, Sub-Ground Floor, G.P.O. North, E.C.1, or at the Box Office before 7.30 p.m. each evening.

THE CHARING CROSS SCHEME.

SCHEMES of town development, while of general interest to all telephone men, are of peculiar and particular interest to Contract men. Their figures, on which plant is provided, are affected by changes, growth, demolition of property, replacements, provision of new thoroughfares and traffic avenues, and generally all those movements for development which are continually going on in progressive communities. Contract men in London have, therefore, been following closely the course of events dealing with the proposed removal of Charing Cross Station to the other side of the Thames, and the erection of a new road bridge in place of the existing railway and foot bridge.

The scheme, to which I made a brief reference in an article which appeared in the *Journal* a year ago, has reached its final stage, and it is now possible to see that the changes consequent on the two operations will be of an even more momentous and far-reaching character than were originally contemplated. A few more streets will be wiped out, one or two more thoroughfares created, landmarks and properties which have stood for centuries swept away.

The principal new feature on the north side of the river which is contemplated by the final plans is the creation of a circus where the approach road from the new bridge enters the Strand. The entry of this circus into the scheme involves the disappearance of the triangular block of buildings between King William Street, Adelaide Street and that section of the Strand which faces the existing Charing Cross Station, Villiers Street and Buckingham Street. This block contains such well-known features as Coutts Bank, Gatti's Restaurant, and our own West Strand Post Office. St. Martin's-in-the-Fields, with its playground, will remain untouched, and there will be no interference with Charing Cross Hospital, which will face the north-eastern side of the new circus.

On the south side, the extended proposals are of great interest. There is no intention, so far as I can gather from the plans, to interfere with the original proposals with regard to the new station. It will occupy, roughly, the triangular site generally known as the "Lion Brewery" site, the base running parallel to the river, with a frontage of about 500 feet, and extending from the Surrey end of the new road bridge to the Surrey end of Waterloo Bridge, and the apex being at a point approximately opposite St. John's Church in Waterloo Road. One side of the new station will stretch along the west side of Waterloo Road, facing Cornwall House. The other will abut on a new viaduct and roadway which will run from the end of the new bridge, cut across York Road, skirt Waterloo Station, cross Waterloo Road a little way south of the existing railway bridge, and finally open out into a large new traffic circus at the Waterloo Road end of the New Cut.

This new roadway will sweep away the whole of Sandell Street and the mass of buildings behind the "Union Jack Club." It will probably mean the disappearance of that well-known institution. The southern end of Cornwall Road will be absorbed in the new thoroughfare, and the removal of the "Old Vic" to another site is a necessary part of the scheme. The proposed demolition of the old theatre, which has stood for over a century on its present site and possesses a tradition almost unique, has called forth spirited representations from Miss Baylis and Sir Johnston Forbes-Robertson, and it is satisfactory to know that a site in the new circus has been set apart for a new "Old Vic."

The scheme in its final form is the work of Sir Edwin Lutyens, and the engineers of the London County Council and Ministry of Transport. An agreement has been reached between the London County Council, the promoters of this scheme, and the Southern Railway Company. A Bill embodying the whole scheme will, however, have to pass through Parliament before the work can be commenced. The Bill will probably be presented to Parliament in November.

Various estimates have been made of the period which will elapse before the new bridge and station will be completed. The latest one, which may seem somewhat optimistic, made at a recent meeting of the L.C.C., is six years, and this notwithstanding that two years will be occupied in engineering preliminaries and assemblage of material.

The work will fall into four main divisions:—

(1) The new station site on the south side of the river will be cleared by the L.C.C. and handed over to the Southern Railway Company.

(2) The new station will be built, on completion of which the Company will hand over to the L.C.C. the ground covered by the old station.

(3) As soon as the first train is run into the new station, the work of demolishing the property on both sides of the river to make way for the approaches to the new bridge will be begun, and, finally,

(4) The new road bridge will be thrown across the Thames.

C. W. M.

THE RE-BIRTH OF THE TELEGRAPH.

BY F. J. LANE (CONTRACT OFFICER).

[*Supplementary Article No. II on The Telegraph Service. The Editing Committee accepts no responsibility for the views expressed in this series of articles.*]

RECENTLY a series of interesting articles from various pens have been appearing in the *Journal* on "How to Improve the Telegraph Service." I do not propose to enter the arena on this subject. I have not been invited, for one thing, and the views of a telephone Contract Officer on the telegraph service are not likely to be very valuable. This is merely what H. G. Wells might call a "fantasia of possibility": I am enthusiastic enough to call it a fantasia on probability of how the telegraph may be reborn.

It will be noticed that none of the contributors who would improve the telegraph service suggests that it can be placed on a commercially paying basis without sacrificing any of its efficiency as a cheap public service. There was, perhaps, a chance of this before the telephone entered the field, but that day has passed for the telegraph as we know it at present. In America, it is true, the telegraph still pays, but this is due to conditions (chiefly geographical ones) peculiar to vast countries. The immensity of distances slows down the postal service but has little such effect on the telegraph. We are frequently told, of course, that the American system is more efficiently managed; but we know that if all this efficiency (real or imaginary) were brought over here the telegraph still would not pay.

Yet, somehow, we do not see the telegraph going altogether. We feel that there must always be a place for it where the telephone fails to qualify.

It is noteworthy that the telephone has not seriously affected the amount of matter conveyed through the post. The post holds the field for fairly rapid conveyance of written messages at a cheap—one might say more or less nominal—flat rate. The telephone obviously fails here altogether; but I am going to suggest that the time may come when the telegraph will evade its telephone enemy and take much that at present finds its way into the mail bag.

Mr. Lowe, in last month's *Journal*, gives us a forecast of the development of photo-telegraphy which, he says, will soon be an accomplished fact. He foresees that photo-telegrams will have to be charged by space measurement instead of the number of words

—a change which may lead to the invention of commercial codes consisting of pictorial symbols to replace the present ten-letter words. This is a most interesting speculation, but I venture to think that human material progress may render these suggested jig-saw puzzles stillborn.

With systems at present in use the transmission of any "subject" by photo-telegraphy takes an appreciable time; but based on similar principles, are being developed devices (already partially successful, we are told) having television for their object. Now an essential feature of such machines, if successful, is that the "scanning" of the "subject" must take place fast enough to complete pictures at the rate of 16 per second. Sir Oliver Lodge has suggested that the solution of this somewhat large problem will be found in the "scanning" of the subject by means of rays or electron emissions free of the limitations of mechanical devices and therefore capable of performing the operation in any desired time.

Let us modestly suppose that transmissions of photo-grams by modified television apparatus can take place at the rate of 30 per second, surely it would be ridiculous to charge the sender so much per square inch, and premises would hardly permit a charge of so much per acre! All that would be necessary would be to supply the sender with special sizes of forms and the machine would swallow reams of them far faster than a machine could cancel the stamps if the same correspondence were posted in envelopes! The messages would be accepted at a flat rate with similar broad limits at present applying to postal matter. The transmissions would be conveyed by high-frequency carrier circuits over telephone circuits—a sort of revenge for the telegraph.

We shall, perhaps, regret the wasted energy of inventors of printing telegraphs. But things like this must be in a progressive world—the "printer" killed the expert operator just as the invention of the "free-wheel" robbed us of those spectacular tournaments of messengers riding their bicycles backwards.

THE NEW "METROPOLITAN" AND "NATIONAL" STROWGER AUTOMATIC TELEPHONE EXCHANGES.

SITUATED in Wood Street, Cheapside, London, is a fine new multi-storey building which will ultimately accommodate automatic equipment serving no less than 30,000 telephone subscribers in that congested city area. The building has been designed to house "Metropolitan," "National" and "Empire" exchanges, each of 10,000 lines capacity, but at present equipment for the two first-named only is *in situ*. These were opened on Aug. 31 and Sept. 7 respectively. The opening of these exchanges will bring the total of exchanges in the Strowger system up to 17, and the latest achievement is unique as marking the partial completion of what will be the largest automatic telephone exchange in London.

Like Holborn and Bishopsgate, the first two large automatic telephone exchanges to be installed in the Greater London area, these also are Strowger Director exchanges in which calls are routed automatically to any part of the area before the wanted number is finally selected at the exchange on which the line terminates

Metropolitan has 15 director racks, and National 16. Associated with these are 1,416 "A" digit switch finders, 332 "A" digit switches, and 496 directors.

Eighty-eight trunk boards are necessary to accommodate the selectors for the two exchanges, a summary of which is as follows:—

Type of Selector.	*Number.*	
	Metropolitan.	*National.*
1st Code	1,277	1,416
2nd „	1,257	1,277
3rd „	148	158
1st Numerical	1,868	1,903
2nd „	1,606	1,668
3rd „	55	180

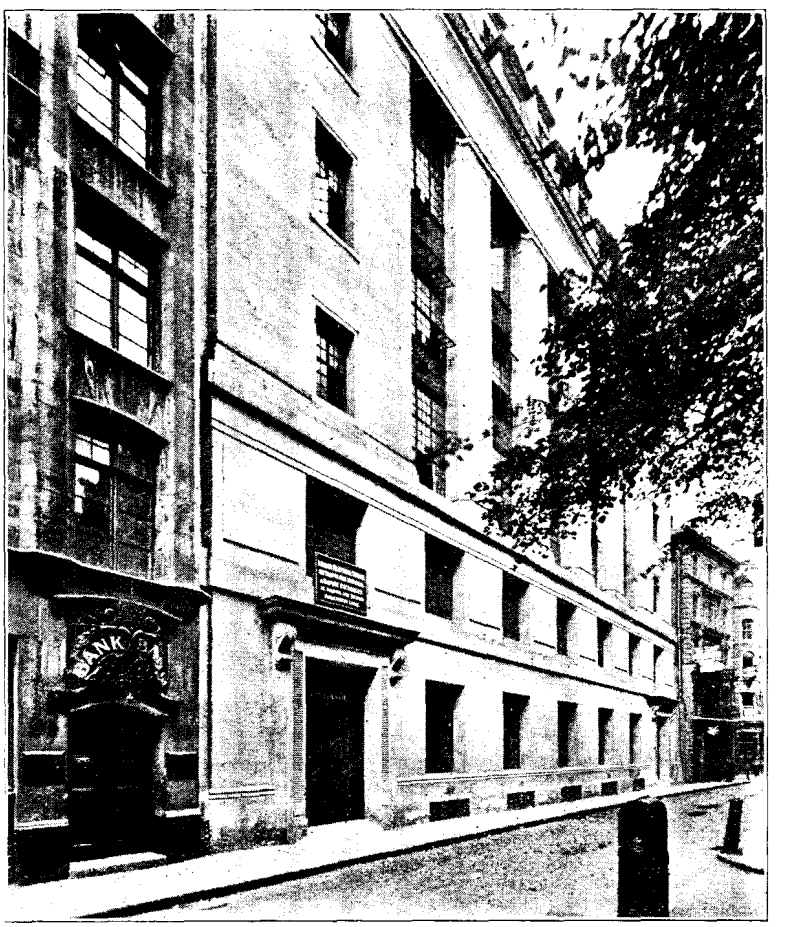
In addition to the above, Metropolitan Exchange is at present equipped with 1,827 and National with 1,572 final selectors.

In addition to the standard rotary lineswitch units, trunk boards and director racks, a quantity of miscellaneous equipment is also provided for the service of both exchanges, some of the more important items being as under:—

Type of Equipment.	*Number.*
C.C.I. Repeater and Coder Rotary Lineswitch Racks	18
Cordless "B" position Apparatus Racks ...	52
Semi "B" Sender Racks	4
Coder Boards	4
Miscellaneous Repeater Racks	2

Equipment associated with these racks includes 1,297 C.C.I. repeaters, 1,602 coder final rotary lineswitches, 112 coders and 104 cordless "B" senders.

Progress in the development of automatic telephone exchange equipment proceeds apace, and a novel feature has been introduced into Metropolitan and National Exchanges in the shape of single-sided racks for mounting certain items of the equipment. These racks can be erected much closer together than the ordinary length lineswitch units and trunk boards, thereby effecting material economies in floor space, making for more facile mounting and inspection of the equipment and enabling the latter to be assembled, wired and mounted in convenient self-contained units. Furthermore, the new design affords greater mechanical protection to the wiring and cabling and eliminates the ill effects of accumulation of dust.

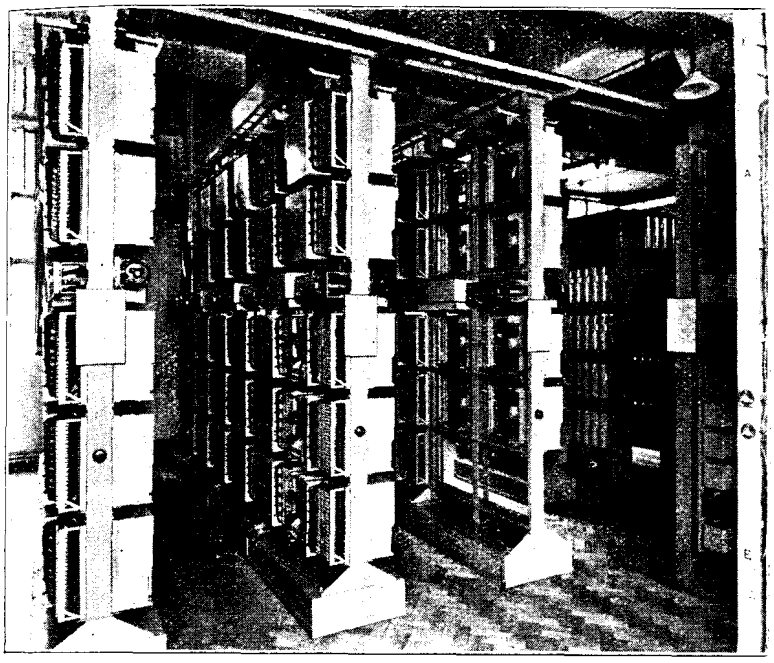


EXTERIOR OF METROPOLITAN AND NATIONAL EXCHANGES.

In addition to performing the normal duties of routing a call and selecting the wanted number in the final exchange the Strowger selectors carry out quite a number of special duties, with the same meticulous accuracy as the mere switching through of one automatic subscriber to another, without the intervention of an operator. Thus, the trunk offering final selector will, in the event of a trunk call, single out the wanted number, whether engaged or free, and, if the former condition obtain, connect with the line and enable the trunk operator to challenge and offer the more urgent trunk call in the usual way. Again, what are known as "barred trunks" are similarly taken care of by another type of Strowger selector. This is to meet the case of P.A.B.X. lines entering the exchange from, say, a hotel or other premises where access to trunks is necessarily differentiated as between management and guests. Under this sytem a guest can dial locally from his room but can only originate a trunk call through the medium of the hotel operator, who, of course, records the call for the purpose of collecting the fee from the guest.

Then there are the P.B.X. final selectors associated with P.B.X.'s having a number of exchange lines but only one directory entry. All callers dial the one number, but the discriminating selector rapidly searches the entire available group and connects with the first disengaged junction located.

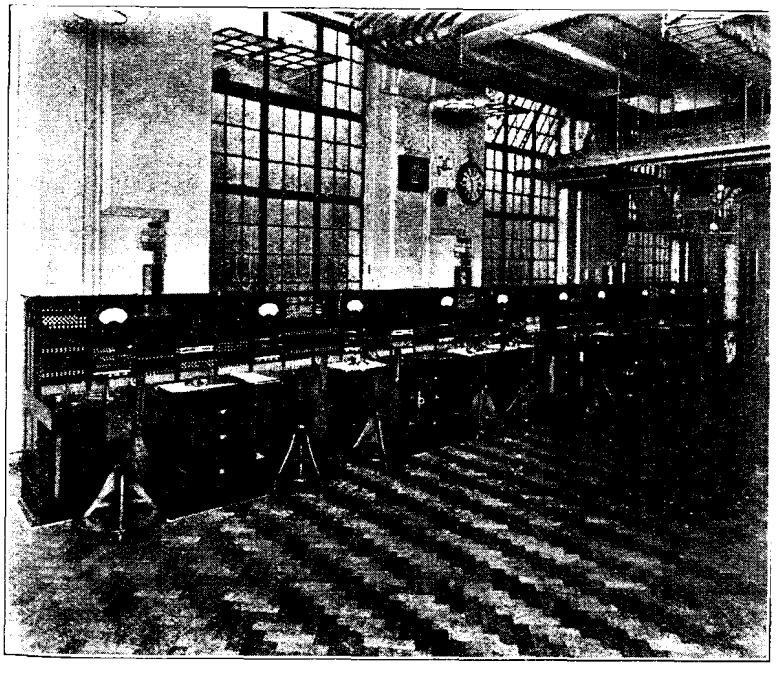
A call put through by Strowger automatic telephone exchange equipment cannot be metered until the called party responds by lifting his receiver, thereby maturing the call, registration being entirely automatic. In the event of a "wrong number" being dialled, and the distant subscriber replying the call will, of course, be registered against the caller, a just tax on carelessness



DIRECTOR RACKS, METROPOLITAN EXCHANGE.

in manipulating what is, after all, an extremely simple and efficient device, the Strowger calling dial.

A regular feature of all large Strowger automatic telephone exchanges to-day is the routiner equipment which, regularly and entirely automatically, applies a drastic series of routine tests to each and every section of the



TEST DESK, METROPOLITAN AND NATIONAL EXCHANGES.

equipment, thereby anticipating any abnormal condition and enabling it to be rectified before trouble actually occurs. So efficient is this routiner equipment in service that it is very seldom a subscriber on an automatic exchange experiences trouble on his line, inasmuch as it has been detected and remedied before it had time to prejudicially affect the service.

On the 6th and uppermost floor of the new building are accommodated the 84 special "A" and 42 semi-"B" key-sending positions for dealing with auto-manual traffic and vice versa, during the transition period, which is calculated to occupy from 15 to 20 years.

The system in vogue at Metropolitan and National Exchanges is precisely the same as at other Strowger automatic exchanges in the Greater London telephone area. Subscribers dial seven successive digits, the first three of which represent the initial three letters of the name of the wanted exchange, *e.g.*, CEN for Central, whilst the remaining four—known as the numerical digits, represent the number of the wanted subscriber whose line terminates on that exchange. The impulses set up by dialling the first three letters operate the director and are duly converted into the code representative of the exchange selected. Meanwhile the numerical impulses are stored, and, as soon as the routing process is complete pass out over the extended circuit to complete their function of selecting the required subscriber in the usual way.

The whole of the automatic equipment for Metropolitan and National Exchanges has been manufactured and installed to the order of the British Post Office by Automatic Telephone Manufacturing Company, Ltd., Strowger Works, Liverpool.

PROGRESS OF THE TELEPHONE SYSTEM.

THE total number of telephone stations in the Post Office system at July 31, 1929, was 1,794,424, representing an increase of 7,559 on the total at the end of the previous month.

The growth for the month of July is summarised below :—

Telephone Stations	*London.*	*Provinces.*
Total at July 31	641,660	1,152,764
Net increase for month	2,776	4,783
Residence Rate Subscribers—		
Total	154,943	243,647
Net increase	835	1,362
Call Office Stations (including Kiosks)—		
Total	5,671	22,606
Net increase	24	733
Kiosks—		
Total	1,383	5,468
Net increase	30	102
Rural Party Line Stations—		
Total	—	10,490
Net increase	—	—
Rural Railway Stations connected with Exchange Systems—		
Total	17	1,156
Net increase	—	10

The total number of inland trunk calls dealt with during May (the latest statistics available) was 10,175,282, the ten million mark having been reached for the first time. Compared with May last year, the calls show an increase of 827,685, or 8.9%.

Outgoing international calls in May numbered 42,768 and incoming international calls 45,667, representing increases of 19% and 11.7% respectively over May 1928.

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

LONDON—Metropolitan (automatic).

PROVINCES—Bramhall, Bridlington, Parkstone (automatic); Broadwindsor, Catterline, Cayton Bay, Corpach, Old Meldrum, Onich, Reepham, Rhynie, Slaidburn (all rural automatic).

and among the more important exchanges extended were :—

PROVINCES—Acocks Green, Dorking, Folkestone, Marple, Newmarket, Newquay, Oldbury, Smethwick, Wolverhampton, Yeovil.

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

Cross Hands—Carmarthen cable
Manchester—Preston (No. 2) cable
Preston—Blackpool (No. 2) cable

while 72 new overhead trunk circuits were completed, and 63 additional circuits were provided by means of spare wires in underground cables.

THE POST OFFICE ENGINEER.

(*A Retrospect.*)

BY T. B. JOHNSON, M.I.E.E.

AT the end of a long period of service one is permitted (and sometimes asked) to give counsel based on experience. How should a young man of to-day prepare himself for the Post Office Engineering Service, and what qualities should he try to develop? Good technical knowledge is, of course, indispensable, but it is now generally recognised that technical knowledge is only one of the important tools a good Engineer must possess, and I need do no more than press the importance of avoiding too narrow a training. Fundamental principles must be mastered in order that they may be applied to the best advantage in various cases.

The necessity for a good training in English must be emphasised. The engineer will be subordinate to administrators and others if he does not cultivate the ability to speak and write his own language correctly and clearly. He should also be sufficiently acquainted with accounting to be able to analyse and explain the financial results of various courses of action.

An engineering supervisor must know something of economics and industrial history, and of psychology—that is, of the minds of other men. No man is a true leader whose main impulse is selfishness.

Of the utmost importance is the "balancing mind." We have to realise that no proposal combines all the advantages and none of the disadvantages, and that we have to weigh one course against another and see where the balance of advantage lies. In this way, too, we can learn to what extent previous cases can be adapted for present use, instead of following them slavishly. We must also get a balance between our work and our recreation, our interests and those of other people. Some interest outside our work must be cultivated. The administrative mind is closely allied to this. It means the power to grasp essentials, and the exercise of clear judgment on main issues. Detail is, of course, necessary for working out schemes, but clear-cut issue is the aim and attribute of sound administration.

A good maxim is "Be pessimistic in preparation but optimistic in execution." When a work is being prepared every factor should be weighed and all unfavourable circumstances considered and prepared for; but when the work has been started the time for considering alternative courses has passed, and the job must be carried out resolutely.

Experience shows more and more the need for adaptability and resource. One good test of a man is how he gets out of a difficulty. We all get into trouble at different times, but whereas some men can use initiative and resource in getting out of a difficulty, other men gaze helplessly on and wait for other people to get them out.

A supervisor must be able to inspire in his subordinates confidence in his judgment and integrity, and in his determination to give to each of his subordinates a square deal. He must also train and encourage them to have confidence in themselves. (Self-reliance is not cocksureness.) On the example of a supervisor depends the morale of the staff under his control, and upon their confidence in his straightforwardness and integrity, as well as in his judgment and ability, depends the efficiency of the District or Section or other unit.

It is of great importance that a man should get the right outlook for his job. If he looks upon it as an unpleasant necessity by which he can make a certain amount of money per week or per month, he cannot be expected to make a success of it. We must look upon our work as a vocation, and have ideals in connexion with it. As Walter Pater says:—

"We need some imaginative stimulus, some not impossible ideal, which may shape vague hope, and transform it into effective desire, to carry us year by year, without disgust, through the routine work which is so large a part of life."

We must rid ourselves of the fallacy that work is an evil and leisure an unmixed good. The working portion of an average day holds many pleasant recollections, while the leisure portion has its share of disappointments and annoyances. We should try to make the working half as pleasant as possible because of the big slice of life it represents. If we give our minds and energies to our work grudgingly and reluctantly, believing it is something unpleasant to be got through somehow, it will give no satisfaction. If we bring to it the keenness we think necessary for a favourite hobby we find all sorts of interests, and we frequently experience the pleasant feeling of having done something really well. An electrical engineer can find interest, stimulus, and even adventure in his work if he gives his mind to it.

Another important factor (of which a good deal has been heard lately in connexion with appraisement schedules) is tact. What is tact? One definition is "that admirable quality which we ourselves possess, and which the other fellow lacks," but we need not accept so cynical a definition as this! A better one is "Nice perception, especially in seeing exactly what to do and say in given circumstances," but the definition I prefer is that of "sympathetic insight." In order to be tactful a man has to read the other man's mind, and interpret this knowledge with sympathetic consideration. It has been said that every man suffers from "liver," if not his own, then another's. We ought to see that our own does not cause unhappiness to those among whom we live and work.

When all has been said regarding ability, capacity, knowledge, and experience, there is still another factor which is sometimes called "luck." Lord Derby, for instance, said that to win the Derby an owner needed the best horse, the best jockey, and the best luck. I do not like this term "luck," and would sooner say "opportunity." One can readily recall cases in which some people seem to have had opportunities for getting on which did not present themselves to other people equally well fitted. Even "opportunity" does not seem to cover the whole ground, and the term "circumstances" is probably better still. Abraham Lincoln said "I can control men but not circumstances," and cases have occurred in which some men appear to have had favourable circumstances ready to hand, and opportunities waiting for them; while for other people, who were as well or even better fitted, the circumstances seem to have been adverse, and in spite of what they have tried to do, promotion has not come with the same readiness. There must, however, be the capacity to take advantage of opportunities when they occur.

Some counsel given over 2,500 years ago may well be considered by supervisors and other people in authority to-day: "What is required of thee is to do justly, and to love mercy, and to walk humbly with God." To do justly, that is, justly towards the Department whose salt we eat, and also to the staff with whom we work. To be loyal both to the Department and those under our control. Mercy does not mean weakness or laxity of discipline. Some men think they are merciful when they are simply showing they have not the strength to be firm in an unpleasant position, and they can make a decision in advance involving some amount of hardship to other people, which, when the time comes, they have not the courage to carry out. To walk humbly—that is not to have a high opinion of one's self; but it does not mean we are not to have a high opinion of our job. A high opinion of one's work makes one inclined to be humble, while a high opinion of one's self makes one swelled-headed and conceited.

In the recent report of the Committee dealing with the conduct of Civil Servants it was laid down that "The public expects from Civil Servants a standard of integrity and conduct not only inflexible but fastidious, and has not been disappointed in the past. We are

confident that we are expressing the view of the Service when we say that the public have a right to expect that standard, and that it is the duty of the Service to see that the expectation is fulfilled." This principle has been handed down to us as a tradition, and it behoves every one of us to see that in his own sphere, however small or large it may be, that tradition is faithfully followed, and handed on to those who succeed him.

I am glad to have been a Post Office Electrical Engineer. I have always been a firm believer in the Post Office Engineering Department as a career, and believe in it as strongly now as ever. It gives plenty of hard work, heavy responsibility, not so much pay as other people get: but in addition to some valuable material advantages, such as liberal annual leave, pension, &c., it also gives work with a great deal of interest and variety, opportunities for service to the community, and the consciousness that one is, in some degree, increasing the comfort and helping forward the progress of mankind.

THE JUBILEE OF THE TELEPHONE EXCHANGE SYSTEM.

WE may take it as being fairly certain that this is the jubilee year of the exchange telephone system in Liverpool, and most probably in the United Kingdom.

It is somewhat extraordinary that a system of exchange telephony which was destined to have such an effect on the commercial and domestic life of the world should apparently have received such scant notice at the time, as there is very little reliable information as to when the first telephone exchange was actually opened in this country. There does not appear to have been any flourish of trumpets or waving of flags, banquets or speeches to herald what was to become one of the greatest utility services of the century.

The first telephone exchanges were purely local and provided only for connecting one subscriber to another on the same exchange. Before long, however, lines connecting exchanges in various adjacent towns came into being and gradually spread farther afield to distant towns in the United Kingdom, and eventually to the Continent, and recently, by means of wireless, to America.

The number of calls passing from subscriber to subscriber in this country alone in the course of a year amount to something like one thousand six hundred millions. The first through switching apparatus was of a very crude nature, the calling apparatus being on one board and the connecting cords on another, requiring two or more operators to handle one local call.

The lines were single, with an earth return, and, of course, entirely overhead. Then followed the double or return wire system and later underground cables. The single switchboard was superseded by the multiple board by which one operator could connect a subscriber to any one other subscriber on the same exchange without moving from her position. Central battery working followed magneto, and automatic is now replacing all other systems, slowly, perhaps, but none the less surely.

Wires are still generally a necessity, but wireless has already been brought into place for transatlantic speaking, and who can visialise what will happen in the next 50 years if the same rate of progress is maintained.

The most remarkable fact, perhaps, is that throughout, the telephone receiver, which was the invention that gave us the telephone system, has remained practically the same in its construction and varied little in its form, the only variation being the substitution of the double pole for the single pole magnet under the diaphragm, a wonderful testimony to the thoroughness of Graham Bell's invention.

The telephone is no longer a toy, it is no longer a luxury, it is a necessity.

W. E. GAUNTLETT.

SUMMARY OF EVIDENCE AS TO THE FIRST TELEPHONE EXCHANGE IN EUROPE.

THE records of the electrical press for the latter half of 1879 have been investigated, and while they go far to confirm the claim of 36 Coleman Street to be the first exchange, they leave room for an element of doubt. The evidence is somewhat contradictory and requires weighing with judicial care. For example, the *Electrician* reprints letters addressed to the *Times* in August 1879 by Mr. G. H. Chubb, and the replies of the Telephone Companies. Mr. G. H. Chubb (now Lord Hayter) asks, on Aug. 19, "how much longer it will be before this most useful arrangement is established in London." On Aug. 20 the Edison Company reply to the effect that they are now erecting an exchange, and the Telephone Company Limited say that progress is being made but they are experiencing difficulty in obtaining instruments. Nevertheless on the 21st Mr. Chubb writes again saying that he is "pleased to find that one company has actually got it at work. By the courtesy of Captain Horne and Mr. Ormiston, of the Telephony Company, Limited, I have to-day seen the whole of their arrangements and can testify to the perfect ease and simplicity in speaking through the central office to anyone who has a telephone in communication." It would therefore seem that the Telephone Company had a small number of subscribers working at that date, but was unable to develop further at the moment for lack of satisfactory instruments. Lord Hayter, whose firm is given in Mr. Baldwin's list (quoted in the *Journal* last month) of those who were "amongst the first subscribers" apparently lost no time in becoming one, for he recently stated to the *Daily Express* that Chubb & Sons were "No. 9."

We now turn to the *Telegraphic Journal*, the forerunner of the *Electrical Review*. This was a fortnightly paper, and it is of course impossible to decide how many days before publication small items of news concerning the telephone were written. On Sept. 1 they say "the Telephone Company are *about to introduce* Bell's telephone into London on the exchange system": and on Sept. 15 in an editorial: "The Bell Telephone Company have turned their Coleman Street office into a central exchange for the city. Other stations are likely to open soon in the Metropolis, and other towns, notably Manchester, are arranging to have exchanges." Further on, the same article adds, "and *at last* a telephone on the Edisonian model has been opened at No. 6 Lombard Street and a number of subscribers gained." We know from the record of the *Times* (*vide* last month's *Journal*) that the Edison Company's exchange was opened with 10 subscribers on the 6th: but apart from the testimony of Mr. Chubb's letter that the Telephone Company, Limited, had "actually got it at work," the wording of the editorial seems to confirm the view that the Edison Company's exchange was the later of the two. The opinion may be hazarded that whatever sort of exchange the Telephone Company had working on Aug. 21 (whether experimental, confined to officials and directors, or what not), some time at the beginning of September they extended the service to the general public. At any rate, when Messrs. Graves and Preece inspected 36 Coleman Street on behalf of the Post Office on Nov. 7, they reported that the Telephone Company had 52 or 53 subscribers, and Mr. Preece added that the Edison Company had (even at that date) only 10 wires connected with their central station, "and we cannot find that they have any *bona fide* subscribers." (These interesting reports were reprinted in the *Telegraph and Telephone Journal* for July 1916.)

The *Telegraphic Journal* of Oct. 15 reports that the Bell Company (i.e. the Telephone Company, Limited), had 50 subscribers in London, 80 in Manchester, and 40 in Liverpool, and in their Dec. 1 issue they credit the Telephone Company with 150 subscribers and 3 exchanges in London. (A circular dated Dec. 24 gives the names of about 200 subscribers.)

Despite Mr. Preece's disparaging remarks about the Edison Company, the fact remains that they had 2 more exchanges working

in London before the end of 1879 (their principal exchange was transferred from Lombard Street to 11 Queen Victoria Street in the middle of September): and a list dated Feb. 20, 1880, contains the names of 180 subscribers (*vide* "The Telephone and Telegraph Exchange," by Mr. J. E. Kingsbury).

The evidence at our disposal seems to show that the Telephone Company had an exchange of some sort (whether public or not) working in the middle of August and that it was more or less opened or extended to the public at the beginning of September; that the Edison Company had 10 lines working at Lombard Street on Sept. 6 whose possessors, however, Mr. Preece describes as "not *bona fide* subscribers"; and that the first-named company had 200 subscribers by Christmas and the second 170 by the following February. They were amalgamated in the summer of 1880 as the United Telephone Company.

The Faulkner Street Exchange, Manchester, once claimed by Mr. Lorimer as the pioneer exchange in England, is shown by the *Manchester City News* of Sept. 13, 1879 (and also by the *Electrician* quoted above) as about to be opened in the middle of September.

The position of Glasgow is more obscure. Mr. Graham claimed to have a medical and legal exchange working in March 1879. The late Mr. A. R. Bennett (who joined Mr. Graham in January, 1881) disputed these claims and suggested that the date was a mistake for March 1880. Finally he produced evidence from the *Electrician* of Dec. 20, 1879, as follows:—"Glasgow has now three rival telephone exchange companies—Scottish Telephone Exchange Company, Edison Company, and the Telephone Company (Bell's). Besides these Mr. Graham, a telegraph engineer of the city, is prepared to establish private lines." In October, 1880, the same paper reports that "Graham's exchange is now working against the powerful rivalry of the United Company (Bell and Edison)." Mr. Bennett adds that the Scottish Telephone Exchange Company never got properly to work in Glasgow. Lastly, Mr. Adam Scott claims to have erected what he calls an exchange connecting the offices of Smith & Son, wool brokers, Glasgow, with two other offices with which they were interested, and to have made their office a kind of central office, so arranged that intercommunication could be obtained. He explains that he could get no further until he had obtained a licence from the Bell Company. He then proceeded, and states that "in this way Glasgow telephone exchanges were formed at least 5 months before the opening of the small London exchanges." These, however, seemed to have been what are known as "A to B" private lines with intercommunication. They are hardly exchanges in the ordinary sense of the word and were evidently not so regarded by the writer in the *Electrician*, who does not include them in the 3 exchange systems working in Glasgow in December, 1879.*

After considering all these data, it seems fairly conclusive that the Coleman Street exchange (which was certainly connecting up members of the public as subscribers early in September, 1879, and which by the beginning of November had 52 or 55 subscribers working, whilst the Edison Company, which started work on Sept. 6 with 10 subscribers, had still only 10 subscribers in November), has a good claim to be considered the first *bona fide* public telephone exchange in Europe. It looks as though the Edison Company with their 10 subscribers (whom Mr. Preece, for reasons which we do not now know, did consider *bona fide*) made a desperate effort to open first. They *may* have announced a public opening of their exchange on Sept. 6 before the Telephone Company, Limited made a public announcement of opening, but it cannot be considered that their service to 10 subscribers has any greater claim to be considered a "public service" than that rendered by the Telephone Company on Aug. 21, when Mr. Chubb saw the Coleman Street exchange working.

W. H. GUNSTON.

* Mr. Scott, in an interview with a *Star* reporter, also claims to have had a medical, legal, and commercial exchange working in Glasgow before London possessed one. It would seem either that Mr. Scott was associated with Graham or else that Glasgow positively teemed with "exchanges" in the year 1879.

THE FINE ARTS AND THE THREE SERVICES OF THE POST OFFICE.

THE necessity for some diversion from the strain of one's normal trade, occupation or profession is to-day more fully recognised than hitherto. At one time, and that not so very long ago, it was argued in certain quarters that if men and women had too much leisure they would get into mischief—therefore it was good for them to work long hours!

In any case, to-day, whatever lessening of the hours of labour may have accrued to Government Postal, Telegraph and Telephone officials of either sex and in any country, the time thus available for the independent use of the individual, has, with the exception of but a microscopical percentage, been healthfully and usefully employed in recreation of all kinds, be it physical or mental.

Our own British Post Office is an excellent example of this condition of affairs of which the service papers periodically give due evidence.

Similar happy tendencies are to be noted elsewhere, and the occasion of the 17th Art Exhibition of our colleagues of the French Posts, Telegraphs and Telephones, has given our readers the opportunity of a glimpse of the use of leisure on the artistic side the other side of the Manche.

Thanks to the kind permission of M. Reculon Dupont and to the skill of our Parisian colleague, M. Foulon, no less than to the courtesy of M. Petro Filliatre, editor of *La Interligilo de l'P.T.T.*, who has loaned the original photograph, we are able to reproduce an excellent picture of a corner of "The 17th *Salon* of our Paris colleagues."

There were no less than 500 entries and the exhibits were the work of all ranks, from Director to postman. The French colonies and the provincial offices were also contributors, a surprising fact and one which, some day, one may hope will be possible in connexion with British colonies. If Australian, Canadian and New Zealand scouts can reach our shores, there should not be any insurmountable difficulties in arranging for an exchange of a few pictures, &c.

Official recognition was given to the extent of the opening of the exhibition by the present Secretary of State for the P.T. and T., M. Germain Martin, who himself visited every part of the Salon, and became so interested that he purchased two beautiful aquarelles.

A critic informs me that "nothing but the warmest congratulations can be offered to the exhibitors for their clever paintings,

their rich colourings and their evident love for and striving towards the beautiful."

The exhibits comprised sculptures, pottery, miniatures, oils and aquarelles, pastels and designs, photos and stereophotos, &c. These presented every aspect of nature, landscape and rocks, trees, water, snow, flowers, animals, urban scenes, villages, harbours, field scenes and scenes of family life, still life and the nude.

The manner of treatment was equally diverse: classic, cubist and impressionist being fully represented.

Not only the purely artistic but the practical was in evidence. A postman exhibited a design for the semi-official calender, while another official of the same rank showed one for a pocket calendar.

The women were well to the fore with what are described by a writer in the Esperanto organ as "remarkable productions of painting on velvet, ornamental embroidery for clothing or for decoration of the home."

The works of musical composers and authors were not omitted, one is glad to note.

During the opening, music was provided by the P.T.T. Orchestra, which it is hoped gave the visitors at least one or two examples of their colleagues' originality in rhythmic beauty. Shall we say in Baudot cadence?

J. J. T.

TELEGRAPHIC MEMORABILIA.

TELEVISION has made yet another step forward since our last issue in that the Baird Television Development Company accepted a new offer from the B.B.C., and will begin broadcasting shortly, probably this month, from B.B.C. stations, outside the regular programme hours.

Nightly transmissions are also soon to be made from the Brussels station of the company. The time of these transmissions, it is understood, will be from 10.30 to 11.30. Both the British and Belgian transmissions will be made on experimental lines. Captain Hutchinson is very confident of success, according to a statement made to the radio correspondent of the *Daily Telegraph*.

A Television Society, similar to that established in this country about eighteen months ago, has been inaugurated in France, under the presidency of M. E. Belin, and is to be known as *L'Association Française de Télévision*, with headquarters at 5, Rue Malakoff, Paris.

Picture telegraphy has made a very definite move forward "down under." On the 9th of last month a telegraph picture service was opened between Sydney and Melbourne by means of the normal telegraph circuits. A picture telegraph service has also been established between Germany and Sweden.

Amalgamated Wireless (Australia), Ltd., has concluded a five years' contract for a still-picture service with the agents of the Fultograph system, according to *The Electrical Review*.

An amateur has come to the front in solving a problem in connexion with fixing Fultograph pictures which has puzzled scientists for some time past. The *Electrician* states that Dr. A. J. H. Iles, of Taunton, discovered that if the picture "be laid face downwards in a solution of alum and ordinary tap water, the picture then becomes as permanent as a fixed photographic plate or print." It's so simple!

Wireless on Trains and Omnibuses.—The French State Railways have decided to install broadcast wireless apparatus on certain trains, apparently following on experiments already mentioned in the *T. and T. Journal*. The *Morning Post* informs us that the service will commence from the present month between Havre and Paris. Headphones are to be provided.

A correspondent of the same London daily also reports that wireless is also to be provided very shortly on Berlin omnibuses which travel out into the country, as a counter-attraction to the steamers on the surrounding lakes of the German capital, which carry brass bands on board and are very popular!

Items in Brief.—The Irish Free State Radio Exhibition opens at the Mansion House, Dublin, on the 26th inst.

The annual Belgian Radio Exhibition will also take place in Brussels as usual.

The new Central Telegraph Office in Moscow was opened on Aug. 30. The building was designed and erected in two years by Soviet engineers at a cost of ten million roubles, says Reuter's agency.

The Western Union's new telegraph office in New York is also well on the way to completion. It is to be 370 ft. high, no less than 19 shades of brick are being used to make the building an artistic success. The estimated cost of erection is $14,000,000.

Japan is considering the advisability of transferring the telephone service to private management. *Per contra*, the Prime Minister of New Zealand says it is regrettable that the British Government should have relinquished its paramount interest in the Beam system!

Personal.—The heartiest congratulations of many old friends and colleagues will surely follow the promotion of Mr. H. Booker to Asst. Traffic Inspector, Class I, a promotion due solely to a dogged, studious character, never content with less than the best he can give.

Work.—Man cannot live by work alone. He must have his work crowned with comradeship.—*Warwick Deeping.*

J. J. T.

REVIEW.

"The Universe Around Us," by Sir James Jeans, F.R.S. Published by the Cambridge University Press. x + 352 pp. Price 12s. 6d. net.

Last year Sir James Jeans published a monumental and critical work on "Astronomy and Cosmogony." In this book, although the results of the various lines of research dealt with were summarised at the end of each chapter in such a manner that their general outline could be understood by the non-mathematical reader, yet, in view of the nature of the subject and its critical treatment, it was necessary for the greater portion of the volume to be devoted to very abstruse mathematical investigations. The subject is, however, of extraordinary interest, wonderful discoveries are being made almost daily, and it is good for the man in the street to have some idea, at any rate, of the developments which are taking place. The general reader will, therefore, welcome the volume now under review. The ground covered is, in general, that of the volume just referred to, but the method of treatment is essentially non-mathematical and popular.

After a brief historical introduction, Sir James deals, in six chapters, with the latest discoveries in the distribution of the heavenly bodies, the structure of the stars and of atoms—for it has been discovered that a knowledge of the structure of the atom can throw a flood of light on the structure and functioning of the stars, the enormous vistas of time comprised in the past and future history of the universe which have been opened to us by modern research, and the story of the birth, life and death of the stars.

The whole book is written in a most fascinating style, and should appeal to a wide circle of readers. It is illustrated by 22 plates showing beautifully reproduced astronomical photographs and by two plates showing photographs of the tracks of the alpha and beta particles resulting from the disruption of atoms, together with 23 well-reproduced diagrams in the text.

View of Strowger Automatic equipment at the Marunouchi Office, Tokyo, Japan. Note the excellent construction of the building which is fire-proof and earthquake-proof, with high ceilings and unusual provisions for light and ventilation.

Strowger Automatic Brings Modern Service to Tokyo.

FOLLOWULATING its first definite plans for the conversion of the city of Tokyo to Strowger Automatic operation immediately following the disastrous earthquake of 1923, the Japanese Government placed the first Strowger Automatic telephone exchange for Tokyo in operation in 1925. So rapid have been the strides made in the carrying out of this noteworthy project, that today there are in operation in Tokyo eleven Strowger Automatic offices rendering the highest type of service to more than 48,000 telephones, which comprise approximately 50% of the total number of stations in operation at the present time.

In addition, there are 7,000 lines of Strowger Automatic equipment now being installed in Tokyo, with further additions scheduled for the near future. So well pleased have the Japanese Government engineers been with the operation of this system, that Strowger Automatic telephone equipment has also been adopted for the cities of Kyoto and Nagoya, both of which are now well advanced in their programs of conversion to this highly satisfactory and economical method of operation.

The
Telegraph and Telephone Journal.

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

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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THE IMPERIAL CABLE AND WIRELESS SERVICES.

BY the time these lines appear in print, the Imperial Cables and the four Beam services will probably have been moved from the Central Telegraph Office, and will henceforth be under the sole control of Imperial & International Communications, Limited. For a time the Imperial Cables will be worked from Electra House, Moorgate, the headquarters of the Eastern Company, and the Beams from Radio House, Wilson Street, the main telegraph office of the Marconi Company. At a later date the services will meet again at the new headquarters of the Communications Company, which are now being built on the Embankment.

This *Journal*, by reason of its habitual modesty and discretion, has done much less than justice to the Beam services, which may be described without exaggeration as the most important development in the history of telegraphy during the present century. In the early days of Beam working the system was untried, and a large staff had to be specially trained to adapt their methods to the peculiarities of the new system. In these circumstances it was premature to boast. When the Beams had begun to establish themselves in the public confidence, the shadow of the Imperial Conference loomed on the horizon; and although the daily press was full of rumours of what the Conference were likely to decide and the shares of the Eastern & Marconi Companies 'soared' in consequence, it behoved us to keep silence until the report of the Conference was published. A summary of that report will be found in our issue of August, 1928; and at last, after long and complicated negotiations, the recommendations of the Conference have fully taken effect.

Let us examine briefly in retrospect the Post Office working of the Beam services. (Considerations of space alone compel us to crowd out the less spectacular but hardly less significant history of the Imperial Cables.) First of all from the taxpayers' point of view. The capital cost involved to the Exchequer in the four Beam services in this country was about £242,000. In the first complete year since their inception, the working-profit gained by the Post Office amounted to no less than £166,000; and the present profits are still higher. The financial exploitation of a new invention is strewn with pitfalls, as investors in many new companies have found to their cost; and the result in this case is a record of sound financial administration of which we may be reasonably proud.

Next from the point of view of the "consumer." Mainly as a result of the insistence of the British Post Office, it was decided at the outset to fix the main rates on the Australian, Indian, and South African services at two-thirds of the cable-rates then in force; and on the Canadian service, where it was not found possible to reduce the rates generally, a special service of "post letter telegrams" was introduced at the unprecedentedly low rate of half-a-crown for a message of twenty words to any part of Canada. Immediately before the Beam services to Australia, South Africa, and India were opened, the cable-rates to those countries were also reduced in order to meet the new competition. These solid gains have been secured to the British public, not only by reason of the invention of the Beams, but also to no small extent by virtue of the fact that the Beam services in this country were controlled by the Post Office.

As regards the confidence of the public, the traffic speaks for itself. If we contrast the first complete week of each service with a week in November last, chosen at random (the latest comparison that has been published), we find that on the Canadian Beam the traffic increased from 59,000 to 113,000 paid words; on the Australian Beam from 53,000 to 181,000; on the Indian Beam from 115,000 to 253,000; on the South African Beam from 88,000 to 200,000. The proportion of full-rate traffic to the whole is about 50%. It is clear that the business-community is not only making use of the Beam services but is ready to entrust them with its code-traffic, for which speed and accuracy is essential.

As regards the staff, the operating and engineering staff directly concerned in the working of the services have been given an opportunity of transferring to the Communications Company. Some have decided to avail themselves of this opportunity; the majority, as far as is known at present, have preferred to remain with the Post Office. But whether they go or stay, they will not lightly forget their experiences of the last two years. They worked at concert-pitch, in the full limelight of criticism; and they made a good show. The services established a sound tradition; and it is to be hoped that even though the services are lost, the tradition will remain. On the remainder of the telegraph service there is not the same incentive of novelty and competition; but on the

other hand a monopoly imposes an obligation, and the public have no less right to a first-rate service because they have no opportunities of transferring their custom elsewhere.

We trust, therefore, that the telegraph service will profit by the association of the Beams with the Post Office, not only by the annual rent of £250,000, but in other less material ways. There is some hope at any rate that the publicity organisation (commonly known as "canvassing"), to which the Imperial Cable and wireless services owed so much, will be retained; and the operators who were trained to give a service of high quality to Melbourne, Bombay, Cape Town, and Montreal will not be content with an inferior service to Manchester or Paris. We had built up high hopes of the Imperial services, and it is with real regret that we hand them over; but we wish every success to the Communications Company in this extension of their activities. We are specially sorry that the team of operators at the C.T.O. will have to be disbanded; both to those who leave us and to those who remain we extend our sincere congratulations on the past and our cordial wishes for the future.

HIC ET UBIQUE.

SEVERAL developments of the international telephone service took place in September. Indeed, the month that goes by without witnessing some extension is in the nature of an exception. On the 1st the transatlantic service was extended to Moose Jaw and Saskatoon, in Canada, and on the 18th to Turin and Genoa, in Italy. On Sept. 10 arrangements were put in force for keeping the transatlantic service open during the whole 24 hours of the day. Finally, the London-Warsaw service was extended to several of the chief towns in Poland, including Krakow and Posnan (better known in this country as Cracow and Posen).

Oct. 1 will see the extension of the "Personal Call" system to the Anglo-Continental telephone services (except in that with Switzerland). The additional charge ("personal charge") for a personal call to the Continent—which is the same whatever the duration of the call—is one-third of the unit (3-minute) charge, for a call to the Continental town concerned.

Whilst in London the City is in contention with the West End as to its superiority in the manipulation of the dial, Northerners are permitting themselves to crow over the South concerning the entirely successful introduction of automatic working into their cities. Says the *North-Eastern Daily Gazette*:—

"Perhaps the enervating atmosphere of the South will be held up as their excuse. Or it may be suggested that the industrial North should be expected to grasp mechanical details more quickly. No self-respecting Southerner will admit that the North stimulates a spirit of inquiry and self-reliance that makes its inhabitants delight in conquering difficulties, even simple ones like dial telephones. They will continue to deny our claim to superior native ability, even as they fuss helplessly about with almost fool-proof gadgets."

The *Yorkshire Post* adds:—

"Though it is only to be expected that it will take London longer to learn the manipulation of the dial than it took us sharp ones in the North. Already there it has produced a revolution in the attitude towards the telephone girl. Now they are losing her they realise how much they love her.

The problem of deciding which was the first exchange in this country still exercises the minds of newspaper contributors. The fact that Mr. Bernard Shaw once worked in the Edison Company's offices at Queen Victoria Street (he tells the story himself in the preface to "The Irrational Knot") seems to influence one of the lighter paragraphs in favour of the Edison exchange. And really, this seems to us as good a reason as any which have been brought forward.

Mr. W. W. Cook, well-known to many of our readers as the Assistant Engineer-in-Chief of the old National Telephone Company, is relinquishing his practice as consulting engineer. The firm of W. W. Cook & Partners dissolved partnership on Sept. 30, Mr. Cook retiring, and Mr. Pook joining the International Telephone and Telegraph Corporation.

J. F. STIRLING.

THE Telephone Service loses one of its outstanding personalities by the retirement of Mr. Stirling from the post of Assistant Controller, London Telephone Service. Stirling is well known to his telephone and telegraph friends, and his early career has already been described in the pages of the old *National Telephone Journal*. It may be of interest, however, to recall here some incidents in his long and varied experience. He joined the Telephone Service in 1883 and soon came to the forefront. After service at Dundee and Sheffield and as Local Manager at Hastings, he became District Manager at Ipswich in 1901. Subsequently he became District Manager at Chester and at Portsmouth. In 1907 he came to London to join Colonel Clay's staff in the Metropolitan District as Chief Accountant. In that capacity he did much to build up the London system. His extensive knowledge of the National Telephone Company's business was of great use in facilitating the co-ordination of the company's and the Post Office systems when the company's business was taken over by the Post Office in 1912.

Since July, 1913, Stirling has been Assistant Controller in charge of the Accounts Branch of the London Telephone Service, and he has devoted himself wholeheartedly to the task of improving the accounting methods to meet the rapid development of business, always with a keen eye to efficiency and economy.

Quick and sound in his judgment, and with long and varied experience in telephone matters, his views have always been highly valued by his colleagues, and he has achieved a reputation for thoroughness in connexion with whatever he took in hand.

He did not confine his service interests solely to the official work of the Department. At all times he showed keen interest in the various staff activities outside the office. In the earlier days he gave much time and thought to the formation of the telephone societies both in the Provinces and in London.

He has taken a leading part in connexion with the various schemes for encouraging the further education of the staff, and has served as Chairman of the Advisory Committee of the City Literary Evening Institute of the London County Council. As many of his colleagues know, he has, in addition, been prominently associated with the work of the Hospital Saturday Fund. He has also served on the Editorial Committee of this Journal, frequently contributing to its pages and seeking always new methods and matter which would increase the Journal's attractiveness to the staff.

By Stirling's retirement we lose an able and energetic colleague, to whom we in the London Telephone Service tender our good wishes for the future.

W. N.

[We are sorry not to be able to reproduce a photograph of Mr. Stirling, but his colleagues on the Committee have been unable on more than one occasion to obtain by persuasion or pressure the necessary print.—ED., *T. & T.J.*]

IS A TYPEWRITER-TELEGRAPH-TELEPHONE SERVICE IN SIGHT?

By J. J. T.

THE *Wall Street Journal*, of New York, in its issue of a few weeks back, declares that the Bell system has developed such a system as could be described in the above title, by means of which subscribers would be able "to handle their own messages, telephone or telegraph, in their own way."

As constant readers of our own telegraph and telephone literature in this country are well aware, the idea is by no means a new one, at least as modern progress is measured. It is actually a matter of years since Donald Murray adumbrated the future possibility of the telegraph-cum-typewriter exchange.

The Bell engineers appear to have given to the typewriter something very near to the flexibility of the telephone by their latest developments in connexion with their own telephone system.

It has been found possible to construct switchboards by means of which "telephone-typewriter" subscribers can be inter-connected with the same ease as is at present the case with the ordinary telephone.

The system has been so far developed that the company will apparently soon be in a position actually to install the necessary supplementary apparatus in any American city.

Already experimental services have been established in New York, Boston and Chicago, and a few smaller cities, by means of which the actual traffic of the day is being dealt with.

"When placing the call," says my informant, "the subscriber switches on the necessary power"—an operation of the simple order of raising a telephone receiver—"which lights the subscriber's line-lamp at the switchboard, whereupon the operator responds by connecting his special typewriter to the calling subscriber's line and typing the letters, say, NY OPR. The calling subscriber then types the station required and awaits "G" from the called subscriber, or suitable information if the connexion cannot be completed."

The experimental stage has not been finally reached, but he would be a rank pessimist who would deny the possibility of permanency to these developments in telephone-telegraphy.

So far as the U.S.A. is concerned, these same developments open up an interesting vista of competition with the purely telegraph interests of that country. It is true that, "so far the American Telephone and Telegraph Company has concentrated its efforts entirely on the telephone and has contented itself with leasing its facilities for telegraph purposes," but given continued success of the scheme one cannot believe that matters will remain quiescent for very long!

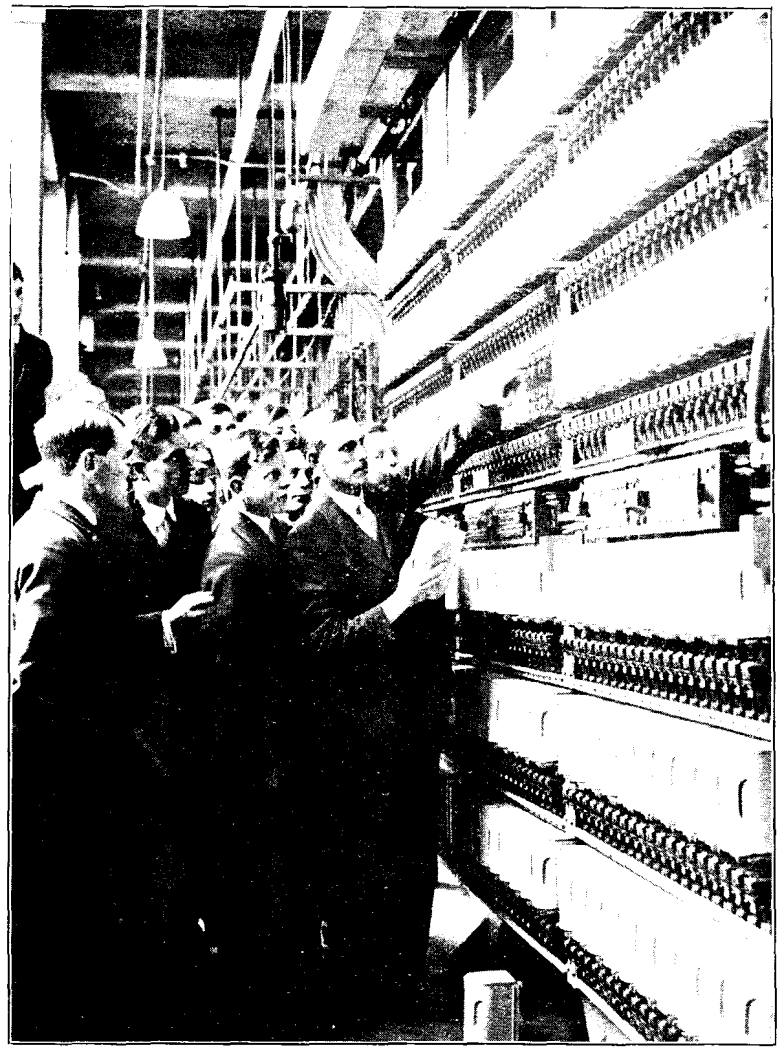
INTELLIGENT ANTICIPATION.

WELLINGTON COLLEGE SCIENCE CLUB VISIT TO HOLBORN AUTOMATIC EXCHANGE.

THE Telephone Development Association recently adopted the policy of encouraging the senior boys of the colleges and schools of England to see at first hand the difficulties, uses and inner workings of the telephone service, and marked the initiation of this policy by a luncheon given on July 2 at Gatti's Restaurant, Strand, London, W.C., to 22 members of the "Science Club" and to the Holborn Superintendent, the Press being represented. In keeping with the nature of the function the excellent menu included:—

Saumon froid, Sauce Téléphone,
Salade Wellington, and
Fraises à la Crême Automatic.

The Chairman, Mr. Powell-Jones (Secretary of the T.D.A.), made a short, concise speech in which he emphasised the utility of the knowledge which such a scheme would diffuse to those who were on the threshold of their business careers, and the beneficial effects which would follow both to them and to the businesses with which they would in due course be associated. Among other interesting points which he made was the necessity for a competent, intelligent and responsible employee to deal with incoming telephone calls. Only too frequently to-day a very junior and inexperienced employee answers a person wishing to be put into contact with a firm, with the result that the latter immediately encounters an atmosphere of inefficiency, and often impertinence, of which the effect is difficult to gauge. The impression conveyed to a client



or prospective client, by such treatment upon being brought into contact is certainly worse than receiving correspondence on cheap, badly printed, stationery. The good effect of the first impression and of courtesy before dealing with the responsible official of the firm cannot be estimated with exactness, but it does not need to be enlarged upon for its importance to be evident.

A further point which the Chairman brought out was that a high percentage of ineffective calls experienced by users of the telephone was due to the fault of many of the subscribers themselves, a large number of whom have insufficient circuits to deal with

the volume of their traffic, and as a consequence several calls have to be put through, owing to the lines being found engaged, instead of a single call establishing immediate connexion: and this in turn results in congestion both of junctions and of the originating circuits.

The party was split into small groups for the purposes of demonstration, and spent approximately two hours in the Exchange; and the nature of the expressions of thanks and pleasure which have been received leaves no doubt as to the interest awakened by the scheme.

The T.D.A. are to be congratulated upon their foresight, which cannot fail eventually to benefit both the public and the Service.

T. A. M.

CORRESPONDENCE.

HOW TO IMPROVE THE TELEGRAPH SERVICE.

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

SIR,—In the July issue of the *Telegraph and Telephone Journal* I read the interesting article of a "Provincial Chief Superintendent of Telegraphs," entitled "How to Improve the Telegraph Service." I am in full agreement, especially with the proposal in the second part of the article dealing with the improvement of the skill of the operators in touch-typing. Thinking it might be useful to say something about analogous circumstances in the Dutch Telegraph Service, and of some of the experiences at a Dutch telegraph school for keyboard operation, I hope my observations will be found of sufficient importance for publication. If that be so, I trust they will add weight to the suggestions made in the above-mentioned article.

Before 1916, in the Dutch Telegraph Service, keyboard operating did not extend beyond the use of typewriters. Nowadays the number of these machines has much increased. Moreover, punching machines and teletypes, all provided with keyboards, have been introduced in the telegraph offices.

As was the case in your country, more attention could have been paid to training in keyboard working. Learners were left to their own devices as regards fingering and the use of all 10 fingers was not insisted upon. As it seemed very difficult to work the keyboard without looking at it, touch-typing was not taught. Consequently, in general, learners could not reach a higher speed than 25 words per minute (125 characters, spaces excluded), and the standard speed could not be fixed higher. Some of them, however, realising the special merits of touch-typing, endeavoured to increase their speed, and reached in practice more than 40 w.p.m. Nevertheless, the teachers did not think of the possibility, by training and practice, of putting such speeds within the reach of the majority of the learners.

In October, 1927, when a special school was established in Amsterdam for the new radio staff, attention was concentrated upon touch-typing with the object of turning out highly skilled touch typists. This was of considerable importance for the radio service as all reception (by ear or by tape) is done by typewriters, whilst tape-punching is carried out on Creed keyboard perforators. As the staff had to work both machines alternately, it was inadvisable to maintain two different keyboards, and as the typewriter keyboard was the less difficult to alter, the typewriter manufacturers rebuilt their machines with the same keyboard layout as that of the Creed perforator.

Now some particulars about the method of training. The training starts with typewriter exercises. Hands must be kept parallel, with the backs of the hands as nearly as possible in a plane parallel to that of the keyboard, in order to allow the fingers to fall exactly vertically upon the keys. The horizontal movement of the hands has to be reduced to a minimum. At keyboards with 3 rows, such as the teletype, practically all horizontal movement of the hands can be suppressed. The lower arms, without vertical movement and with the least possible horizontal movement, have to be softly pressed against the side of the body, and the upper arms are kept in a vertical position. After about 30 hours the pupils have memorised the positions of all the keys and are able to work the keyboard very slowly typing from touch. At that point daily tests, accompanied by a metronome (60 beats per minute) are imposed. As soon as 3 out of 4 tests in succession can be passed successfully (one of these 3 must be made without any mistake) the metronome speed is increased to 90 beats per minute, and practice continues until 3 out of 4 tests in succession at that speed can be satisfactorily performed. Thereafter the speed of the metronome is increased to 120 beats and so on up to 180 beats per minute. This speed corresponds to 30 words per minute (150 characters excluding spaces). The metronome tests have corrected the tendency of pupils to practice at too high a speed, and moreover the tests indicate to them the combinations in which they fail to maintain speed.

After the metronome period free tests are applied. The qualifying standard for typewriter and Creed perforator is 40 words per minute.

Twice a week a test is applied which consists of 1,000 letters of miscellaneous text in 4 languages with market and exchange news and about 20 codewords altogether on one sheet, and as soon as 3 out of 6 successive tests can be passed at a speed of at least 40 w.p.m., without any mistake and with a maximum of 5 corrections, a certificate is given. In many cases the learners are given the opportunity of continuing their training before they leave the school, and they reach speeds up to 50 or as much as 53 w.p.m. An average total training time of about 300 hours has proved to be sufficient.

Once capable of operating the typewriters, the pupils very soon become efficient on teleprinter keyboards.

In my opinion, it is necessary that the training must not be discontinued before the pupils feel fully conscious of their power to type accurately at high speed. Otherwise it is found that hesitancy and difficulty arise, with a tendency to abandon the touch-typing method, followed by a considerable decrease of speed. In connexion with this point I realise to the full the difficulties of the present staff, in their efforts to improve their efficiency. Much perseverance will be necessary if they are to overcome the special difficulties they will meet.

In conclusion, perhaps I might mention the three-row typewriter keyboard. Such a machine, which can be much more easily operated, is preferable to a four-row machine in all cases where other keyboard apparatus having three rows is alternately used by the same staff. In Germany hundreds of such machines are employed bearing exactly the same keyboard as the teletypes.

J. VEEN
(Referendaris 2nd Class of the Dutch Posts and Telegraphs, Chief Teacher of the Radio School at Amsterdam).

Amsterdam, Aug. 16.

[We are glad to publish the above interesting letter from an officer of the Dutch Telegraphs. It illustrates clearly the advantages to be obtained from a well-arranged and systematic scheme of training in touch-typing. The use made of the metronome is particularly interesting. EDITOR, *T. & T. Journal.*]

CITY AND GUILDS OF LONDON INSTITUTE EXAMINATIONS.

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

SIR,—With the advent of the 1929-30 session of winter classes, students drawn mainly from the Post Office engineering staffs, the Post Office manipulative grades, Surveyors' and District Managers' staffs and, to a less extent, the staffs of manufacturers of telephone and telegraph plant, settle down to a set course of study.

They aim at the certificates offered by the City and Guilds of London Institute, which certificates are recognised by the Post Office Department in allocating technical allowances, and in considering the merits of candidates for the grades of Inspector of Engineering and Assistant Traffic Superintendents.

From time to time vacancies are also offered through the medium of the Post Office Circular, for positions in the Colonial Services, it being desirable that candidates for such positions should possess City and Guilds certificates.

The Institute has accepted the mandate and thus becomes sole adjudicator of the telephone and telegraph qualifications of the candidates for the above-mentioned certificates, and it is, therefore, incumbent upon it to leave no stone unturned to offer a fair and reasonable opportunity to all students making their effort.

It may perhaps be assumed that, in view of the importance of these certificates, responsible officers of the Post Office Department are intimately concerned in the drawing up of the curricula, the conduct of the examinations, and the method of marking the papers set in the examinations. This assumption is, of course, open to correction.

Concerning the type of candidate, the engineering staffs may be roughly grouped in four classes: Inspectors, Repeater Officers, skilled workmen—established and unestablished—and labourers. The manipulative grades are essentially telegraphists and wireless operators, whilst the Surveyors' and District Managers' staffs include Assistant Traffic Superintendents, Clerical and Contract Officers. The engineering staffs possess practical knowledge of the subject according to their work, which, in practice, is often of a specialised character, e.g., constructional and maintenance work, underground and open line, is usually performed by fixed staffs, precision testing is not carried out indiscriminately, and staffs allocated to power plant usually remain there. Telegraphists and wireless operators are limited to the apparatus handled by them, whilst Surveyors' and District Managers' staffs are at the greatest disadvantage as regards the engineering side of the subjects, although from an administrative standpoint that portion of the staff attached to the Traffic sections is perhaps the best equipped of all.

The type of student would, therefore, indicate that whilst some few of them possess practical knowledge of telephone and telegraph engineering to a limited degree, the majority are dependent upon a theoretical knowledge obtained from standard works, assisted by the lectures given at the various technical centres throughout the country.

In recent years the examining body has seen fit to amend the syllabuses *and considerable prominence is given to the fact that the curricula and scheme* of examinations now recommended offer educational advantages to Inspectors in the engineering department of the Post Office.

Now, despite the undoubted advantages which the grouped courses offer to the Inspectors, the examining body has accepted a mandate to cater

for the needs of the pre-described staffs, and the question now arises, is this being done ?

Again, the syllabuses for Telephony and Telegraphy have been revised in detail, mainly in the direction of giving increased prominence to line equipment and engineering of external plant, and whilst this may be all to the good in respect of Inspectors and workmen in the engineering branch, the position of students outside those grades is less happy.

At this stage it might be suggested that the subjects, particularly telephony, have a much wider scope than seems to be implied by the revisions of the syllabuses. Administrative telephony has made great strides in recent years, but one looks in vain for questions on this important branch of the subject—such questions would be appreciated by students drawn from the traffic sections—and the general inference suggests that the subjects begin and end with the study of telephone and telegraph engineering plant ; its construction and maintenance. Now the duties of an Inspector of Engineering and an Assistant Traffic Superintendent do not coincide at any particular phase, but, as the Post Office Department recognises the same certificates in considering the qualifications of candidates for both grades, it is reasonable to assume that the Department would expect a good general knowledge of the subjects as a whole rather than a detailed knowledge of the working of each separate piece of apparatus. Such knowledge can only be obtained by actual practice, and it is safe to say that no student could cover the whole of the syllabuses in this manner.

Nothing need be said as regards the conduct of the examinations, as it conforms to the rules of most examining bodies, but in connexion with the allocation of certificates, there is undoubted room for improvement.

In the first instance, it will hardly be disputed that a three hours paper on subjects having so wide a scope does not enable a student to do full justice to the paper, and the Principal of a Technical Centre must always remain the best judge of the effort of a student who has attended his classes. No profession would attempt to judge a candidate's ability solely on these lines.

Again, does the examining body expect candidates drawn from so many grades to have detailed knowledge of particular phases of construction and maintenance to so marked a degree that they can do justice to the type of questions set, when the time allowed for each question, including diagrams, averages 22½ minutes, or are they satisfied if a candidate can indicate a good general knowledge of the broad principles of the subject ?

Available evidence points to the former, and if this is so the examination resolves itself into a question of a student being lucky if the paper falls his way and thus offers little encouragement to a diligent student who has endeavoured to cover the whole syllabus and to obtain a sound all-round knowledge. Nor does it encourage the lecturers at the technical centres to have their most promising students fail whilst less capable and less diligent students obtain a snap pass.

Consider for a moment the paper set on Telephony, Intermediate Grade, 1929, in conjunction with the corresponding syllabus. Five of the twelve questions were devoted solely to automatic telephony, thus giving a student dealing with auto apparatus the opportunity of answering five-eighths of his paper, although such a student might have the haziest ideas of manual telephony. In addition, there is a separate examination dealing entirely with automatic telephony.

If the examinations held in respect of the A.M.I.E.E. were carried out in the same manner, it would be reasonable to suppose that the type of membership would materially alter and not necessarily for the better. The school examinations held at the technical centres are based on the work performed by students throughout the session and obviously the results are more in keeping with the student's general efforts. These circumstances should permit of a school report being taken into consideration in conjunction with the City and Guilds examinations.

Again, in order to reduce the possibility of error, the marking of a paper in most important examinations is not confined to one examiner. Is this the case in the City and Guilds examinations ?

In conclusion, it might be urged that the general indications are that the City and Guilds courses are drawn up mainly with a view to offering increased educational facilities to Inspectors of Engineering—a grade small in numbers—that the subjects are becoming increasingly difficult to engineering workmen, who are therefore discouraged from taking the classes, and that the students drawn from other staffs are not receiving proper consideration in view of the narrow ideas on the subjects taken by the examining body, who, it must be remembered, accepted a mandate by concurring in its certificates being used as a qualification for posts other than engineering posts.

A continuance of this attitude will result in a marked decrease in the number of candidates, which will be reflected in the technical centres taking less interest in the courses, or alternatively, pressing for a national certificate to replace that of the City and Guilds. The Post Office Department may also be pressed to consider new methods of testing the capabilities and qualifications of its staff if it desires to retain the technical allowances and the promotion of clerical and manipulative grades to technical posts. The telegraphists are fortunate in having the departmental technical examination as an alternative.

Consideration might also be given to the dates on which the examinations are held so that a student who has failed to obtain a certificate may continue the course and take both examinations the following year. At present the intermediate and final examinations are taken on the same date.

C. H. HAYCOCKS.

Liverpool : Telephone Traffic. Sept. 5.

C.T.O. NOTES.

Promotions.

Mr. H. Stewardson, Overseer to Assistant Superintendent

C.T.O. Library.

The library was reopened after stocktaking on Sept. 9. Upwards of 560 new books were placed in circulation, the selection containing a good proportion of the latest novels in addition to such works as "Undertones of War," &c. Officers who have left the C.T.O. are eligible for membership and the subscription is quite small.

Music.

The C.O.D.O.C. are giving a performance of "Veronique" on Oct. 9 and 10, at the Kings Hall, Covent Garden, commencing at 7.30 p.m. This delightful French Comic Opera should appeal to lovers of musical comedy.

Sport.

The Centel Sports Association held their Fifteenth Annual Swimming Gala at the Shoreditch Baths, Pitfield Street, on Sept. 13. There was a good company in attendance and this annual meeting is becoming a miniature re-union, judging from the number of old friends who came to enjoy the programme.

Briefly the results were as follow : —

100 yds.	Club Championship	Mr. H. Megenis (Cable Room).
33 yds.	Ladies' Club Handicap	Miss M. C. Thorne.
33 yds.	Veteran Handicap	Mr. G. Corp.
67 yds.	Club Handicap	Mr. C. Shugar.
133 yds.	Inter-Divisional Team Handicap (Ladies)	Phonogram Room.
133 yds.	Inter-Divisional Team Handicap (Men)...	"B" Division.

The Cable Room beat the Inland Galleries in the Water Polo Match by 3 goals to 2.

During the evening a display of swimming strokes and diving was given by Miss O. Tarr (Southern Counties Junior Champion, 1927-8) and members of the Amateur Diving Association displayed their talents with high and fancy diving. These two items were much appreciated.

LIVERPOOL TELEPHONE SERVICE NOTES.

On the evening of Sept. 20, the Traffic staff held a Hot Pot Supper at the St. George Restaurant, presided over by Mr. Staite, Traffic Superintendent. The occasion marked the promotion of Mr. Carroll to the post of Traffic Superintendent, Class II, at Preston.

Guests of the evening were Mr. Gauntlett, our District Manager, Mr. Parry, of Manchester, and Mr. Salmon, of Chester. We were very sorry that a prior engagement precluded the presence of Mr. Coombs, of Glasgow.

By reason of his Association work, Mr. Carroll is a prominent figure to Traffic people throughout the country, and all will be pleased to hear of his well-deserved promotion.

At the supper he was accorded a signal honour ; one, by the way, which accentuated the good fellowship that exists amongst the nationalities in the Service. Here we had an Irishman with a well-known love and admiration for the Principality, being piped to his seat to the tune of "Highland Laddie," the pipes being played by an Englishman : the latter being a Scotsman by adoption—in other words, by marriage. It was unique.

Mr. Parry, Mr. Salmon and others paid due tribute to the efforts of Mr. Carroll, on behalf of the Association, and Mr. Gauntlett made a presentation on behalf of the staff.

We have to congratulate Mr. G. Green, Assistant Traffic Superintendent, on his success in the City and Guilds examinations held last May. He was awarded second place in the Final Telephony (Automatic) Examination and the Award carried with it a silver medal and £2 10s.

The result is a fitting tribute to the very considerable knowledge of automatic telephony possessed by Mr. Green by reason of careful application to the subject. Both first and second places in this examination were awarded to students from the Liverpool Central Technical School, and it is a pity that, as far as is known at present, no lectures will be held at that centre in telephone transmission this session owing to the lack of the requisite number of students necessary to form a class.

Of the three students who maintained the transmission course there to the end of last session, two obtained first-class certificates and one a second-class certificate.

C. H.

GLASGOW TELEPHONE NOTES.

AN interesting little meeting took place in the Traffic Office on Aug. 29 to bid farewell to Mr. W. Palk, who after two and a half years' service with us as an Assistant Traffic Superintendent, has been transferred to Reading.

Mr. Palk was presented with a few small gifts by the Glasgow telephone staff. (The umbrella should be a lasting reminder of Glasgow!) After Mr. Lane and Mr. Coombs had expressed the wishes of the assembly, Mr. Palk replied with a few well chosen words. His quiet, unassuming manner had endeared him to all of us, and his departure leaves a gap which will not be easily filled. Even the elements took a tearful farewell of him However, Glasgow's loss is Reading's gain, and Mr. Palk is to be congratulated on obtaining a transfer which places him a day's march or, to be more strictly correct, a night's train journey—nearer home.

Once again, Bill, all the best of luck! If you should give us a look in at Glasgow any time, we shall be pleased to see you. You will probably find the office reorganised again, but Ben Lomond will still be in position!

Two sons of our sister branch, the telegraphs, have recently "come over." They are now busily engaged in assimilating the wonders and the mysteries of the Traffic Branch, its organisation and its staff. We offer a cordial welcome to Messrs. E. N. Payne, of the Glasgow office, and S. Hutton, of Dundee, and by the same token we take upon ourselves to express the hope that their settlement in the "Junior Service" will be to the mutual advantage of the Department and of themselves.

On Style.

"Courtesy and cheerfulness should be the tone of correspondence."—(N.T.C. Circular).

"A courteous, reasoned answer, narrowed as far as possible to the facts, rarely fails in its desired effect, while intangible generalities only lead to prolonged correspondence."—(P.O. Circular.)

"I can still read with pleasure a book on any subject provided the author has style, which in literature is only another word for personality. Given this condition I could read with pleasure, though no longer interested in the subject, an official report."—(E.B.)

"Those of us who have a definite job of work to do in a definite time have to say what we mean, and take the consequences, or we should never get through with it." . . . . "The type of English that we of the Civil Service are wont to use is almost invariably scrupulously accurate in grammar and syntax, and in this we can claim superiority over the commercial world. There is no danger of our being caught out in false concords or split infinitives; but there are worse things, in English prose, even than split infinitives, and something more is needed for the writing of good English than the avoidance of turns of phrase condemned by popular convention."—(Sir Ernest Gower.)

"Obscurity and affectation are the two greatest faults of style."—(Machiavelli.)

"There are men who, having nothing to say and nothing to write, are nevertheless so in love with oratory and with literature that they delight in repeating as much as they can understand of what others have said or written aforetime. The leisurely tricks which their want of conviction leaves them free to play with the diluted and misapprehended message supply them with a pleasant parlour game which they call style. A true original style is never achieved for its own sake. Effectiveness of assertion is the alpha and omega of style. He who has nothing to assert has no style and can have none; but he who has something to assert will go as far in power of style as its momentousness and his conviction will carry him. Disprove his assertion after it is made, yet its style remains. Darwin has no more destroyed the style of Job nor of Handel than Martin Luther destroyed the style of Giotto. Your man of letters thinks he can get Bunyan's or Shakespeare's style without Bunyan's conviction or Shakespeare's apprehension, especially if he takes care not to split his infinitives."—(G. B. S. to A. B. W.)

"The English-speaking world may be divided into—(1) those who neither know nor care what a split infinitive is; (2) those who do not know, but care very much; (3) those who know and condemn; (4) those who know and approve; and (5) those who know and distinguish. Those who neither know nor care are the vast majority, and are a happy folk, to be envied by most of the minority classes; 'to really understand' comes readier to their lips and pens than 'really to understand,' they see no reason why they should not say it (small blame to them, seeing that reasons are not their critics' strong point), and they do say it to the discomfort of some among us, but not to their own. The second class are those who would as soon be caught putting their knives in their mouths as splitting an infinitive and who have hazy notions of what constitutes that deplorable breach of etiquette. . . ."—(Fowler.)

"I wrote as I felt—sometimes in good spirits, sometimes in bad—always carelessly—for, God help me, I can do no better."—(Charles Lever).

LONDON TELEPHONE SERVICE NOTES.

Contract Branch Notes.

THE business done by the Contract Branch during the month of August resulted in a net gain of 3,319 stations as compared with 3,081 last year.

I have heard a rumour that a Contract Officer, experiencing some difficulty in explaining the working of a coin-box to a well-known titled lady, clinched the matter by saying "You put the penny in just like you used to put one in the gas-meter in the old days!!!"

Mr. B. Whitaker, of the Western Office, and Mr. C. Willoughby, of the North-West, joined the ranks of the Benedicts on Aug. 24. As a mark of esteem and a token of their good wishes the staff in the respective offices presented an oak dining table to Mr. Whitaker and a canteen of cutlery to Mr. Willoughby.

Our congratulations to them, and our best wishes for good luck and happiness to them and their wives.

The Aero Exhibition, which was held at Olympia from July 16 to 27, was certainly one of the most interesting of recent years. The Air Ministry exhibit showed models of flying craft in chronological order from the glider to the present-day airships. Aeroplanes which have made history were also on view and partly open for inspection. The contrast between the giant planes and the clever little moths was most striking.

There were 205 exhibitors and 129 exchange lines were provided for their use.

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Sports Notes.

L.T.S. Cricket.—A successful season was brought to a close with a match against the A.G.D. at Chiswick, on Aug. 29, which the A.G.D. won comfortably. The Traffic Section have won the L.T.S. Shield for the first time, and arrangements are being made to hold a gathering of all the Sports Sections in Cornwall House, on Wednesday, Oct. 16, 1929, for the presentation of prizes and trophies won during the year.

Considerable headway has been made in the various branches of sport during the past, and much of the progress is due to the activities of the London Telephone Service Sports Association.

L.T.S. Bowls.—By winning the championship of the "A" Section of the Civil Service Bowls League the L.T.S. have qualified to meet the Admiralty winners of the "B" division, in the final tie for the Bunbury cup. The match is to take place at Chiswick on Thursday, Sept. 26.

L.T.S. Football.—The football season opens with two friendly fixtures on Sept. 16 against the Secretary's Office, and Sept. 23 against the Engineer-in-Chief's Office. The League tournament commences on Sept. 28, and the following is a list of engagements:—

Sept. 28 *v.* War Office—Home.
Oct. 5 *v.* Taxes—Away.
" 12 *v.* Dollis Hill—Home.
" 19 *v.* High Commissioner for India—Away.
" 26 *v.* Ministry of Health—Home.

The team promises to be stronger than ever, and several young players have been secured who should help to speed up the team. Mr. Evans, of the Traffic Branch, is again the Secretary, and any players wishing to join the club should get in touch with him at once. Tel. No. Central 3600, Extension 442.

* * * *

London Telephonists' Society. Sessions 1929-1930.

An interesting programme has been arranged for the ensuing session, the following are the particulars:—

Oct. 4, 1929. Presidential Address. Mr. P. J. Mantle—"The Value of Tradition."

Nov. 1, 1929. Lecture. Mrs. Anne Corner—"Speaking and Voice Production."

Nov. 22, 1929. Whist Drive. Caxton House Restaurant.

December 6, 1929. Lecture. Mr. W. H. Gunston (Editor, *Telegraph and Telephone Journal*)—"The Telephonist and The Press."

Jan. 4, 1930. Annual Dance. Bishopsgate Institute.

Feb. 7, 1930. Four Papers—"My Service."
By A Telephone Operator (Miss Hobdell, Operating School).
By A Hospital Nurse (Miss Merrikin, Elizabeth Garrett Anderson Hospital).
By A Saleswoman (Miss Ellt, Messrs. Selfridge & Co.).
By A Lady Journalist (Miss Kathleen Courlander, The *Daily Express*).

Mar. 7, 1930. Competition Night. Reading of Prize Papers. Final Trial of Elocution Competition.

April 9 and 10, 1930. A Telephone Play. Written by Miss J. M. McMillan. Produced by Mr. E. A. Pounds.

RANDOM REMARKS TO HERB.

[For the views in the following unofficial contribution to the problem, "How to Improve the Telegraph Service," we accept, as heretofore, no responsibility. What Herb. would be disposed to reply to his lively correspondent we cannot conjecture. He might, for example, say "Thank Heaven, my dear Klast, we have only to propose and not dispose of these experimental remedies."

DEAR HERBERT,

Now that the shower has lasted for three weeks and has refreshed our droughty thoughts, it seems appropriate, even if we omit the kings and the good old cabbages, to talk of many things.

Very obligingly the Telegraph Service trips forward (it has been tripping backwards and forwards for a number of years now) to offer itself as a subject. Like the septuagenarian spinster floating into the beauty parlour, it has come to be improved. Well, the worst cloud appears to be public opinion, which is inclined to regard the telegraph system as fusty and obsolete. The remedy? Well, an effective one and one that applies to most branches of Post Office activity, would be to brighten the public rooms of Post Offices. It is not surprising that the atmosphere of many Post Offices has such a deleterious effect on both the staff and the public—you know what I mean, Herbert—that dark, super-official, dead letter sort of smelly atmosphere. How much better it would be if Post Offices had something like the appearance of the public rooms of Banks, with their atmosphere of efficiency, although their real efficiency is probably below Post Office standard. Almost all of our offices could do with better lighting and a little more air. The remaining few seem to have too much of the latter for present-day fashions. Coloured tiles, whites and blues, might be substituted for the grey or dark green of our smaller offices, although you know, Herbert, we should have to take care to avoid a public wash house effect. White, glass covered counters might also come into the little scheme of things.

Another useful change, Herbert, might be made in the method of staffing the public offices. I am afraid that the union (for which I have a great respect) would not be wholly in favour of this, although, as we are all out for the same end, God bless us, it might if talked to nicely. The counter staff should be picked specially for their appearance and then specially trained in counter selling work. "Voices with a smile" at the counter might accomplish a bigger change in public opinion than any other single step, but training under a competent salesman would be necessary. I trust, Herbert, that you will not think I am advocating a Folies Bergère chorus, a bevy of duchesses or a market of cheap-jacks; I merely suggest a picked staff, specially trained on modern selling lines. And, of course, the social side needs development; it is the only means of keeping alive, in a nationalised concern, the spirit of keenness and public service once the joy of craftsmanship has been allowed to waste.

I wonder whether you would care to send a "standard" telegram for 6*d.* or 9*d.*, Herbert? Whether you would care to send "Arrived safely, will write soon," or "Hearty congratulations and best wishes," or "Letter arrived. Will write early," or "Usual luck—send cash," which we could telegraph as A, B, C or D, and whether special booths at holiday railway stations would do much biz with the first example. I believe they do it in America, you know, but I am much too lazy to make sure. I agree with you *re* the press rate, Herbert. But if the Press is to be subsidised, why we can't take credit for the work at the ordinary rates in our accounts and show the subsidy on a separate account, I don't know.

You must be a little tired at hearing all this about telegraphs, so if you like we will hang on to a telephone wire instead for a few seconds, risking another shock thereby. Don't you think, Herbert, that our engineers would capture old Samuel Smith's prize for doing a job well? I mean they take such a pride in making a good job of a job and in being able to say "Yes, I built that and I am willing that the whole world should see it and judge me on that piece of work." So splendid, you know, Herbert, but so unfortunate from the economic point of view. I mean, for example, when we spend such a terrific sum on a small 15-line auto exchange, which can never be a paying proposition, at the expense of the town subscribers. Yes, I know that rural development is much more advanced in America, but the quality of the service isn't anything like the same on the rural lines, because they are provided so much more cheaply. But you know, Herbert, as the City and Guilds Institute award no certificates for telephone economies the engineers pay little attention to the commercial cost factor, and we daren't say anything against the engineers these days; but localised commercial accounts would be so interesting. Yes, I know, Herbert, it would be much better if the commercial and engineering staffs were under the same local chiefs; so much more co-operation and so much less jealousy, as well as a growth of the sense of proportion, you know; and it would be so much more efficient too—too efficient to be adopted for some time yet, I am afraid.

And have you thought what the psychological effect of giving credit for a hundred local calls free to new subscribers would be? Quite a big one, you know, Herbert, and as the new subscribers are not usually busy-hour callers, the cost wouldn't be anything like 8*s.* 4*d.* per new subscriber. And if we really want to develop, quite a good start could be made by allowing a 15 or 20% reduction on the rentals to Post Office employees, that is if, after office hours, they could still look a telephone in the face. And a small percentage commission to any Post Office employee raking in a new subscriber would, I think, produce good results, particularly in rural areas. As old Shake. might have said—we've gotter come out into the highways to seek for biz, Herb. Yes, Herbert, I am sure that the matter of raising the age of entry for boy messengers and girl probationers must have been raised before; you really musn't make such proposals, the advantages of which are so obvious.

And the Trunk Service? Yes, of course, we ought to have an urgent rate. You know, Herb., it may be worth thousands of pounds to business men at times to get a trunk call through within 5 minutes. The fixed time arrangements are only of use when it is known some time beforehand that such a call will be required. I think that the principal objections to an "urgent" service are the inconvenience, to the Department to make such special arrangements, and to subscribers who have booked calls over the same trunk route who would find the delays greater than they expected. But of course the "urgent" rate could be adjusted so that the percentage of such calls would be very small. The great thing is that the facility would be there if required. And we would be raking in the oof, you know, Herbert!

Frightfully Yours,
IKONA KLAST
(per L.M.S.).

LONDON ENGINEERING DISTRICT NOTES.

Fire at Sidcup Telephone Exchange.

THOSE officers who are more directly concerned with "Internal" work have of late followed with admiration the successful efforts of their "External colleagues" in maintaining the public service in face of disasters of great magnitude. During the past month, as a result of a fire at Sidcup Exchange, the internal staff found their opportunity to meet emergency with an equal determination to reduce to a minimum both the duration and extent of unavoidable inconvenience. And, in the opinion of competent critics, these objects were undoubtedly achieved.

The fire occurred on Saturday, Aug. 10, on premises adjoining the exchange and then spread to the roof of the latter. The ultimate result was to put the Sidcup Exchange entirely out of service. Indeed, the spectacle inside the exchange, arising from the three fold effect of flame, smoke and water was extremely melancholy, whilst outside, the presence of fire engines vividly emphasised the nature of the calamity.

The engineering staff immediately responsible and available were quickly on the spot, whilst others, with an intimate knowledge of local conditions, were recalled from annual leave. In passing, it should be added that the difficulty of mobilising the staff was increased by the fact that the fire occurred on a Saturday during August—the height of the holiday season.

After consultation with building experts, it was decided that a temporary exchange should be erected on the ground floor of the damaged building. An alternative scheme, however, was in hand should expert opinion decide, on grounds of safety, against this course. In the meantime, consideration had been given to the means of restoring at the earliest possible moment, vital public services such as police, hospitals, ambulance and doctors, and within a few hours these services had been connected via other exchanges in the vicinity. On the Sunday following the outbreak, a spare suite of suitable sections in the Edgware Manual Exchange was removed to Sidcup. The work of re-conditioning the board and connecting the subscribers was then put in hand; this involved a considerable increase in the capacity of the home sections to enable the restored service to be brought into use not only with maximum rapidity but also with due regard to operating efficiency during the period immediately following the restoration of the service.

By continuous and wisely directed effort the new suite was rapidly made available and the whole of the circuits were restored within 6 days. Moreover, so efficient was the work performed that it is anticipated that, far from being a temporary restoration, the switchboard now in use will serve for several years.

A welcome aspect of an unfortunate event was the fact that the nature of the difficulties confronting the engineers and the rapid progress of the restoration was recognised in a most generous manner by the local papers.

Finally, it is pleasing to hear that the Executive Engineer and his staff have been specially commended for their services.

Midland Bank P.A.B.X.

Persons whose business takes them to the City every day may notice certain rebuilding operations going on, but probably do not give the matter much consideration owing to the gradual nature of the changes that are taking place. Those, however, who make visits at intervals of several months are very much impressed at the changes in the character of the buildings that are rapidly replacing those which previously existed. A typical case is that of the Midland Bank which has been constructed on the site of some small buildings in Poultry. The exterior is handsome and can be seen by passers-by. The change in the character of the building can, however, be best illustrated to telephone men by stating that whereas half-a-dozen direct exchange lines were sufficient to serve the old buildings, the new building has a P.A.B.X. with a capacity for 110 exchange and 900 extension lines.

The present equipment is seven 100-line units with 670 line switches fitted, 8 manual boards, 35 first selectors, 7 second selectors and 63 final selectors. The current to operate the switchboard is supplied from two 400-ampere-hour batteries at 50 volts.

Although the building has only been in occupation a short time, the lines already in use are :—

71 exchange lines.
306 external extensions.
250 internal extensions.
6 tie lines.

The problem of the provision of line plant in such a manner as to allow so many external circuits to be connected up by the time that they are required without having made excessive provision for contingencies, is no small one.

Negotiations for important sites are generally conducted very quickly until agreement has been reached, and at the time a scheme for serving the area with line plant is prepared, there may be no hint that blocks of small, inconvenient buildings will be pulled down and in two years replaced by buildings of the type above described. The *Midland Bank* is one of the largest installations hitherto dealt with and has an exceptional number of external circuits, as the figures show, but there are many other large buildings recently constructed in which the demands for telephone lines have been very heavy. There is no doubt that when the longed-for revival of trade comes, the reconstruction of the City buildings will be further accelerated, and this will increase the demand for telephones, especially for the larger type of installation.

New Exchanges.

The following exchanges were opened during the month of September :—

	No. of Lines equipped.	*Date opened.*	*Manufacturer.*
National	9,500	Sept. 7	A.T.M.
Mitcham	1,480	„ 11	Siemens.
Flaxman	9,900	„ 14	General Electric.
Stanmore (C.B. Manual) ...	800	„ 18	Standard.

Obituary.

We record with deep regret the death of Mr. K. G. R. Graves, a young Inspector attached to the Cable Balancing Section of the London Engineering District.

Mr. Graves entered the Engineering Department on Mar. 2, 1926, after passing the open Competitive Examination for Probationary Inspectors. Then followed the usual period of training, which included a special course of instruction in cable balancing and precision testing at Dollis Hill. Subsequently he was appointed Inspector and attached to the section dealing with that class of work in the London district.

Here he proved himself reliable and trustworthy. Of a somewhat quiet disposition, he was nevertheless very capable and willing to take responsibility. He was respected by those who came under his supervision, and all who came into close association with him held him in great regard.

Early in July he went into St. Bartholomew's Hospital for examination of what was thought to be quite a minor trouble. It proved, however, to be serious and operation was decided upon.

This took place early in September, but Mr. Graves did not recover from its effect, and passed away on Sept. 4.

The Department has lost a promising officer, and we extend our great sympathy to his mother, sister and brother in their loss.

FOR OUR ADVERTISERS.

The following contracts are open, and all references should be made to the Department of Overseas Trade, London.—New Zealand, Wellington, Posts and Telegraphs, Oct. 15, Condensers (P. & T 151/1733). Reference BX 5602. Also, same date, Supply of B.P.O. type resistances (No. P. & T. 151/1712). Also P. & T. Department, Oct. 15, Supply and delivery of B.P.O. type resistances. Reference BX 5551. Also, same date and authority require supply and delivery of B.P.O. retardation coils. Reference BX 5552.

Cape Town Municipality, Oct. 16, Supply of paper-insulated cables (Specific. No. 474). Reference BX 5640.

New Zealand, Wellington, Posts and Telegraphs, Oct 16, Automatic wall and table telephones. Reference BX 5509. Also Automatic telephone dials (P. & T. 151/1734). Reference 5605. Also, Oct. 30, head receivers (P. & T. 151/1725). Reference 5603.

Melbourne, Oct. 15, P.M.G. Dept. Switchboard instruments, test plugs and sleeves (Schedule C. 472) Reference BX 5541. Also, Victorian Government Railways, Oct. 23, Supply dry core telephone cable. Reference BX 5638. Also, Melbourne P.M.G. Dept., Oct. 22, Supply insulated wire (Schedule C. 474). Reference BX 5581. Also, Nov. 12, Supply of (1) transmitters and (2) receivers with associated parts. Reference BX 5653 and 5656. Also, Nov. 19, Supply of telephone generators and motor generators. Reference BX 5662.

J. J. T.

The Editress.

BY a curiously ironic stroke of fate, while last month's issue of this *Journal* was actually in the press with a portrait and a few light-hearted words concerning the Editress of this page, that lady was undergoing a painful experience. Miss McMillan, whilst motoring in Northumberland, was involved in a serious accident, resulting in the overthrow of the car and the pitching out of its four occupants. Miss McMillan was badly cut and shaken and had three ribs broken, but we are pleased to know that she is making satisfactory progress towards recovery. All our readers will, we are sure, join in a message of sympathy and sincere wishes for her speedy restoration to health.

The Lido.

One morning recently, before the clocks had been "de-Willatted," I rose at five and went into the garden. After mastering that mild look of surprise which rushed momentarily into your face when you heard that statement, you would probably say that, personally, you had no difficulty at all in believing me. But, you would add, you felt sure that an uncle on mother's side, a cousin, two irreproachable aunts—one married to an impeccable churchwarden—and several intimate friends would, quite frankly, disbelieve me. Believe me or believe me not, they would be justified in their unbelief. Nevertheless, there is a large percentage of truth in the statement. The garden and my entry therein are incontrovertible facts, but the 5 a.m.—ah, no ! No, no. The wish was never farther from the thought. I merely said it in order to test your ability to believe. I think it was the White Queen in "Alice in Wonderland" who said that believing was a matter of practice and that she had believed as many as six impossible things before breakfast. We may suppose that, had the White Queen been a telephonist, the service observation results would have presented no difficulties and raised no haunting doubts. Had she, on the other hand, been a subscriber, she would never have questioned any advice of "number engaged" or "no reply." Some of the things of life seem almost too good and others much too bad to be believed, but to believe the ordinary things requires no effort. To the unimaginative, seeing is believing, but to the imaginative believing is seeing.

Ere now you may have experienced considerable difficulty in believing that all or any of this has any bearing upon "The Lido." Dispel your doubt and believe at least that I have merely taken an inordinately long and round-about approach to what the birds believe concerning my garden. The sparrows and the finches, the tits and the starlings, the thrushes and the blackbirds, the robins and now even a warbler, believe that a visit paid at any time will be rewarded by a piece of bread, potato, fat or coco-nut—sometimes all four. But above all their belief has been centred of late on "The Lido." The Lido is at the bottom of the garden, in the shade, among the fallen leaves and rose petals, and it consists of a small dish of drinking water and a larger one for bathing. Incidentally, let me remark that the little heathens as often as not, bathe in their drink and drink their bath-water. The sparrows —as depraved and uncultured as any in this respect—believe that it is their Lido, and in consequence the Robin gets his bath as best he can. The larger birds seem to be more modest and prefer the early morning when there are no spectators, but they splash so much that they empty the bath. Bindle the Hound believes that Ethelbert (he's the rat) frequents the Lido in secret, but, of course, to hear Bindle bark one would think that there were rats in trees, books, running brooks, stones and, in fact, in everything. But Ethelbert is welcome and if he were not an unbeliever he would show himself oftener.

It would be a sad day for me if the birds ceased to believe in my garden as a haven of plenty and security. They seem to believe that I appreciate their sweet song and their cheerful twittering and that I am amused at their engaging antics and their fluttering offspring. But if the birds went I believe the green-fly and the snails and the worms would be happier.

PERCY FLAGE.

Our Portrait Gallery.

NO. 2—ELEANOR L. STAITE.

Miss Staite is the Chief Supervisor of the Sloane Automatic Exchange, and the mere recital of that fact will convey to all who know anything of the London Telephone Service that she must be the possessor in a highly developed degree of all those virtues which are associated instinctively with telephonists, and even more so with Supervisors. For those readers, if there be such, who have not the key to interpret this statement, let it be set out in cold print that Eleanor Staite is a model of courtesy and tact. The *most irate and aristocratic of subscribers bursting with rage against the* "ineptitude" of the Telephone Service, after a few minutes conversation with Sloane's Chief Supervisor is another being, scarcely able to understand what possible pretext could be advanced for having grown so cross.

It is recorded of Miss Staite that when interviewed for her original appointment as telephonist, the interviewing officer, a lady of very keen judgment, marked the form of this child "excellent," a quite exceptional marking. That the interviewer's judgment was sound as well as keen, all who have met and associated with Miss Staite will promptly agree.

Outside office hours she has established a reputation as a devoted daughter, an ardent follower of the outdoor life, loving a tramp among the Welsh hills or others even more "foreign." She is a keen gardener, pardon, it should be written horticulturist, for has she not attended classes on such specialised aspects as soils, artificials, &c. Above all she has the gift of a subtle humour, and lucky are those to whom she will recount the everyday happenings of her holidays or telephone experiences.

Mountview Swimming Club.

When scanning the newspapers during the summer, we were greeted with the fact that "this summer has been the hottest for so many years." We had ample testimony that such was the case by the much-needed dress reform of our half-hearted menfolk—their endeavours to keep cool did not appear as successful as the efforts of the telephonists at Mountview.

An open-air swimming pool was opened early in the summer for the benefit of the residents of the borough of Hornsey, and if the inhabitants of Crouch End and districts did not avail themselves of the boon the telephonists of Mountview did! My word—what jolly times they had!

MOUNTVIEW SWIMMING CLUB.

The swimming club, which normally hold their weekly club meeting at Hornsey Road Public Baths, arranged during the tropical weather for the club members to meet at the open-air pool.

Some idea of the good times the telephonists had can be gathered by the happy picture which one of the members photographed for the *Journal*.

D. A. P.

Imperial and Renown Swimming Clubs. The Ninth Annual Gala.

The general public often get telephone operators into hot water, but it was regrettable that so few subscribers were present to see the members of the Imperial and Renown (Trunk and Toll Exchanges) Swimming Clubs actually entering the water with a smile and behaving just like those people whose only mission in life seems to consist of asking for wrong numbers and becoming annoyed when they get the right ones.

Holborn Baths, on Tuesday, Sept. 10, presented a carnival aspect, and Miss Epps, who is presenting the prize for the Learners' Race (Toll) and the prize for the best attendance in the Summer session, must have been quite proud of the aquatic prowess of her girls.

There were many attractive items in a good programme, but chief interest of competitors and onlookers centred in the Team Race between the Day Staff of Toll and the Night Staff, which the girls won by 13 seconds.

The Night Staff had the temerity to issue a challenge to their feminine colleagues, thinking, perhaps, that the arms that were accustomed to reaching for distant exchanges, with the voice of an irate "sub." dinning in their owner's ears, would not be so capable at the trudgeon stroke with the cheers of a bevy of supervisors ringing the rafters. The Night Staff found out their mistake before the last 20 yards of the distance had been covered!

Another team race, between the London Telephone Service and the Rest of the Civil Service, resulted in a win for the L.T.S., and an Old Clothes

Race, a Jockey Race and an event which was announced as Walking Ping-Pong demonstrated that a swimming gala need not be the dull affair so many people think it is.

The most graceful swimmer, Miss House of Regent, carried off the honours in the 60-yards' Back Stroke Championship in 54½ seconds, and she was also a member of the Regent team which won the L.T.S. Invitation Team Race. She was closely followed by Miss McBirney, of Trunks, whose time was 55⅘ seconds.

The Surprise Item at first puzzled our unsophisticated reporter, who said afterwards that he thought it was to be an "ugly scene," as the Police court reporters say, between a subscriber and a Toll Supervisor, but it proved to be a demonstration by members of both clubs of four methods of life saving. Miss Saunders and Miss Summers made splendid boys. After a most realistic quarrel one fell into the water, rescue being effected by one method. Another method was then shown, the characters being a fearsome burglar (in the person of Miss Trenery) and a householder (Miss Vargerson)

A fine display given by members of the A.D.A. showed that there is more than one way of falling into a swimming bath.

Altogether it was a very successful evening, and everyone was perfectly happy, for not once during the whole of the proceedings was heard the all too familiar chant "wrong number"! In fact, there was not a single wrong number in the programme.

The 100 yards' Club Championships have still to be swum, but the results of the other chief club items were :—

		Trunks.	*Toll.*
Learners' Race		Miss Pratt.	Miss Tame.
One-length Handicap ...	1.	Miss Westbrook.	Miss Hammond.
	2.	Miss Jones.	Miss Saunders.
	3.	Miss Vargerson.	Miss Watts.
Club Diving	1.	Miss McBirney.	Miss J. Turner.
	2.	Miss Theakston.	Miss Cowper.
	3.	Miss Vargerson.	Miss Saunders.

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.1.

THE POST OFFICE SWITCHES AUSTRALIA THROUGH TO AMERICA.

AMERICA talked with Australia by means of instruments of the ordinary telephone service for the first time on Wednesday, Sept. 25, when several officials of the American Telephone and Telegraph Company exchanged greetings with Australian telephone officials in Sydney. The occasion was an informal demonstration by the British Post Office of the practicability of connecting its existing transatlantic telephone system with the new short-wave radio-telephone channel operated by the British Post Office between Great Britain and the Australian continent, which may soon be open for commercial use. One of the Directive short-wave trans-atlantic radio channels now in regular use for the American service was used between London and New York and the voices of the speakers were thus carried a total distance of 15,000 miles by the short-wave system of transmission over two separate radio links inter-connecting the wire systems of the United States and Australia via the wire system of Great Britain. The speech from New York passed over land wires to the short-wave transmitting centre of the American Telephone and Telegraph Company in Lawrenceville, New Jersey, thence by radio to the short-wave receiving station of the British Post Office at Baldock, Herts, and thence by wire via London to the Post Office transmitting station at Rugby; thence by radio to the receiving station of Amalgamated Wireless of Australia and by wire to Sydney. The path of speech from Australia was again to Baldock, thence through London to Rugby and onward via the American Company's short-wave receiving station at Netcong, New Jersey, to New York.

An interesting aspect of the conversations was that they took place at 4 o'clock in the afternoon of Sept. 25, New York time, which in Sydney was 6 o'clock in the morning of Sept. 26.

The conversations were entirely successful, as were also repeat experiments on Thursday, the 26th.

A BRIEF CHRONOLOGY FOR STUDENTS OF TELEGRAPHS, TELEPHONES AND POSTS.

BY HARRY G. SELLARS.

(*Continued from page 250.*)

1884, Dec. ... National Telephone Company issued adhesive stamps of five values to be affixed by callers at public call offices to forms held by the attendants.

1884, Dec. 17 ... London's first trunk telephone line opened with Brighton

1,227,000,000 letters and 25,000,000 parcels passed through the Post Office.

1885, Jan. ... Sir Sandford Fleming advocated the establishment of All-British communication between Great Britain and Australia via Canada and Polynesia.

J. A. Fleming devised a voltaic cell made up of zinc, zinc sulphate, copper and copper sulphate.

1885, Feb. ... All-night telephone service introduced by the United Telephone Company.

International Postal Union dealt with "Express" delivery of correspondence and postage of valuable articles.

African Direct Telegraph Company subsidised (£25,000 per annum for 20 years) by British and German Governments for cables down the West Coast of Africa to the Cape.

West African Telegraph Company obtained contributions (£44,000 per annum for 23 years) from Portugal and France for cables establishing communication with the colonies of these countries.

W. H. Preece experimented with an inductive system of wireless telegraphy.

Emile Baudot installed an experimental set of his apparatus in the Submarine Telegraph Company's office, London.

Delaney Multiplex telegraph working introduced in Inland Telegraph Service.

Electric railways laid down in several places in England.

Electricity adopted for tramways in United States.

Volta Laboratory Association produced the Graphophone in which sounds were recorded on wax.

1885, June 22 T. A. Edison and E. T. Gilliland patented in England an apparatus for telegraphing between moving trains without wires.

1885, July 1 ... Parcel Post established between United Kingdom and Gibraltar, Egypt, Aden, and India.

Postage for letters above 12 oz. reduced to ½*d.* for every 2 oz.

First Parcel Sorting Carriage established.

Special mail trains instituted between London and Aberdeen.

1885, Aug. 22 A. M. Rosebrough patented a mechanical telephone. Other mechanical telephones, notably, the "Atlas" and "Pulsion," made their appearance and were used to a limited extent.

New Telephone Company floated to exploit the telephone invented by Silvanus P. Thompson.

Long-distance telephone trials took place between London and Liverpool. Telegraph circuits were employed, and the speakers stationed in Uxbridge and Liverpool.

American Telephone and Telegraph Company formed.

1885, Oct. 1 ... Sixpenny telegrams introduced, free transmission of addresses abolished.

International Telegraph Conference in Berlin. Destinations permitted as one word and code words limited to ten letters. Telephones discussed.

Blathy, Deri, and Zipernowsky, of Budapest, introduced a system of working transformers in parallel.

Ferranti, Kapp, and Mordey produced various types of transformers.

Berry devised an alternating current transformer.

1885 ... ... Fawcett revision of Post Office wages.

13,000,000 Money Orders issued.

1886, Jan. 1 ... Parcel Post extended to various foreign countries.

1886, April 8 ... 1,500,000 words sent from the Central Telegraph Office, London, in connexion with William Ewart Gladstone's "Home Rule" speech.

1886, April 15 Emile Berliner patented a telephone transmitter with a horizontal carbon diaphragm.

S.S. "*Carthage*" passed through Suez Canal at night by the aid of electric light—the first vessel to do so.

1886, May 1 ... Inland Parcel Post rates altered to range from 3*d.* for 1 lb. to 18*d.* for 11 lb.

Compensation up to £1 given in respect of damage to parcels if sender produced certificate of posting.

Insurance of inland parcels and registered letters introduced at fees of 1*d.* for £5 insurance and 2*d.* for £10.

Dr. Heinrich Hertz carried out a series of experiments in electro-magnetic induction and the effect of electric waves on surrounding bodies.

Von Dolivo Dobrowolsky, G. Ferraris and Nikola Tesla produced motors with rotating magnetic fields.

1886, Sept. 1 ... Money Order rates reduced to a scale ranging from 2*d.* for £1 to 6*d.* for £10.

Gabriel Lippmann observed that the capillary forces existing at the points of contact between dilute sulphuric acid and mercury in a capillary tube are modified by a weak current or slight electric wave. He constructed a capillary electrometer.

Mimault, a rival of Baudot, introduced a multiplex telegraph system.

Dr. Chichester Bell described, before the Royal Society, his experiments which led to the invention of the "water-jet" telephone transmitter.

Elihu Thomson, of U.S.A., described a method of electrical welding to the American Society of Arts.

(*To be continued.*)

THE

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CONTENTS.

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All correspondence relating to advertisements should be addressed to MESSRS. SELLS, LTD., 168, *Fleet Street, London, E.C.4.*

TELEGRAPH AND TELEPHONE MEN AND WOMEN.

LXX.—MR. T. A. BECK.

MR. T. A. BECK—the subject of our illustration this month—is District Manager in charge of the Exeter District.

Mr. Beck entered The National Telephone Company's service as a boy, and in the course of a joyous period of employment on engineering duties he acquired a sound foundation and appreciation of engineering knowledge which has stood him in good stead throughout his official career.

At the formation by the Company of its London Traffic Department, he took up traffic duties, including Exchange management, and developed a wide knowledge of equipment and humanity.

Mr. Beck's qualifications marked him out for promotion to the rank of Assistant Superintendent of Traffic, Class I, in 1923; and in the initial stages of the study of automatic possibilities and in the introduction of the automatic system to London his knowledge and experience were of considerable value to the Department.

[*Photo by "Douglas," 46, St. James Place, S.W.*

He does not spare himself and it was a fitting recognition of his enthusiasm and capacity and his outstanding personality that he should have been selected early this year to take charge of the Exeter District.

He has always taken a keen interest in the welfare and the recreation of the staffs under his control. For many years his musical talent was in great demand. He has been a staunch supporter of Telephone Societies and Sports activities and is himself an athlete and sportsman of no mean attainments.

He is a man of many hobbies, and in all his recreations he is as enthusiastic as he is in his official duties.

DR. R. V. HANSFORD.

IT is with the deepest regret that we chronicle the death of Dr. R. V. Hansford, Assistant Staff Engineer, of the Engineer-in-Chief's Office, following an accident at his home on Oct. 5.

Dr. Hansford was one of the outstanding men of the Department; young, active, and enthusiastic, he was successful at everything which he undertook. His bright and pleasing personality made for him friends in all branches of the Post Office, and his loss will be deplored by all of those with whom he came in contact.

Richard Vernon Hansford was born in 1888. He commenced his engineering training as an apprentice at Chatham Dockyard. From there he proceeded to Glasgow University, where he took Honours B.Sc. in Naval Architecture. Instead of taking up naval construction, however, he came to the Post Office as 2nd Class Engineer in 1910.

He served in the Edinburgh Engineering Section and in the Technical Section of the Superintending Engineer's Office at Edinburgh, afterwards being transferred to the Inverness Section in 1912.

During the war period he was engaged almost exclusively on naval and military communications in the North of Scotland, including the provision of circuits for the defence and administrative requirements of the Fleet at Scapa Flow and Cromarty Firth.

In 1919 he was transferred to the Radio Section of the Engineer-in-Chief's Office, which was then beginning to expand its activities after the restrictive period of the war.

From the first he was associated with the development of the high power valve transmitter. The early experiments led on to the design of the valve transmitter at Northolt, in which valuable experience was gained. Following on this came the design of the valve transmitter at Rugby, his *magnum opus*. All this work trod new ground and demanded courage of the highest order as well as technical skill. Many nights, as well as days, and many week-ends, were spent in unravelling the behaviour of high power valves and in tracking down the mysterious parasitical oscillations which occasionally threatened to blow the valves to pieces.

On the conclusion of the work at Rugby he obtained the degree of D.Sc., Glasgow University, for his thesis on the design of high power valve transmitters.

In 1925 he proceeded to America to discuss the preliminary technical arrangements for the transatlantic telephony circuit. This work absorbed his energies for several years and enabled him to give full play to his wonderful capacity for organisation.

His activities were not bounded by his work in the Radio Section. He was a member of the Institute of Electrical Engineers and an Associate Member of the Institute of Civil Engineers. He served as Secretary of the Institution of Post Office Electrical Engineers, where his organising ability found many warm admirers. He was Chairman of the 5th Commission of Rapporteurs of the C.C.I. Telephones, and he had just taken a very prominent part in the work of the British delegation at the Hague C.C.I. Radio, from which Conference he had returned only a few days before his death.

He possessed unbounded energy and could handle the minutest details of an engineering task with the same enthusiasm that he applied to the broader issues. He combined the mind of a lawyer with the technical knowledge of the trained engineer, and was therefore an extraordinarily valuable man in conference work. Upright and honourable in all his dealings with his fellow men, he always insisted on fair play and justice, tempered where necessary with sympathy. He had a keen sense of humour and a wide fund of cheerfulness which expressed itself in friendliness to all those around him.

His death is a severe blow to all those who worked with him, and the Department loses the most promising man of the younger generation, one who undoubtedly had a brilliant career before him.

Finally, we should like to tender to his widow and his family our most sincere and heartfelt sympathy. The sorrow we have felt makes us realize all the more fully the grief of those who were nearest and dearest to him. A. G. L.

THE DIPLOMA IN PUBLIC ADMINISTRATION.

BY J. T. E. A. WADDELL, B.A., D.P.A.

AT the first examination to be held by the University of London for this Diploma last July, only nine candidates entered, of whom five were successful, three unsuccessful, and one failed to put in an appearance.

This was not a too encouraging turn-out, and Professor A. M. Carr-Saunders, speaking at the Summer Conference of the Institute of Public Administration at Edinburgh, said that a much larger number of entrants was desirable to make it worth while for the University to undertake these expensive examinations, the cost of which is far from being covered by so few entrance fees.

I am writing this article, therefore, to draw attention to the existence of the Diploma examination, and to attract fresh candidates. The Institute of Public Administration and the University of London have been to a vast amount of trouble and expense in the establishment of this Diploma, and it is up to the Service to show their appreciation by entering for the examination in more encouraging numbers.

The Institute of Public Administration exists for the purpose of applying intensive study to the problems of the Administrator, and for the encouragement of higher education and the attainment of professional status in and for the Government Service, whether Central or Local. Up to the present, examinations for entry into the public service have been conducted rather too much on general lines, and not with sufficient regard to the subjects which would be of greater importance and use to the prospective administrator. Such is not simply my opinion, but the declared conviction of University Professors and Heads of Departments alike. The Institute has aimed at remedying this defect in Civil Service education by inducing the University of London to establish the Diploma examination, which requires competent knowledge in subjects exclusively useful to those engaged in the Government service.

This Diploma is the first University honour to be offered especially for acquired learning in matters appertaining to the work of Government. There has existed for some years past the degree of Bachelor of Science (Economics), and also the Diploma in Sociology. Neither of these, however, satisfy the questions which arise on the subject of Administration and the problems of Government. The Diploma in Public Administration combines both Economics, Sociology, and the business of Government.

I do not wish to overburden your columns with too much detail, especially as it is desirable that all those interested should obtain the full particulars of the conditions direct from the Institute of Public Administration, Palace Chambers, Bridge Street, S.W.1, or from the Registrar, University of London, South Kensington, S.W.7. Those who are in London may attend classes at the London School of Economics, Aldwych, or those outside may register

as External students. The course occupies normally two years, and candidates entering now will be eligible for the Diploma examination in 1931.

The following are the subjects, of which more elaborate details will be given by the authorities :—

These are compulsory.	Public Administration, Central and Local. Economics, including Public Finance. Social and Political Theory.
Three optional out of these six (see syllabus).	Constitutional Development of Great Britain. Constitutional Law. Industrial and Social Development of Great Britain. Local Government in greater detail. Social Administration. Statistics.

Now you see what I mean. All useful subjects of every-day value. No languages. No metaphysics. No complicated mathematics (except statistics, which is optional). The whole forms a first-class political education, which cannot fail to interest and be of utility. Very comprehensive, certainly, and no easy job, but nothing to scare one at all. No essential need to undertake expensive tuition from Correspondence Colleges. And if I can be of any use to you, write to me at the Institute, as above, enclosing stamped envelope.

REVIEWS.

"First Year Electrical Engineering." By D. J. Bolton. Edward Arnold & Co. Price 5s.

This useful primer is divided into five parts taken in the following order :—

The Electric Current, Electric Chemistry, Magnetism, Electrostatics, and Applications.

In the last part, brief treatment is given to the subject of measuring instruments, Photometry, Telegraphy, and Telephony. An appendix giving particulars of constants of conducting and insulating materials, and answers to questions, completes the book. Both from the simple lucidity of treatment and the arrangement of subject matter the author shows himself to be well acquainted with the difficulties and limitations of the class of student for which this book is intended.

The judicious use of analogy and illustration, and the excellence of the printing, has resulted in a book that can be recommended to those whose groundwork in mathematics and physics is weak.

"Le Relais," Revue Mensuelle des Postes et Télécommunications. (Saint Cyr-l'Ecole.) 3 francs.

We are pleased to welcome the first number of the "Le Relais," a monthly publication of posts, telegraphs, and telephones, published by our colleagues of the French Post Office. In a prefatory note the editors state that the French Post Office, "apart from a certain scientific publication too heavy for the greater part of the staff, has no co-operative journal which fulfils the purpose at which we aim"; and the present publication is intended to fill this gap. The first number contains among other articles a technical account of the Belin system of facsimile transmission, a brief description of the International Postal Congress by Mr. Tyrrell, a contributor not unknown to this *Journal*, and an account of the various systems of "personal call" by Mr. Valentine of the American Telephone Company. There is an interesting literary column, but the Editors, perhaps as part of their efforts to avoid an "excès de vulgarisation," have not included any personal or social gossip.

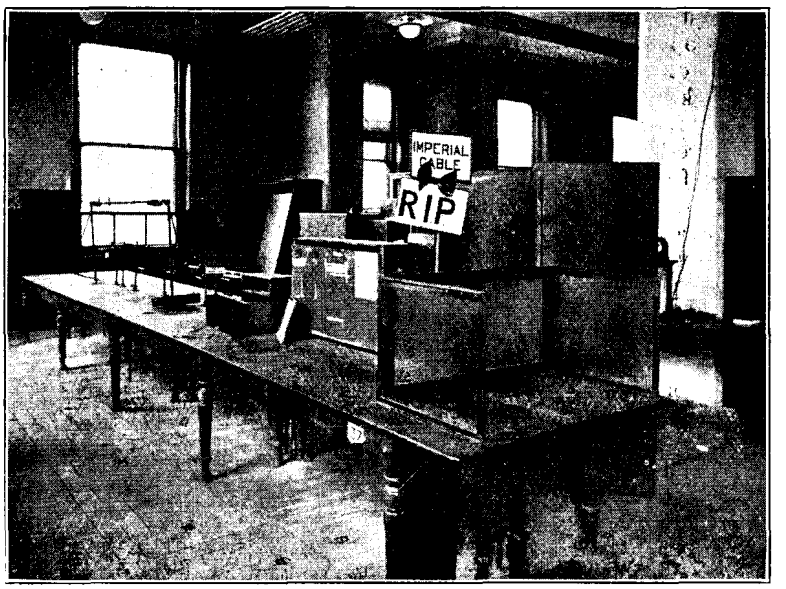
Altogether an interesting and useful venture to which we wish all success.

ICHABOD.

SUNDAY, THE 29TH OF SEPTEMBER, 1929.

THE weather was sultry and overcast, September striving gallantly, but in vain, to maintain its rainless record. The usual Sunday calm prevailed in the City : in the neighbourhood of the C.T.O. the only thing at all out of the ordinary was the sight of two plain vans drawn up in Roman Bath Street and a photographer hovering near. Even within the C.T.O. there was nothing spectacular to mark the passing of the Imperial Cable and Wireless services.

The time was 3 p.m. The Imperial Cables had already been moved, and only a miscellaneous collection of disconnected instruments and a large legend "R.I.P." marked the place where they had been. The Canadian and Australian Beams had also gone. The Indian Beam was moved a few minutes later : but so quietly was it done that a spectator would hardly notice its passing. The South African Beam was still hard at work with a mass of letter-telegrams on hand : not until 6.30 p.m. was it possible to transfer it.



The transfer itself took place at the Provincial Test, merely the joining up of the circuits to Penzance and the wireless stations with the circuits to Electra House and Radio House. "There was no hitch or incident of any kind" : so runs the official report. That is the sort of ending that we could have wished : no "fireworks" or sensations, but quiet efficiency to the end. It was an engineers' field-day, and very well they did their work, disconnecting the instruments and packing them methodically in trolleys. The engineers, who assisted at the birth of the Beam services, were also present at their death-bed.

Now all that remains of the services, as far as the Post Office is concerned, is a large clock which shows the time at Bombay, a vivid map of the Imperial services, prepared by an enthusiast in Cardiff, a few graphs showing the trend of traffic, and some cordial telegrams of farewell from our colleagues in Australia, Canada, India, and South Africa. We are too modest to publish these.

Altogether, from our point of view, a funereal occasion, and our only consolation the knowledge that the funeral passed off very nicely. But these gloomy metaphors are out of place. It would be more appropriate to say that the services have been transplanted—a delicate process, as all gardeners know. For two years we have tended the Beams, and we flatter ourselves that the work has been well done ; we do not doubt that in the new soil they will continue to flourish.

TELEGRAPHIC MEMORABILIA.

IT has not hitherto been clear to a very considerable number of persons, and of those not a few, who, if they could not be looked upon as *experts* of radio communication would certainly not be classed as mere novices in that science, as to the figure-value of frequencies (wavelengths) expressed by the generic terms "medium," "short," "long," &c.

To these it will come as a relief to know that the International Consultative Committee responsible for the Technique of Radio Communication has decided that frequencies (wavelengths) shall be classified as follows: Low frequency, 100 kilocycles (usually abbreviated kc/s) per second and less, i.e., 3,000 metres and upwards; medium frequency, 1,500-100 kc/s, i.e., 200-3,000 metres; medium high frequency, 6,000-1,500 kc/s, i.e., 50-200 metres; high frequency, 30,000-6,000 kc/s, i.e., 10-50 metres; and very high frequency over 30,000 kc/s, i.e., below 10 metres. As most of us are aware, the frequency method of measurement was adopted internationally at Washington as being more accurate and precise than the wavelength method; but to those accustomed to thinking in wavelengths the change-over is confusing because a high frequency is a low wavelength, and *vice versa*. It may, therefore, be helpful to repeat the corresponding wavelength terms for the frequencies in the order mentioned above. They are: long, medium, intermediate, short and ultra short. The Committee also recommended, amongst other things, specific standards of accuracy in maintaining constant frequencies and the restriction of the power of broadcasting stations working on frequencies between 550 and 1,500 kc/s (545 and 200 metres) to not more than 100 kilowatts.

A correspondent residing in Bedford Chambers, Covent Garden, London, writing to the Press on the subject of the Post Office, cites the fact that on Oct. 11 a letter postmarked at 11.15 a.m. from Hatton Garden was delivered to the above address just 55 minutes later. While congratulating our postal colleagues on their success in obtaining this excellent flower in their cap from the public, it cannot but be remarked that should this standard of acceleration of the *postal* traffic be maintained the telegraphs would cease to smile at mention of the competition of the Postal Service. Fortunately, from a telegraph view, one may look upon the case quoted as an exception, and a happy one, to the average time of delivery, even in the circumscribed area mentioned.

According to the *Daily Telegraph* correspondent in Sydney, the Commonwealth Postal Department has coined the word "Picturegrams" to describe transmissions over the photo-telegraph service between Melbourne and the first-mentioned city. It may be the unfamiliarity of the word, but it does not strike one as altogether happy. Perhaps the writer is too fastidious.

"Telegram" itself is at times badly mishandled, so it would appear. Quite recently there was exhibited at the International Congress of Orientalists at Oxford a fragment of stone on which is inscribed a simple Coptic sentence, which, translated, means, "He died to-day." An *original* rather than an accurate journalist described this as "probably the first form of 'telegram' in the world." Gentle readers of the art of telegraphy, I put the case before *you*.

We might, with some reason, have associated the ancient hour-glass, or its descendant, the glass egg-timer, which latter, on more than one occasion, has been used to check three-minute calls—this in America, my *T. and T. Age* informs me—with the telephone, but Coptic stone inscriptions with the telegram, I think not.

The Institute of Railway Signal Engineers held its annual dinner on the 25th ult., and has a fixed programme for the months of November to February. The title of the paper for Dec. 11, for example, on "Some Notes on A.C. Rectifiers," is indicative of the complexity of modern signalling in connexion with railways. Quite another art than that of red, blue and green oil-lit lamps of long ago!

The Most Northerly Wireless Station.—This is apparently that established at Tranquil Bay, in Franz Josef Land, in the Arctic, by a Soviet expedition and is held by its commander, Commander Schmidt, to be the most northerly station in the world and to be equipped with the most up-to-date apparatus both as regards radio communication and meteorological services. Communication is maintained on a 43-metre wavelength, according to Reuter's Moscow Agency.

Obituaries.—As a distant link with the past of the Telegraph Service one would reverently mention the decease of Mrs. E. Trenam *relict* of Mr. Trenam, a one-time Controller of the C.T.O. Mrs. Trenam died in her 90th year, pre-deceased by her husband by some few years. The latter, it will be recalled by some, retired from the Telegraph Service in 1905.

Yet another link with the old telegraphing days has passed away by the death, in his 84th year of age, of Mr. William Payne, on Oct. 8, at Tottenham. "Pincher Payne," as he was for so long known, joined the old Electric and International Company in 1864, and was appointed to their Mincing Lane and Founders Court offices, and after the Transfer in 1870 became Clerk-in-Charge of the Night Check. He continued as such till he succeeded the late Mr. A. S. Coates in charge of the Moorgate Street Buildings office as an Assistant Superintendent in 1892, later coming to T.S., he ultimately retired through ill-health in 1903.

Personal.—All who can still recall Mr. T. Warren (Tommy Warren) in the C.T.O. London, who left the Home telegraphs to join that of the South Africa at the Cape, about three decades ago, and who recently paid a visit to the C.T.O., which naturally has changed beyond recognition—all indeed, one may repeat, will specially congratulate our colleague upon his safe re-arrival in Capetown on Sept. 13 last—safe and sound with his wife and family, after a thrilling experience.

The "family" passenger steamer, *Trafford Hall*, it appears, caught fire when they were 2,000 miles from Table Bay. After most courageous efforts by the officers and crew and the co-operation of the seventy odd passengers the fire was extinguished apparently, but broke out afresh upon their arrival at Cape Town. Mr. Warren was at one time in the Secretary's Office of the Administration in Pretoria and then became Postmaster of Simonstown.

May one offer sincerest congratulations to those fifty odd men who have transferred to the "Merger" service? One can only wish them well with intense earnestness. Most of them have taken courage in both hands, yet with no small amount of regret at the parting of the ways which have been none of their seeking. Without any sense of collective conceit, the writer knowing most of these officers personally, is desirous of affirming one thing very specially and confidently, i.e. that the company will certainly never regret the day that the half-hundred entered the service of their corporation.

Heard unofficially! Small Sub-office. Business man to postmistress: Time 9.30 a.m.: "Can I send a telegram from here, madam?" Postmistress to B.M.: "Very sorry, sir, I have no facilities here, but you can dictate your own telegram from the 'phone box outside." B.M. to P.M.: "No fear, can't waste any time like that. Too much fag." Walks out in high dudgeon.

Youth.—Youth is not a *time* of life: it is a state of mind.—*Anon.*

J. J. T.

THE G.P.O. PLAYERS DRAMATIC SOCIETY.

THIS Society provided a treat for its members and their friends when they gave Mr. Bernard Shaw's "Devil's Disciple," preceded by Mr. A. P. Herbert's "Two Gentlemen of Soho," at King George's Hall, on Oct. 10, 11 and 12 last. To say that "The Devil's Disciple" is typically Shavian is really no more than to say that it is a play by Shaw, for all his plays can, by no great stretch of the term, be styled typically Shavian. Mrs. Dudgeon, Mr. and Mrs. Anderson, Major Swindon, General Burgoyne and Dick—who but Shaw could be the "onelie begetter" of these characters. In the dramatic scene between Judith and Dick in Anderson's house, both Miss Kathleen Emery and Mr. Jack Scott were at their best. Mr. Scott sustained an exacting part with great verve, although, at times, we thought he was inclined to err on the side of jauntiness. Mr. Cahill (excellent as ever) was thoroughly at home in the role of Anthony Anderson. We have nothing but the highest praise for Mr. Gartland's admirable rendering of General Burgoyne, while Mr. Pilkington made a sufficiently stiff and crusty Major Swindon. The scene at the "trial" is always a delight, and the P.O. Players did it full justice. It should be mentioned that Miss Isabel Hood gave a good rendering of Mrs. Dudgeon, and that the parts of Christopher, Essie and Lawyer Hawkins were very adequately filled by Stuart Godson, Miss Law and Cyril Leigh.

"Two Gentlemen of Soho" was a gorgeous affair. Mr. A. P. Herbert, in mock-Shakespearian garb, provided some rich fare. The artistically grouped heap of corpses, with a detective (an unconscionable time in dying) orating in spasms of heroic verse was something to be remembered. Mr. Pilkington, as the rhetorical policeman, was in great form, and indeed, the whole caste was well filled, Mr. Gartland, Mr. Alfred Doust, Mr. Eric Hudson, Mr. Cyril Leigh, Miss Dorothy Cleaver, Miss Dorothy Smith, and Miss Ling (who took her part at very short notice) all being well in the picture. Mr. Herbert got in some of his favourite and effective gibes at the *agent provocateur* in suave Shakespearian verse.

The plays were excellently produced by Mr. Reginald Purdell, and stage-managed by Mr. Eric Hudson. An orchestra under the direction of Mr. Will Harrison discoursed varied numbers during the intervals.

THE LEAGUE OF NATIONS.

LONDON TELEPHONE SERVICE BRANCH.

IT is perhaps known to many of our readers that a number of the London telephone exchanges are corporate members of the League of Nations Union and are accustomed to hold a yearly lunch-time meeting. In view of the inconvenience of this it has been suggested that one meeting should be held for the whole of the London exchanges—and such a meeting has been arranged to take place on Wednesday, Nov. 27, at Memorial Hall, Farringdon Street, at 6.30 p.m. Lady Gladstone has promised to take the chair at this meeting and the principal speaker will be Lord Cecil.

Mr. F. H. S. Grant (Assistant Secretary in Charge of Telephones) and Miss Agnes E. Cox (Superintendent, Female Exchange Staff) will also speak.

We feel that the objects of the League of Nations Union are such as to appeal with very special force to members of the London Telephone Service. Lady Gladstone and Lord Cecil have both shown great personal interest in enlisting the support of the London Telephone Staff and a keen appreciation of the value of that support. It is therefore hoped that there will be an enthusiastic response from the staff and that all members will extend their sympathy and help to the movement.

THE PSYCHOLOGY OF A TELEGRAPHIST.

EVERY trade has its psychology, quite naturally, and when we come to fundamentals so also has each individual unit. There are, of course, general principles which may affect the mass of any trade or profession, *some* which actually apply to every trade and calling.

In a recent book, edited by Dr. Charles S. Myers, on "Industrial Psychology," the doctor touches upon the latter when he apparently endeavours to maintain that the aim of Industrial Psychology is primarily *not* to obtain greater output, but to give to the worker greater ease at his work.

One fears, however, that such a statement would not be accepted at its face value by 95% of the rank and file whom it is likely to affect. To say this is not by any means to detract from the value of the many studies of industrial fatigue now proceeding, but only to place on record in these days of standardisation the intractability of human nature towards the limitation of its activities.

Dr. Meyer's foreword is not unchallenged even in his own book—in itself a tribute to his editorial fairness—for one of the essays attacks the wisdom of attempting to fix too rigidly such things as "the one best way of working." Our own telegraph service, it may be recalled, on one occasion received a good-humoured shock when an official pre-war order advised Morse workers when using the key to "keep the thumb well under"! Individual taste in Morse keys is permissible in the United States, the telegraphist purchasing his own key—a *privilege* which our English, Scottish, or Welsh telegraphists would probably meet with disapproval.

One could hardly imagine any telegraphist in the British Isles becoming intrigued by an advertisement such as the following, quite a usual feature in the columns of transatlantic service journals :—

> Try the Vibroplex Morse Key! See this new bug!
> Send with it! Buy it! $19, plus carrying-case $3."

Manipulation must be taught, of course, and certain principles must of necessity be laid down as, for a special instance, in touch-typing. Yet as is truly stated in the work quoted, when the worker is repeatedly time-studied or is forced to work in "the one best way," a point is reached at which the reaction to restriction asserts itself with almost primitive force. In fact, the possibility of more than "*one* best way" of doing a job should always be present in the minds of administrators.

One has found some of the most expert Morse operators who according to moderns or quasi-moderns were absolutely unorthodox in their methods. One has come across Hughes keyboard manipulators whose hands had been voted as impossibly unfit for operations of this kind, because of the short span of their fingers, but who nevertheless turned out to be among the fastest and most accurate of Hughes telegraphists.

Was it not our own telegraphists of the Morse printer era who themselves persisted in a terrible heterodoxy finding their own "best way" of "*reading* the slip" by listening to the time spaces of the Morse armature? This was persisted in despite the fact that the over-lords of that period imposed a fine in the case of each infraction of the prohibitive rule.

Is it not permissible to ask what would have been the effect on the staff of that day had the suggestion to read "by sound" in place of "by sight" originated with the higher powers?

O, Subtle Psychological Thought! After all, could such a thing have been possible that without any knowledge of twentieth century psychology the powers that then were, had of malice aforethought actually opposed the change—the value of which they had already fully appreciated—so that the staff themselves should impose the new system upon themselves? Who can tell?

J. J. T.

CORRESPONDENCE.

HOW TO IMPROVE THE TELEGRAPH SERVICE.

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

SIR,—It has been with considerable interest that we have read the various articles of your contributors on the subject of the improvement of the Telegraph Service, and perhaps we may be permitted to comment upon and add to the suggestions which have appeared in your columns.

We agree entirely with the view that the "shilling" telegram has outstayed its welcome, and the sooner its place is taken by a more reasonable and modern method of charging the better. Under present conditions the service rendered in many cases is out of all proportion to the amount charged. A telegram for delivery in the town of handing in is charged at the same rate as one involving some four or five telegraph transmissions over lines the maintenance and capital charges of which will probably amount to thousands of pounds per annum. A telegram for delivery in the same street as the post office of origin is charged at the same rate as one between the Shetlands and the Channel Islands. The suggestion to institute a system of charging on the basis of distance similar to that of the telephone seems to us to be very appropriate. In your September issue some criticism of this proposal was made on the ground that inequality existed because of the fact that a telegram sent over a distance of 100 miles with two transmissions costs much more to handle than one sent over a distance of 300 miles where only one transmission is involved. Some inequality is bound to exist in any system of charging. The exact counterpart of the instance quoted is quite apparent on the telephone side. In many cases a comparatively short distance call necessitating three or four switchings not only takes up more operating time but actually involves the use of more length of line than a call to an office more distant but in direct communication with the office of origin. The system of charging in use by the Telephone Service cannot, however, be condemned on that account. The reason why the zone system of charging is fair and reasonable is that it is based upon the undeniable fact that, taken on the average the shorter distance traffic involves less operating and maintenance cost than that of the longer distance. Nobody will deny that on the average the 100-mile message costs less to handle than the 200-mile message. As this principle can quite properly be applied to all traffic, a sound basis of charging is available. It is really amazing that we should have side by side two services of like character, one of which has a graduated tariff on the basis of distance and the other the standard charge of a shilling. If success has been achieved by the graduated charge in the one case, why should the principle not be applied to the other? The substitution of a flat rate for the Telephone Service would be as harmful as it would be absurd, and would probably reduce that service to a state which would compare unfavourably with that of the telegraphs to-day.

The decline in the number of telegrams handed in can quite clearly be attributed to a very great extent to the obsolete method of charging. When the Telephone Service was in its infancy there was no method of communication other than the Telegraphs, and the public simply had to pay the charge whatever it might be. Nowadays the man who used to send short distance telegrams has his telephone installed and he uses it. He realises that it is much cheaper for him to use his telephone for short-distance work, and the "Telegraphs" for long-distance work. The fact that the public are overcharged for the local telegraph traffic leads to the loss of transactions to the Telephones. The local telegraph traffic is fast declining and will probably continue to do so until such time as the Department see the disadvantage of compelling the short-distance to subsidise the long-distance traffic.

The charges could be graduated on similar lines to the following:—

Under 25	miles	... ...	6*d.*
„ 50	„	... ...	9*d.*
„ 100	„	... ...	1*s.* 0*d.*
„ 200	„	... ...	1*s.* 3*d.*
„ 300	„	... ...	1*s.* 6*d.*
Over 300	„	... ...	2*s.* 0*d.*

It will be noticed that in the first two cases the "*Reply Paid*" telegram would bear comparison with the telephone charges (except for purely local calls) while in the remaining cases the advantages would rest with the Telegraphs by a fair margin.

Another matter which involves a dead loss to the Department and which requires immediate revision is that of the cost of casual delivery in rural areas. Cases can be quoted where the cost of delivery equals, and in some cases exceeds, the amount paid for the full service. We would suggest that the continuance of the telegraph delivery service could be made subject to a guarantee from the local authority of a sum equal to the annual cost of casual delivery less the estimated cost of the same number of messages delivered from an office where permanent messengers are employed.

An instance where the Department err in the other direction is in the case of second delivery and delivery in the town of handing in. The imposition of 1*s.* for a second delivery and the ordinary charge for a purely messenger service tends to make the Telegraphs unpopular.

We would like to join those of your contributors who urge the necessity of an "urgent" and a "deferred" rate in addition to the ordinary rate.

The need for the "urgent" rate is impressed upon every practical telegraphist every hour of every day. He is compelled to deal with traffic in order of turn when the nature of the messages varies between matters of life and death and snatches of friendly gossip. An additional charge of, say, 50% could be imposed and every effort made to ensure that the message reached the office of destination within half an hour from the time of handing in. The innovation would merely be an extension to the public of a service at present available to certain State departments. The increased charge would prevent or minimise any abuse of the service that there might be, and its effect upon the ordinary traffic would probably be so slight as to render unworthy any special consideration.

The suggested introduction of a "deferred" service in addition to the "ordinary" and "urgent" rates seems to us to contain the seeds of what would become a very popular public service which, while satisfying a real demand, would prove a profitable venture for the Department. During the day the postal side does not provide a satisfactory service between towns of any considerable distance apart. A letter posted in the forenoon is rarely delivered the same day unless the towns of origin and destination are comparatively near. There is consequently a gap between the 1½*d.* letter and the 1*s.* telegram which is not adequately covered by the Express Service. The need is a very quick postal service or a comparatively slow but cheap telegraph service. The former cannot easily be provided, but the latter seems a very sensible and practicable proposal. A "deferred" service would, we submit, involve no maintenance or capital charges, and the operating costs would be so far counterbalanced by the economies due to the allowable delay facilitating organisation that the service would be rendered profitable. In order to give a thoroughly satisfactory telegraph service it is essential to employ staff in excess of the normal or average requirements in order that periods of abnormal pressure may not cause confusion and delay. However accurate may be the basis upon which the necessary staff is reckoned, there is no escaping the fact that upon one day during a certain hour there may be a shortage of staff, while the corresponding hour of the following day there may be an excess over requirements. As all messages are equally important in the eyes of the Department, there is no margin of transit time and delay simply does or does not arise. It cannot be prevented. In this respect the deferred service by acting as a kind of shock absorber for the ordinary traffic would be most valuable. Staff hours normally allocated to "deferred" traffic would be available for periods of pressure upon ordinary traffic, and there would be minimum delay with a minimum wastage of force.

Assuming that the reduced charges for the short distance traffic were to be introduced and the deferred rate also made applicable, there would undoubtedly be a very great increase in traffic of that nature. It is also probable that, owing to the advantages of the "deferred" rate, there would be a considerable increase in the traffic of what may be called an intermediate distance (say 50 to 200 miles). On the other hand, the increased charges for the long distance traffic would probably result in a decrease in the number of messages handed in at the "ordinary" rate, but with the introduction of the "deferred" rate there would probably be little or no decrease in the aggregate number of telegrams even of the long-distance nature. For the long distance "deferred" rate telegram the charge would probably be about the same as the present ordinary rate, so that there would be a general increase in revenue. In addition there would probably be important economies as a result of the greater allowable transit time of the deferred messages. If during the peak period two channels are justified on the present basis, two must be provided, but if a portion of the traffic could be subjected to delay of 90 minutes or so at that point, the permissible "carry over" could quite conceivably include the whole of the "deferred" traffic and thus one channel may suffice. With the extension of the use of Teleprinter apparatus to all circuits carrying 200 messages per day, the necessity for additional points between area centres and group centres would not arise as the carrying capacity of the instrument would in most cases greatly exceed the anticipated load. Some additional points would probably be necessary between zone centres and between zone and area centres, but it would probably be found expedient to reinstate some of the former non-basic circuits the withdrawal of which has had such a deleterious effect upon the quality of service.

With regard to the delivery service, it would seem that some form of docket system over and above a satisfactory basic wage would give good results. It may be argued that such a scheme would lead to competition and friction among the boys, but friction exists at present; only the motive may differ. It is well known to despatching officers that the most ingenious boy is usually the last on turn for despatch, but with the introduction of the docket system his skill could be used to better purpose to the benefit of all concerned. If the deferred service were to be introduced, delivery to a very large extent would probably be effected by the afternoon post. Deferred messages received later could be despatched with ordinary telegrams or, if necessary, in hourly batches. In rural areas where casual messengers are employed, delivery of deferred matter would probably only be effected by post or telephone.

The advent of the Teleprinter seems to have given the service a new lease of life and it is not difficult to visualise a really efficient, popular, and economically sound telegraph service with this instrument as the standard one in use. If there is no justification for any suspicion that our administrators are crying "The Telegraph Service is dead—Long Live the Telephones," we would respectfully suggest that they set about the task of reviving the

service in real earnest. It is no use tinkering with all-night services from petrol stations and other minor matters when the whole system of charges is stupid in the extreme. Let us have a revision of our tariffs and a much more delicate and modern method of charging evolved. Let us have at each telegraph counter a notice of this description:—

SERVICES AVAILABLE.

	Urgent. *Maximum* delay 30 mins. to office of destination.	*Ordinary.* *Maximum* delay 90 mins. to office of destination.	*Deferred.* *Maximum* delay 6 hrs. to addressee.
	s. d.	*s. d.*	*s. d.*
Under 25 miles ...	9	6	4
„ 50 „ ...	1 1	9	6
„ 100 „ ...	1 6	1 0	8
„ 200 „ ...	1 10	1 3	10
„ 300 „ ...	2 3	1 6	1 0
Over 300 „ ...	3 0	2 0	1 4
	1*d.* per word after 12.		½*d.* per word after 12.

When this has been done the service will, we believe, be stimulated to a degree which will surprise even its best friends.

W. H. L. and J. S. (Carlisle).

[NOTE.—We welcome the interesting and well-considered proposals of our correspondents. In view of past experience, however, we suggest that they are rather optimistic in their assumption that Parliament could be induced to sanction any increase in telegraph charges.—ED., *T. & T. Journal.*]

HOW TO IMPROVE THE TELEGRAPH SERVICE.

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

SIR,—Mr. J. Veen's letter in the current issue of the *Journal* is interesting, and he will be pleased to learn that touch-typing has been in operation in the Central Telegraph Office since 1907. In fact, I think the C.T.O., so far as the British Post Office is concerned, was the pioneer.

At its inception a speed minimum of 30 words per minute was necessary for qualification. Here again, I believe the C.T.O. was unique in requiring this speed test.

The question of style is intimately bound up in that of chairs, and I am glad to note that Mr. Veen stresses the position of the operator. Arms close to the body, shoulders and elbows in the same vertical plane, minimum movement of the forearms, elbows and shoulders, and maximum movement of the fingers. If the elbow is in the same horizontal plane as the middle tier of the machine then the operator is in the best and easiest position for typing.

The keyboard should be clear of obstruction so as to give the operator's body free movement.

It is gratifying to observe how at long last the telegraph authorities, which have the power to shape policy, are orientating their point of view in regard to such subjects as touch-typing.

In theory, type keyboard working is the final word in manipulation. Its ultimate success rests upon stability of apparatus and ability of operators. Given these two, then telegraphy must be efficient.

The C.T.O. recognised the need of manipulative efficiency and inculcated touch-typing, irrespective of the system by which it is performed, with the introduction of the "Gells."

Touch-typing is two-fold in its effects; it engenders accuracy and it prevents undue strain upon the operator.

Accuracy is essential in telegraphy, and just as eminence is attained in piano playing when the fingers sense the keys and the eyes remain fixed upon the score so in typing the same applies. The drudges are those who merely tintinnabulate upon the keys with uncertain finger movement.

To the touch-typist it does not matter an iota whether the keys are blind or shielded; his hands are anchored and confidence is bred to the total elimination of nerves.

Think, therefore, what this means to the health of the operator. There is no greater strain upon the nervous system than to acquire the painful habit of eyes glancing from copy to keyboard.

Its victims show it in their characteristics. They become neurotic, lack facility, their speech becomes slow, and generally the effect upon their mental virility is suppressive.

The British Post Office has instituted a periodical inspection. The officer performing this duty is instructed strictly to inspect the style of the operators. He must draw attention to a lapse and the Department gives facilities for a refresher to enable the operator to recover his self-possession.

Operators should realise these two-fold advantages of touch-typing, especially as the pencil, with which most messages are written, is trying to the eyes if the latter have to glance continually up and down. To coin a phrase: Touch-typing rivets the eyes and anchors the hands.

Rhythmic typing is good, and I am glad to know from Mr. Veen's interesting letter that the Dutch telegraphs are teaching their operators by this method.

The best schools teach similarly, though the principle is slightly different. At the Pitman's Colleges the instructor beats upon a sound box. The students place their hand beneath the shield which hides the typewriter, the copy is on a rack, level with the eyes, and, on the word "go," the typing follows in unison with the beat.

I do not think there is a more appealing sound than that of rhythm, whether it is typing, a regiment marching, or perfectly timed music.

Of course, speed is necessary. No one should be qualified under 40 words per minute. This is an elementary speed, and the installation of keyboards is not justified at less.

It is pleasing to observe that the Dutch practice period is rather generous, and also to note the reasons advanced, viz., to ensure that the operator *shall be confident* when placed on "live" traffic. That is the only Mecca.

A variety of exercises sufficiently assorted to retain interest are, of course, desirable.

Allusion is made to a simplified keyboard. The British Post Office decided in this direction some years ago. A standardised keyboard is a *fait accompli*. Similar lay-outs with equality of touch are good manipulatively and allow for interchange of staff, which eases supervision.

The seeds of touch-typing have been sown and it is refreshing to see the fruit appearing.

It is many years since Mr. E. S. Pratt, of the C.T.O., started his lonely furrow for touch typing. Since that day his students have taught it in many offices, and perhaps, one day I may be permitted to detail the vital difference this method has made in the disposal of traffic.

C.T.O., Oct. 12, 1929. W. T. GEORGE.

THE FIRST EXCHANGE IN EUROPE.

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

SIR,—In the October issue of the *Telegraph and Telephone Journal* there is, on page 7, evidence demonstrating that the first telephone exchange in this country was the "Coleman Street" Exchange, which was put into service during August, 1879. On page 4 of the same issue is an article describing the new Metropolitan Exchange.

It is interesting to note that the modern "Metropolitan" Director Automatic Exchange actually serves an area which includes the site of the original "Coleman Street" Exchange and that as it, like "Coleman Street" was cut into public service during August, it completes to a month exactly 50 years of progress of telephone engineering. Yours faithfully,

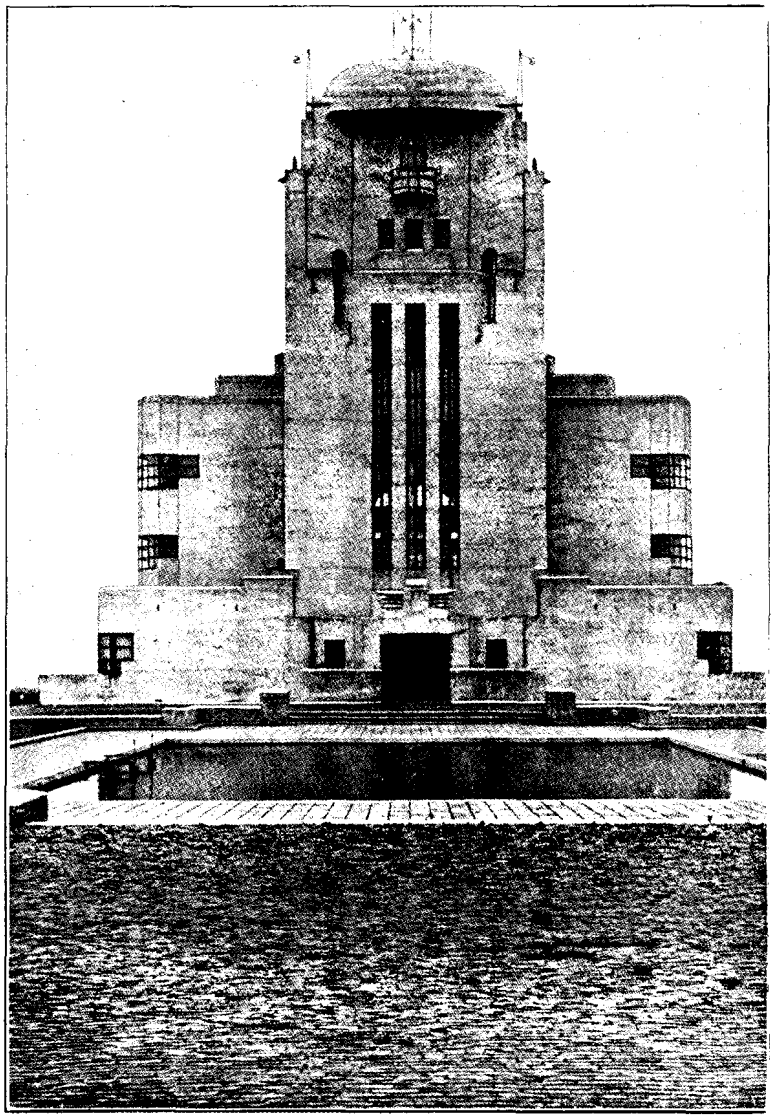
H. G. S. PECK.

General Post Office (Alder House), Oct. 22, 1929.

FOR OUR ADVERTISERS.

The following contracts are open, and all references should be made to the Department of Overseas Trade, London. London, S.W.1, South Indian Railway Company requires supply of power signalling for electrification of Madras suburban services. Apply specially by Nov. 8 to offices of the company, 91, Petty France, London, S.W. New Zealand, P. and T., Nov. 12, Supply of four-conductor telephone operators' cords. Reference BX 5685. South African P. and T., Nov. 14, Supply of 400,000 lb. hard drawn copper wire, 2,000 lb. soft-drawn tinned copper wire (Tender 173). Reference AX 8510. Chili, Santiago, Same date, Government Supply Department, Telegraphic material. Reference BX 5746. New Zealand, Nov. 18, Res. spools (P. and T. 151 1832). Reference BX 5716. Also, Nov. 19, Telephone transformers (P. and T. 151 1807). Reference BX 5718. Also, same date, Automatic wall and table telephones (P. and T. 151 1825). Reference BX 5717. Australia, Melbourne P.M.G.'s Department, same date, Supply telephone generators and motor generators (Schedule No. C. 479). Reference BX 5662. Melbourne, Government Railways, Supply of (1) 2,200-volt automatic oil switches for railway signalling, (2) indication transformers for railway signalling. Reference BX 5735 and 5737. Latest date Nov. 27. Also, by 25th, Victorian Electricity Commission requires tenders for watt-hour meters, remote recording instruments, &c. (Spec. 29 92). Reference BX 5672. Melbourne, State Electricity Commission, Dec. 16, Oscillograph equipment. Reference BX 5692.

J. J. T.



RADIO TRANSMITTING STATION (LONG-WAVE) AT KOOTWIJK, HOLLAND.

This building of striking architectural design is the radio station whence are transmitted the radio services between Holland and the Dutch East Indies.

[*Verslaagaan de Koningin betreffende den P. T. en T.*, 1928.

REMARKABLE CAREER OF A TELEGRAPHIST.

THE early history of Anglo-Continental telegraphy is very closely linked with that of the late Submarine Telegraph Company. It is therefore particularly interesting, if sadly so, to note the disappearance one by one of some of the pioneers. One of these, in the person of Mr. J. Jeffery, of the India Rubber, Gutta Percha and Telegraph Works Co., Ltd., quite recently passed away in his 76th year. It is true he only spent about two years with the "Submarine," and that as a Morse and Hughes telegraphist from 1870-2, but the practical experience thus gained added to his education at Victoria College, Jersey, gave an impetus to his scientific instinct, for he was almost immediately employed as assistant electrician on board the cable ship *Dacia* during the laying of the cable between the Lizard and Bilbao.

Then, continuing as senior clerk at the Lizard till 1874, he was appointed to the charge of the Marseilles-Barcelona cable at Marseilles, due doubtless to his knowledge of the French language. In 1876 he became Senior Superintendent of the Direct Spanish Telegraph Co., Ltd., at the Lizard. 1879 saw him again on board the *Dacia*, on the cable expedition between Marseilles and Algiers. In 1880 he laid a double underground cable between the Lizard and Falmouth, as also a similar one between Las Arenas and Bilbao in 1883. In August of the same year he was made manager of the entire system of cable stations of the Spanish National Submarine Telegraph Co. 1886-8, the management of the Northern division of the West African Telegraph Co. was added to his responsibilities.

The years 1872, 1874, 1879 and 1883-4 saw him busily employed in the laying of no less than seven important new cables.

On three occasions he represented his company at International Telegraph Conferences.

He was also a director of an electricity supply company and was Chairman of the Ross Electric Light and Power Company up to the day of his death.

J. J. T.

PROGRESS OF THE TELEPHONE SYSTEM.

THE total number of telephone stations in the Post Office system at Aug. 31, 1929, was 1,803,927, the net increase for the month of August being 9,503.

The growth for the month is summarised below :—

	London.	*Provinces.*
Telephone Stations—		
Total at Aug. 31	644,440	1,159,487
Net increase for month	2,780	6,723
Residence Rate Subscribers—		
Total	155,722	245,578
Net increase	779	1,931
Call Office Stations (including Kiosks)—		
Total	5,702	22,451
Net increase	31	445
Kiosks—		
Total	1,422	5,548
Net increase	39	80
Rural Party Line Stations—		
Total	-	10,493
Net increase	-	3
Rural Railway Stations connected with Exchange System—		
Total	17	1,194
Net increase	-	22

The total number of inland trunk calls dealt with during June, 1929 (the latest statistics available) was 9,670,669, representing an increase of 456,632, or 5%, over the total for the corresponding month of the previous year.

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

LONDON—Stanmore, National (automatic), Mitcham (automatic), Flaxman (automatic).

PROVINCES—Abbotts Ann, Abbotsbury, Beattock, Burnt Pelham, Chilbolton, Coningsby, Llanfair Talhaiarn, Lorton, Whitwell (Herts) (all rural automatic); Bideford, Southbourne.

and among the more important exchanges extended were :—

LONDON—Bexley Heath, Eltham.

PROVINCES—Buxton, Frinton-on-Sea, Heswall, Norwich, Penzance.

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

Alsager—Sandbach,

Gallows Corner—Southend (section of London—Southend cable),

while 69 new overhead trunk circuits were completed, and 78 additional circuits were provided by means of spare wires in underground cables.

LONDON ENGINEERING DISTRICT NOTES.

New Exchanges Opened during October, 1929.

Exchange.	*Equipped Lines.*	*Date of Opening.*	*Contractor.*
Colindale ...	Hypothetical on Hendon Automatic, which is equipped for 4,200 lines	Oct. 3, 1929.	A.T.M. Co., Ltd.
Hillside ...	2,400	Oct. 24, 1929.	Do.

London Engineering District Chess Club.

The London Engineering District Chess Club, known in the Civil Service League as the "Denman" Chess Club, comprising two competing teams in the League, opened its tenth session on Thursday, the 17th inst. In the unavoidable absence of the Club President, Mr. Gomersall, the chair was taken by Mr. Freeman.

The Chairman said that as one of the founders of the Club, he was keenly interested in its welfare. He deplored the fact that he had too little spare time to take a very active part in the Club's proceedings. Mr. Nevill, the Secretary, in giving a brief résumé of the Club's activities of the previous session, said he wished to congratulate the members on their continued strong affection for the game. It was, he said, a source of satisfaction to himself and the Committee to find their enthusiasm as great, if not greater, than when they started the Club ten years ago. It was also quite as keen satisfaction to be able to state that almost without exception their original members were still with them and going strong.

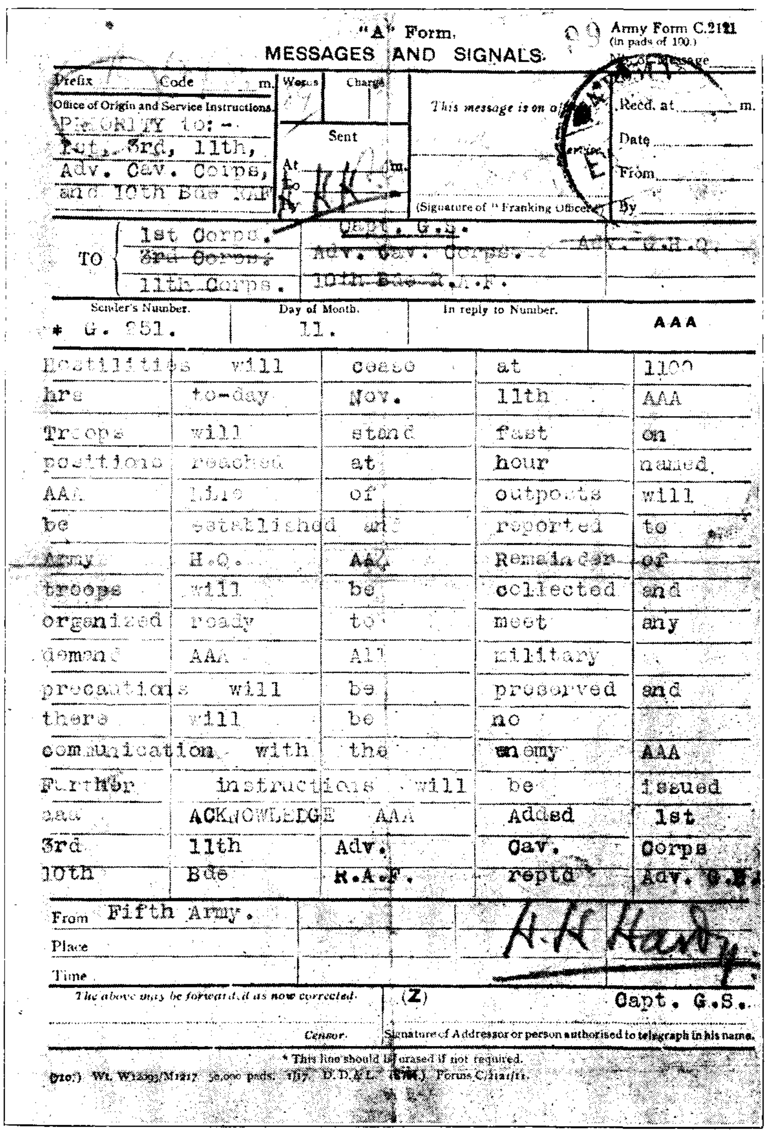
He (the Secretary) had again the pleasure of reporting that the Club had annexed a trophy of the Civil Service League. Their second team had won the trophy of Division V by scoring 11 out of a possible 12 points—winning 10 match games outright and drawing two. They would remember, he said, that this was the second time the Club had won a League trophy. In 1926-27 the first team scored 11 points out of a possible 13, winning the Division III trophy.

Their opening night was always the occasion of the Annual Prize Distribution. The prizes related to the previous session and had been keenly contested. He could safely say that no keener contest could be witnessed than the competition for the Club President's prize, the several rounds of which had prolonged the session into May, owing to adjournments and replaying of well-contested games.

The Chairman then distributed the prizes, and while congratulating the winners on their success, he referred back in several cases to the times when he and they had played for the original Post Office Engineers Chess Club at the Chief Office.

The first skirmish of the season consisted of a *Lightning Tournament* of five rounds, the ultimate winner being a veteran member of the Club, Mr. R. A. Wells, who showed conclusively that he could still give points to his younger opponents.

A most enjoyable evening, which promised well for success in the forthcoming session, concluded with a hearty vote of thanks to the Chairman.


"A" Form. MESSAGES AND SIGNALS. Army Form C.2121 (in pads of 100.)

PRIORITY to:- 1st, 3rd, 11th, Adv. Cav. Corps, and 10th Bde RAF

TO 1st Corps. 3rd Corps. 11th Corps. Capt. G.S. Adv. Cav. Corps. 10th Bde R.A.F. Adv. G.H.Q.

Sender's Number. G. 251. Day of Month. 11. AAA

Hostilities will cease at 1100 hrs to-day Nov. 11th AAA Troops will stand fast on positions reached at hour named AAA Line of outposts will be established and reported to Army H.Q. AAA Remainder of troops will be collected and organized ready to meet any demand AAA All military precautions will be preserved and there will be no communication with the enemy AAA Further instructions will be issued AAA ACKNOWLEDGE AAA Added 1st 3rd 11th Adv. Cav. Corps 10th Bde R.A.F. reptd Adv. G.H.Q.

From Fifth Army. Place Time

A. H. Hardy Capt. G.S.

A MEMENTO OF THE FIRST ARMISTICE DAY.

Facsimile of original telegram ordering cessation of hostilities, Nov. 11, 1918.

London Engineering District Swimming Club.

The Home Office Swimming Club joined forces with the Post Office Engineers on Sept. 27, at the annual swimming gala which was held at the Lambeth Baths. Like its predecessors, the gala provided the members of the club and their friends with a really enjoyable evening's entertainment. All the events were keenly contested, and competitors never lacked the encouraging cheers of their supporters or the full measure of applause for their successes.

The artistic and clever display of floating given by the Lewisham Ladies' Swimming Club was fully appreciated by everybody, and Miss Phyllis Harding and the members of the Amateur Diving Association received well-merited applause. The great sporting event of the evening was, of course, the team championship of the Civil Service—the race for the Clark Cup. The Engineers had to take second place to the R.E.B. Club, who retained the trophy after a great race.

The swimming gala is rapidly taking its place as a social event of the year, to be eagerly looked forward to by club members as an opportunity for meeting colleagues, their wives and families, in the cheery atmosphere of a sporting occasion. We were all very pleased to see so many well-known faces among us.

NEWCASTLE NOTES.

THE New Bridge Street Baths was the scene of great excitement on Oct. 4, when the Exchange Swimming Club held its second Annual Gala. The attendance was excellent, the demand for tickets far exceeding the supply, and many late-comers were unable to obtain seats. A fine display of swimming was witnessed, the judges frequently finding it a difficult task to decide on the prizewinners.

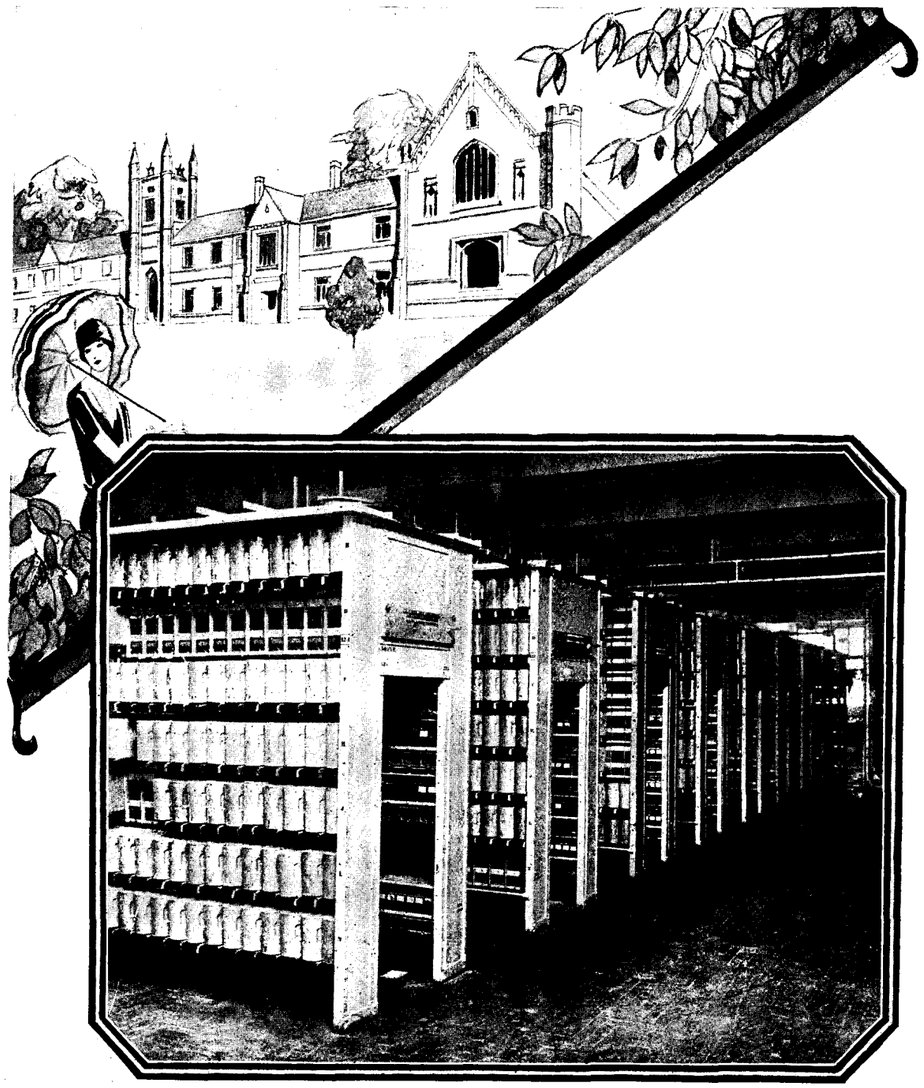
The Club Championship Shield was won by Miss R. Farquharson, but not before last year's holder, Miss A. Beattie, had made strenuous efforts to retain the title. Miss Farquharson also was again successful in winning the cup for graceful swimming, whilst the medal for diving was awarded to Miss R. Wallace.

An interesting event of the evening was the invitation scratch race, open to the male staff of the General Post Office. The winner was Mr. J. Barratt, of the Postal Branch, a close second being Mr. C. Chambers, of the Engineering Department, while Mr. A. C. Miller, of the Telegraphs, was third. Much fun was caused by the novelty race, the entrants having to swim the width of the bath, don pyjamas, and swim back again.

Club members gave an excellent display of life saving, and the spectators were entertained by Mr. J. O'Neil, of the Gateshead A.S.C., who gave a most interesting exhibition of diving and ornamental swimming. The District Manager, Mr. J. D. W. Stewart, Club President, ably presided, and, in presenting the trophies, voiced the general opinion that the evening had been a huge success.

A Social Evening for Telephonists was held in the Brighton Assembly Rooms on Oct. 14, when Miss E. M. Holt, Supervisor of the Trunk Exchange, very kindly presented the swimming prizes for other events.

The first Telephone Staff Dance of the season will be held on Nov. 15.

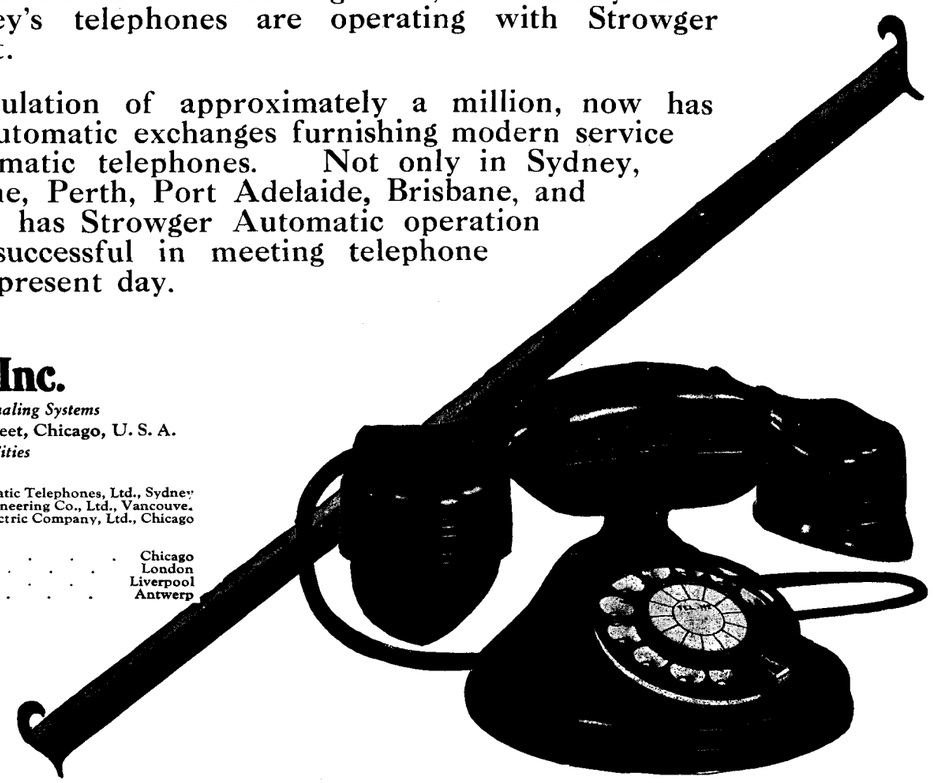


Strowger Automatic selector switches in the City North office, Sydney, Australia. New installations and conversions are constantly being made in Sydney with full automatic operation as the ultimate object.

dney's Modern Telephone Service—Strowger Automatic Development

S EARLY as 1914, the citizens of Sydney had their first experience with Strowger Automatic telephone operation and learned to appreciate its advantages. The success of the initial lation of this equipment was so marked, that subsequent ons and conversions have proceeded at a rapid rate under the ion of the Australian Post Office engineers, until to-day more 70% of Sydney's telephones are operating with Strowger matic equipment.

ey, with a population of approximately a million, now has en Strowger Automatic exchanges furnishing modern service me 53,000 automatic telephones. Not only in Sydney, lso in Melbourne, Perth, Port Adelaide, Brisbane, and ng in Australia, has Strowger Automatic operation found highly successful in meeting telephone rements of the present day.



matic Electric Inc.

Manufacturers of Strowger Dial Telephone and Signaling Systems
Factory and General Offices: 1033 West Van Buren Street, Chicago, U. S. A.
Strowger Service Offices in All Principal Cities

EXPORT DISTRIBUTORS

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For Canada	Independent Sales and Engineering Co., Ltd., Vancouver.
Elsewhere	The Automatic Electric Company, Ltd., Chicago

ASSOCIATED COMPANIES

American Electric C	Chicago
International Autom Company, Ltd.	London
Automatic Telephon Company, Ltd.	Liverpool
The New Antwerp Electrical Works	Antwerp

STROWGER AUTOMATIC

The
Telegraph and Telephone Journal.

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

Editing and Organising Committee - - - Lieut.-Col. A. A. JAYNE.
J. STUART JONES.
W. D. SHARP.
J. F. STIRLING.
J. W. WISSENDEN.

Managing Editor - - W. H. GUNSTON.

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.*

VOL. XVI. NOVEMBER, 1929. No. 176.

TELEPHONE DEVELOPMENT.

MR. POWELL-JONES, in the course of the very interesting paper on the activities and aims of the Telephone Development Association which he read before the London Telephone and Telegraph Society last month, expressed his opinion that the general tone of Press criticism was more favourable to the Post Office Telephone Service than it was some years ago when his Association was launched. On the whole, this is, perhaps, true if we make allowance for a certain bias against any form of Government ownership, and for the humorist whose efforts figure so largely in the daily press nowadays and who finds in the telephone an inexhaustible, if somewhat hard-worked, mine of jokes. Nevertheless, a constant belittling of the usefulness of the telephone in the lighter columns and a reiteration of under-development, which amounts almost to indulgence in an inferiority complex, in the serious columns, does not, as Mr. GRANT pointed out in the discussion which followed the reading of the paper, make for increasing the telephone habit of the people or facilitate the task of raising this country's telephone development to the level of that of some oft-quoted foreign States.

It is manifest that the Post Office, the Telephone Development Association and the Press have a common interest in the expansion of the British telephone system. The first two for obvious reasons, and the last, not only because the more that system is developed and the more efficient it becomes the greater is its value to the telephone user, but also because they wish to see this country compare favourably with its rivals in all respects. We do not undervalue the stimulating effect of good criticism, and as postal officials we do not deny that the telephone development is for many and complex reasons much lower than we should like it to be: we only suggest that some kinds of criticism are scarcely calculated to achieve the end they may be presumed to have in view.

It is not generally realised that of the countries with the greatest telephone density (as shown in a diagram exhibited by Mr. Powell-Jones, and familiar to newspaper readers), only one country which is above Great Britain in the table, viz., Australia, shows a greater percentage increase during the last 8 years. Since 1920 telephones in Australia have increased by 111%; in Great Britain by 78%. In Germany they have increased by 63%, in Canada by 57%, in the United States by 42%, in Denmark by 30% and in Sweden by 22%.

It may, perhaps, be urged that it is easier to show a high percentage development on one million than on 13 million telephones, and that countries with a low telephone density should, in the nature of things, exhibit a more rapid growth. This, however, is not altogether the case, for telephone history shows that at that period when countries begin to reach a high density, the development curve begins to soar upwards. In other words, when the telephone habit is already firmly established, the demand for the telephone by those who have it not becomes the more insistent. Attempts to forecast the "saturation point" in a country's telephone development are invariably doomed to failure.

Each year the number of telephones added to the British system is larger than the last. In 1927 it was 121,000, in 1928 it was 125,000, and in 1929, according to all present indications, it will be between 128 and 129,000. This figure may be surveyed, if not with complacency, at least with hopefulness. It shows that Great Britain is at any rate making up some of its leeway in matters telephonic.

HIC ET UBIQUE.

A NEW telephone cable from Paris to Bordeaux, entirely underground, says *The Times*, was put into service on Saturday. The cable is part of a national scheme, of which the first link, from Paris to Lyons and Marseilles, was inaugurated recently. The Paris-Bordeaux line is 335 miles long, contains 200 strands, and cost 190,000,000f. (about £1,520,000). It is "loaded" by self-induction coils throughout its length.

According to the statistical report of Posts, Telegraphs and Telephones of Czecho-Slovakia for 1928, 77 new main telephone exchanges were opened during the year and 42 sub-exchanges. A long-distance underground cable between Dresden—Prague—Brunn—Bratislava has been laid with a view to improving the international services, and work has been commenced on cables between Prague and Pilsen and Brunn and Moravian Ostrau. Altogether 10 international lines and 226 inland trunk lines have been constructed and put in service.

According to the *Daily Express*, both Mr. Ramsay MacDonald and Mr. Winston Churchill were called to speak on the transatlantic telephone. It adds rather naively: "but whereas Mr. Churchill hated it, the Premier appeared intensely delighted," for we learn from a subsequent paragraph that whilst the Premier had a pleasant chat with his family, Mr. Churchill was called from his bed to inform some quidnunc whether he considered Mr. Baldwin a Bourbon. If Mr. MacDonald had been troubled in the small hours to answer such conundrums as "Do you consider Mr. Snowden a Hapsburg or Mr. Thomas a Plantagenet?" he might have been equally displeased.

The *Hardwareman* recently published a very good article impressing on retail tradesmen the value of a telephone connexion. The writer argues thus with those who say they would prefer customers to come to their shops and buy personally:—

"If it could be assured that a customer would visit the shop when no 'phone was available it would no doubt be advantageous to be without one—but there is no such assurance. The probability is that the customer will go elsewhere either by 'phone or passing.

If a hardwareman is catering for a decent family trade a 'phone is essential, and if he cannot secure half a sovereignsworth of business by it in a week he is a poor salesman. One and three-quarter million people don't subscribe for the fun of the thing, and the fact should be allowed to sink deeply."

The *Daily Mail* is responsible for the following story:—

"Last week two foreign women entered a 'bus and asked to be put down at a certain private house. When they were asked where it was situated they said they had forgotten the address, but handed the conductor a piece of paper with a telephone number on it. 'You can easily find it out from that,' said one of them in excellent English.

"When the conductor explained that he did not carry either a telephone book or a Post Office Directory or a wireless telephone, and was naturally unable to help them, one of them replied: 'Any *gentleman* would take the trouble.'

"The story is so incredible that I believe it to be true."

After this comment, the narrator is, we think, ripe for entry into some strict religious order.

Miss Marion Lorne, before her appearance in the play "Sorry You've Been Troubled," underwent a short actual experience of life in an exchange. She came out of it with an enhanced opinion of the operator. She writes in the *Daily Sketch*:—

"In my far from blissful ignorance I used to rave at the poor dears for giving me the wrong number. I never thought of the number of times they gave me the right one. Of course, I know that when a man's got the toothache it doesn't console him, not much, to be reminded how often he hasn't got it. And no doubt that applies to the 'phone. But all the same, it's true.

"And if you saw the girls at work, getting the next number just as they've plugged the previous one, with lights flashing up and vanishing in front of them, like the magicians' fires on the Isle of Voices, well, you'll never grumble again."

A visit by a disgruntled subscriber to an exchange has often produced a similar result.

A Reuter's telegram story about a £140 call from Toronto has been going the rounds of the Press. It shows occasional embellishments and emendations in its different versions, but the standard text is as follows:—

"A prominent Welsh visitor to Toronto was charged £140 when, after asking for a telephone connexion with England, he inadvertently left the receiver down (or 'off the hook,' some versions) while looking up some information (some authorities add 'and forgot to hang it up again').

"He was finally billed for a 52-minute transatlantic call, amounting to over £140, during which time the line had been kept open for him.

"The visitor was unaware that the system obtaining in Britain does not apply in Canada, namely, that the call is broken off automatically at the end of six minutes. He paid the bill, however (some versions insert 'nobly')."

We give the story for what it is worth, and are sorry to spoil it by observing that in Great Britain the call is not broken off automatically at the end of 6 minutes. The operator merely announces "3 minutes," "6 minutes," &c., at the end of each 3-minute interval, and the call runs on. We imagine, however, that the operator, on observing that no one was speaking, would disconnect the line and terminate the call.

By the way, how does one become a "prominent" visitor at a place. Would you, gentle reader, become a prominent visitor at Eastbourne, for instance, by bathing from the beach in a macintosh, or occupying the largest suite in the largest hotel, or how?

The following "unsolicited testimonial" was recently received by the District Manager of Telephones, Newcastle-on-Tyne, from a Newcastle firm, and circulated amongst the exchange staff:—

"Having now been transferred to Central 8383, we presume that the operators that looked after us on the 1115-6-7 lines will not be the same as are attending to us now.

"That being the case, we should be grateful if you would tender to the operators who have in the past been looking after us, our grateful appreciation for the excellent attention we have had throughout.

"Naturally, in the course of time, these operators have been many and varied, but the last year or two the attention has been of such a high order we feel we would like the girls to know how much we appreciate it.

"From our few days' experience on the new switchboard, we are glad to say that we appear to have been equally fortunate now."

The District Manager, in thanking the subscriber, remarked that our good deeds as a rule passed unnoticed, and it was only when something untoward occurred that we heard from subscribers. The letter was therefore as an oasis in the desert, and as a well-spring to a thirsty man.

THE VALUE OF TRADITION.

BY P. J. MANTLE.

(Reproduced from a paper read to the London Telephonists' Society, 4th Oct., 1929.)

BEFORE proceeding to the consideration of the value of tradition as an aid to progress in our own individual sphere of telephone work, it may be helpful to postulate the view that we live to-day in a world in which progress is steadily maintained and that tradition plays an important part in this advancement.

You will remember that it was Shakespeare who said:—

"The *evil* that men do lives after them,
The *good* is oft interred with their bones."

but it may be contended that if this Shakespearian view were even remotely true, human progress would be impossible. Rather would it seem to be the case that progress is largely dependent upon tradition, and that—most fortunately—we have the ability to select, perpetuate and build upon the good, and that any retrogression caused by evil is but a transient phase.

On the question of general progress H. G. Wells, in his "New Worlds for Old," expresses this view:—

"In spite of all the confusions and thwartings of life, the halts and resiliences and the counter-strokes of fate, it is manifest that, in the long run, human life becomes broader than it was, gentler than it was, finer and deeper. On the whole—and nowadays almost steadily—things get better. There is a steady amelioration of life and it is brought about by goodwill working through the efforts of men."

In any attempt to evaluate our own contribution to this steady progress in human affairs—and improved methods of communication play no small part in this—it is possible, I think, to demonstrate that we and particularly the younger members of our profession have inherited many very valuable traditions and that we have our share in the "inheritance of obligation" which such traditions must impose.

It seems fairly obvious that the more these obligations are recognised the greater will be their influence for good, and it is with the object of gaining acceptance of the view that traditions have been established in our Service that I have (with some diffidence) ventured on a paper on this abstract and rather ambitious subject.

And in case it is thought that preference should have been given to the consideration of some more practical and perhaps technical aspects of our Service, with its manifold problems, I would like to quote the following lines that I came across recently in Bailey's "Festus" which seem to have a bearing on the case:—

"We live in deeds not years,
In thoughts, not breaths,
In feelings, *not in figures on a dial.*
We should count time by heartbeats."

In these days when the study of industrial psychology is engaging more and more the attention of authorities responsible for the control and guidance of large staffs, a good deal is heard of what is termed "The will to work" and how its development can be fostered. This "will to work" is a quality that all normal individuals possess to a greater or lesser degree, but is subject to influences, some of which may act as incentives and others that may have a deterring effect.

The incentives to do good and better work would include such things as, actual pleasure obtained by the performance of a congenial task, the desire to conquer difficulties, the desire for gain whether in money or position, the desire to establish a reputation and, more particularly, the force of immediate example.

The "will to work" is affected adversely by such deterrents as difficulties over which the worker has no control, outside distractions from the task in hand, the absence of interest and enthusiasm, and the lack of appreciation by superiors of good work performed. But possibly the chief deterrent to the attainment of the right will to work on manipulative duties is a sense that the work is being done under compulsion, and it is here that the incentives of present example to be copied and established traditions of good service to be maintained will have their greatest scope for exercising a beneficial influence.

For the purpose of inculcating in any staff a proper regard for the importance, the responsibility and the dignity of their labours, it is difficult to conceive of any more effective measure than to secure the recognition of traditions of work well done, and in this way to obtain what Francis Bacon calls "The Force of Custom."

The value is enhanced by the irresistible nature of the appeal of tradition to all those to whom its upholding and continuance is entrusted, since before a tradition can be recognised as such, the moral obligation it enjoins must have an universal acceptance.

I would submit that, generally speaking, a tradition is not established as the work of one man only, although it may be the work of men inspired by one man. The Nelson tradition, for example, has been established by its recognition and adoption by succeeding generations of the Navy, so that the precept it enjoins has become a first principle.

Neither would it seem to be the case that traditions are created consciously. "A task in hours of insight willed" is carried out faithfully and well, and a standard of efficiency is created and emulated by others. Given conditions which make its continuance possible, the recognition of this standard becomes more general and in the fulness of time a tradition is established.

In this paper I have dealt only with the *value* of tradition and have necessarily confined myself to those examples which appear to be worth perpetuating. That there have been foolish and unworthy traditions will be obvious. The tradition which was maintained for so many centuries that a woman's sphere in life was bounded by domestic and maternal cares, and that her only modest dress should consist of an amazing swathing of draperies and millinery, was obviously one which could not be maintained in more enlightened days.

In considering the question of the inception, growth, and establishment of traditions, one is inclined to think that they can only be looked for in association with old time-honoured institutions, but traditions can, however, be found exercising no small amount of influence in such comparatively recently established callings as those of aviators and wireless operators, to name only two. It is true that the wireless operator's tradition of remaining at his post in the sinking ship sending out his S.O.S. messages until the last moment, is founded on the earlier tradition that the Captain does not desert his ship while it remains afloat; and that during the War the deeds of "Q" boat crews are actuated by the same stern sense of duty that animates the older naval and military services; yet the fact remains that the individual traditions are of recent origin. Our own Service, though generally regarded as a latter-day institution, is really almost middle-aged, for the Service as such has been recognised for nearly 50 years, and it is my submission that we have in this time built up, by example, precedents that are entitled to rank and should be accepted as honourable and worthy traditions, so that we and future generations of telephone men and women may be inspired to endeavour to maintain these standards of service rendered without regard to personal sacrifice on the one hand or personal advantage on the other.

But here, perhaps, we should be well advised to pause and to consider how this matter will appeal to the younger generation, for it may be necessary to exercise care in this somewhat irreverent age not to over-emphasize the virtues of our predecessors.

It is perhaps fortunate that the example which I would choose to put first of all our traditions is one that has been continued right up to date and is still being fully maintained. This question of preference is, of course, a debatable one, but I would like to suggest that the tradition that should stand first and foremost in our regard is this:—

The expenditure of effort without restriction or reserve in dealing with the requirements of the traffic load to be handled.

It is my experience that at all times in the history of the Telephone Service of this country, no matter how adverse the conditions, abnormal loads, exceptional shortage of staff and sometimes equipment, there has been no faltering—the service requirements are met to the full limits of the telephonists' endeavour.

This might be held to be an obligation imposed on all who are engaged on urgent work for the public at large, and it is true that telephonists have no monopoly of loyalty to the public, but I believe that in respect of the quality of the response they make to the demands of the service, telephonists as a body have established a standard of which they have every reason to be proud, one which will bear comparison with any other public service, and it is for this reason that I would give first place to the development of this outstanding characteristic.

I am not, of course, referring to the special efforts required to meet particular occasions, some of which provide their own stimulus, although this is also a matter in which the staff can very well take pride in their achievements.

The full story of the work of the telephone staffs during the Great War remains to be told and is but little appreciated by the outside world. When it is told it will be an inspiration to all who follow in their footsteps to be ready for and equal to any emergency.

Present-day operating conditions during the lengthy transitional period of conversion from Manual to Automatic working require, if efficiency is to be maintained, the continuance of those qualities of unstinted application for which I have claimed we have established a tradition which should be given first place. Then we come to those traditional qualities of courtesy and promptness that operators have made particularly their own, and that striving for accuracy which comes so naturally to all honest craftsmen, and looking into the future it would seem to be fairly evident that—to put it concisely—the ultimate result of the conversion will be to rely on purely mechanical means for the establishment of the short distance and more straightforward types of call, and to rely on the telephonists for the more involved special services. In addition to this it would seem highly probable that we shall always have to cater for an appreciable amount of assistance calls.

From this we may deduce that although the operator of the future will deal with fewer calls than at present, each transaction will represent a much higher call value and will demand the exercise of intelligence and tact of a high standard. In these difficult days that are to come we may rest assured that the worthy traditions we have established will be fully maintained. The purely physical effort will perhaps be less, but the need for a willing spirit of devoted service will be present to a greater degree than ever before.

There is this further consideration. Can we afford to treat with this abstract subject of inspiration, operating ideals, call it what you will, in this manner, or are we, in effect, by attempting to classify our standards and labelling them traditions, merely being sentimental and endeavouring to claim credit for what is after all only the efficient performance of work for which we are paid—in other words, doing our duty.

My answer to any such criticism, if it were made, would be this:—

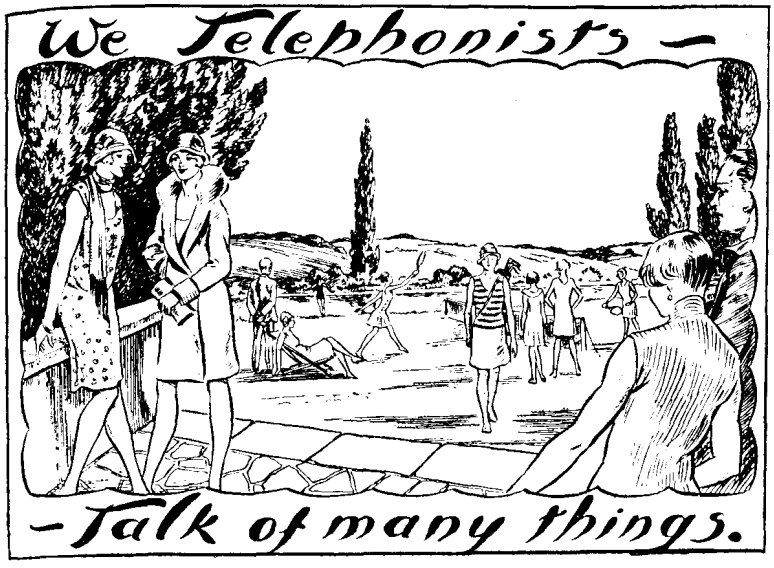
In all tasks of magnitude such as the efficient rendering of an important public service some inspiration is required to meet the day-to-day difficulties that are inevitably encountered. However devoted and zealous the staff may be, there will be progress and there will be retrogression or apparent retrogression, and it is during these latter disheartening periods that the value of a tradition may be best appreciated, in that it constitutes a rallying-point, a standard of achievement representing something that has been done, something that must not be surrendered, and something that if it be lost temporarily must be fought for and regained at all costs.

In this way a good tradition is an inspiration.

THE ST. JOHN AMBULANCE ASSOCIATION: LONDON POST OFFICE CENTRE (POST OFFICE AMBULANCE CORPS).

THE Annual Competitions for the London Postal Ambulance Challenge Shield and the Women's Trophy will be held on Wednesday, Nov. 20, 1929, at 7.30 p.m., in the King George Hall, Caroline Street, Great Russell Street, W.C.1. Admission is by programme—threepence—and a limited number of seats will be reserved at 1*s.* each.

Please help us by buying a programme or a ticket, and so show your appreciation and interest in the work done by the Centre.—Miss E. K. M. Meeser, Controller's Office, L.T.S., Cornwall House, Waterloo Road, S.E.1, Mr. J. E. G. Rogers, I.S. Mount Pleasant, E.C., *Joint Competition Secretaries.*



Low-Lying.

WERE I to commence this article in a conventional manner I should do so by saying "I must confess that I like lying on the floor." But this gambit is open to several objections. Firstly, there is, as far as I know, no compulsion at all in the matter. No one has asked me my preference as to the disposal of my body. Indeed, each of you will have already decided in your own mind the appropriate action to be followed immediately the first favourable opportunity presents itself, and when that moment arrives my only concern will be to dispose myself with comfort and with a speed which precludes explanation. Then, why should I confess? Confession implies conviction of a secret virtue or vice and it may be made humbly or defiantly and voluntarily or under compulsion. Lying on the floor is neither a virtue nor a vice—it is only a confounded nuisance to other people in the room. My recumbent attitude is no secret, for I have been discovered lying more than once and, unless an agonised yelp can be construed as such, I cannot be said to have confessed either humbly or defiantly. To avoid any misconception let me add that when I do lie on the floor I do so of my own free-will and not under the influence of a *force majeure* or inebriation. If you insist that to lie on the floor must be either a virtue or a vice, then I claim it as a virtue. Item, it leaves the easy-chair free for someone else; Item, it is morally better than any other sort of lying; Item, like foreign travel, it broadens the mind and at a smaller cost. To be trodden upon once whilst lying on the floor broadens whatever part comes under the clumsy hoof of the passer-by. To be trodden upon on the second occasion broadens the vocabulary both of the "treader" and the "treadee." Subsequent treadings merely teach wisdom and are in no way interesting.

In the low-lying attitude I find that unusual thoughts are prompted on usual subjects. I see the world from a new angle. Normally I cannot contemplate the presence of a cup of tea, a book and a pipe on the floor with any degree of equanimity, but when I am on the floor what more natural position for those articles could be conceived? The carpet raises burning topics in my mind. I wonder whether the minsters at AX and Kidder are built in the Gothic, Romanesque or Grotesque styles, and I conjure visions of Turkey and Persia with perhaps side-thoughts of delight and sherbet or cats and Omar. I am vaguely puzzled about mohair and as to what is a Mo and whether in any part of the world there is a herd of hairless Mos. The table is no longer a plane polished surface hung miraculously in space and set with fine linen and china. The dominant fact now is that it has legs which spiral with Jacobean twist up to a vault of cunning contrivance. I see that the chairs, so far from being merely articles upon which to sit down, are works of wondrous skill which compel an upward glance of appreciative admiration. I regard the carpenter now with an added respect. The ceiling is a wider and whiter expanse set at an immense distance, and it flows away to an horizon which never seemed so limitless. If I gazed long enough surely the stars would appear. From the floor I can see the real sky, blue and with fleeting white, the waving tree tops, the rooks going home. But those who are upright see only the flat face of the house opposite, with its painful curtains and its respectable aspidistra, and the new hat of its less new owner. They see also the hedge in the front garden which I should have trimmed were I not lying on the floor in idle contemplation. Alas for the vision of the upright. Shall I abandon my low-lying for this vision of the truth or shall I lie low!

PERCY FLAGE.

A Tribute.

(With apologies to Mr. Angus McDonald!)

Oh, sad were our hearts as we pored o'er the map
At the news of our Editress' motor mishap—
And tears of compassion fell fast down our bibs,
When we heard she had fractured quite three of her ribs!

Oh, dear Miss McMillan!—our grief is sincere—
We skip half the *Journal* since you are not here,
To brighten Our Page when contributors pall,
And curb Percy Flage' flights of fancy withal!

And yet, with dear Percy, humbly we pray
You'll be soon "on the mend"—as the cobbler would say.
We long for the day when at length you will be
Entirely unable your bruises to see!

And then, what a cheer!—what a cheer you will hear
From hundreds of maidens and men;
When at last they behold their Pet Playwright again!
The chaplets are waiting, and garlands by the score
To welcome our Jean to her empire once more!

C. A. S.

Our Portrait Gallery.

[*Photograph by Navana.*

No. 3.—MISS A. JUDGE.

Miss A. Judge started her career in the National Telephone Company. Her marked ability resulted in her early selection for special work, and her records show that after six years' service she had attained to the position of an Assistant Supervisor in the operating school, a position which she filled for 14 years and which she held at the time of the Transfer.

She now holds the position of senior interviewing officer, one for which her good judgment, power of quick decision and sympathetic outlook render her specially fitted. She has the inestimable faculty of being able to put the most nervous and hesitating applicant at her ease.

Her cheerful disposition and ready wit endear her to her colleagues, and the able manner in which she undertook and carried through the work of General Secretary of the L.T.S. Christmas Fair of 1928 is typical of all she does.

Outside the office she is keenly interested in amateur theatricals and operatic performances, and has in her time played many parts.

Holborn: Some Impressions.

"Are you transferred to Holborn for good? Do you think you will like it? Don't be afraid to ask anything you want to know, we've all had to learn the work."

The smiling faces of the Supervisors, who seem well versed in the art of coaching novices, the light, airy switchroom, the tap-tap of the keysenders and the humming of the dials, this is my introduction into the subscribers' Paradise—an Automatic Exchange.

Will I find it monotonous after a busy section in a manual exchange? It looks so simple, what can one exercise one's brain upon?

A few days pass, I feel that I have mastered the most intricate part of the business, but "Pride goeth before a fall."

"Good morning," says a voice at my side, "How is the contact on the seventh level getting on?"

How should I know? I cannot see a contact getting on a level, and, come to that, how do telephonists discover what is happening in the apparatus room?

I say something non-committal and the owner of the voice passes on, but I think over the matter without reaching any satisfactory conclusion. At last I decide to seek advice and ask a colleague the question which has become almost a standard expression to me—"How is the contact on the seventh getting on?"

"Oh," she says, "That's all right, my dear, it's not on now, it's off. The First-Class Supervisor has been advised." Now tell me, readers, am I *any nearer to the solution to the problem*?

Ah! a keysender "B" section is the place for me! No snares, nothing to think about, what more could anyone wish for? A docket is placed in my hand with this legend inscribed upon it: "Hol 0000 complains other subscribers advised engaged, our subscriber disputes." Now I *am* on sure ground! Have I not dealt with complaints of this nature in a manual exchange? I walk briskly up to the telephonist concerned and say "Do you remember giving the engaged signal for Holborn 0000 at all this morning?" The telephonist does not turn a hair, she does not even smile, she merely states in a dignified manner: "We cannot connect engaged signals, we can only tap out numbers and watch the Sender Finders."

One is reminded that the "Wind is tempered to the shorn lamb" as one watches the happy School Supervisor teaching, helping, and advising the staff in training; they keep the maidens from incorrect dialling and guard the shepherds who watch over the exchanges by night. How Holborn will miss them when they find other pastures.

What excellent guides the Holborn Supervisors would make—I mean the experienced ones—they recite the "Procedure" to the increasing flow of visitors from other exchanges, who listen with attention to every explanation given.

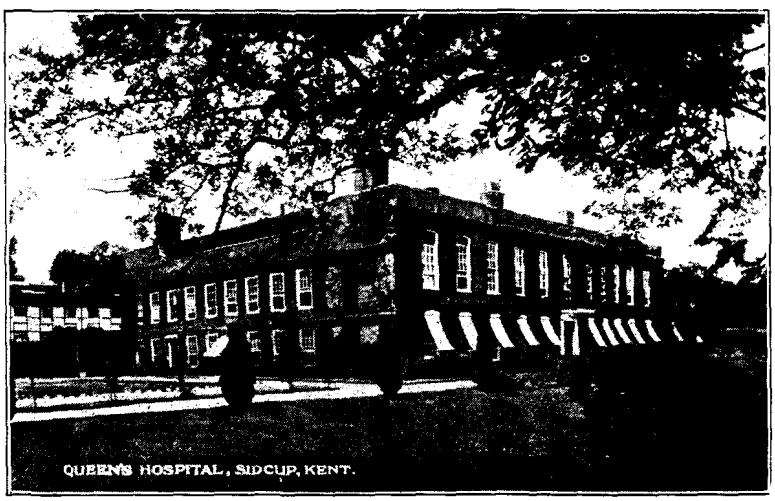
Then there are the telephonists, they work, swim, dance, sing, learn "First Aid" and are what one might term—really alive.

Can such a place ever become monotonous? I wonder whether it will still be interesting in 20 years' time? But I do not think I shall remain at Holborn so long as that. You see, I am the 13th Supervisor on the list, and my "handset" and "headset" are both *number* "13."

G. M. T.

Queen's Hospital, Sidcup.

The closing, on Oct. 12, of the Queen's Hospital, Sidcup, has brought to an end a fund which has been a labour of love to the staff of the Gerrard Exchange and their friends for over 10 years. The Hospital was opened



QUEEN'S HOSPITAL, SIDCUP.

in 1917 and has since become known throughout the world for the wonderful work performed there by Major H. D. Gillies, and surgeons trained by him.

To this hospital all bad cases of facial wounds were drafted from Naval and Military, and miracles of facial surgery were performed, so that the majority of the patients have been able to take their places again among their fellows. Nearly 20,000 such patients have passed through the hospital, many of them having spent years there, and some of those who have suffered most say that they have spent some of their happiest years at Sidcup.

Towards the end of the war the Gerrard staff decided to adopt this hospital for their special care. A fund was started and a party went along one Saturday and gave a tea to the whole hospital—over 500 patients—followed by a dance and entertainment. This fund has been maintained ever since, newcomers to Gerrard joining in enthusiastically, and Gerrardites transferred elsewhere continuing their interest, while friends have helped in all sorts of ways. A total amount of £1,087 9*s*. 6*d*. has been collected during this period, all of which has been spent on entertainments and comforts for the patients. About two years ago funds were badly needed to maintain and develop the wireless installation, and collections were made in aid of this good object by Victoria, Air Ministry, Park, Grosvenor, Wimbledon, and Chiswick Exchanges.

The remaining patients, about 60, are being drafted to Roehampton, and each of them has been presented with a warm cardigan and muffler. The balance of the fund, just on £30, has been handed to Mr. Baker, the Chief Clerk of the Sidcup Hospital, who will keep in touch with them, and use the money for additional comforts which they may need. One of the things which have impressed visitors to the hospital has been the keen interest in their work shown by all the hospital staff. Colonel J. R. Colvin has had charge of the hospital since it opened; Mr. Baker, the Chief Clerk, came for 6 months only, and stayed 7 years; while many of the nurses have worked there throughout the 12 years of the hospital's existence. Miss James and Miss Roe have been Chairman and Secretary of the Gerrard Committee for the whole period of the Fund, and they wish to express their grateful thanks to all who have supported them. In particular, they appreciate the very useful co-operation of Bridgers, of Hammersmith, who did all the catering, and the continued help and interest of Miss Cox, Mr. Pounds, Mr. Buckeridge, and Miss Etheredge.

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.1.

LONDON TELEPHONE SERVICE NOTES.

Presentation to Mr. Stirling.

THE Conference Room at Cornwall House was well crowded on Thursday, Oct. 10, when members of the staff of the London Telephone Service assembled to wish Mr. Stirling good luck on his retirement from the post of Assistant Controller.

In addition to a good representation from the Accounts, Contract and Traffic Branches, many old colleagues attended amongst whom were Mr. J. F. Edmonds (Secretary's Office), Mr. A. H. Hudson (Ministry of Pensions), Mr. R. Bryson (retired), and Mr. W. R. Birnie (A.C.D. Auditor).

Mr. Napier, in making the presentation of a gold watch, binoculars, and several well-chosen volumes, paid a tribute to Mr. Stirling's capacity for "putting his thinking cap on."

After Miss Liddiard had expressed the esteem of the female staff, Mr. Stirling amused the gathering, in returning thanks, with a few personal and official impressions and visualising the evidently pleasing prospect of wintering in sunny desert climes.

* * * *

Contract Branch Notes.

The business done by the Contract Branch during the month of September resulted in a net gain of 2,768 stations as compared with 2,676 last year. The total net gain for the quarter amounted to 10,758 stations against 9,622 last year.

New orders in the City are very difficult to get just at present as everybody seems anxious to know the extent of the reverberations of the Hatry case before they launch out in any new expenditure, and a number of subscribers seem anxious to reduce rather than increase their installations. The increased Bank Rate also has tended to produce a cautious attitude.

There were 320 exhibitors at the *Shipping and Engineering Exhibition* this year, and 123 of them rented lines as compared with 112 lines for 288 exhibitors last year. Orders for 118 lines were obtained from the 192 exhibitors at the Wireless Exhibition as compared with 107 lines for 183 exhibitors last year.

The number of exhibitors at the Motor Show this year is 525 as compared with 547 last year, and up to the time these notes go to press orders for 383 exhibition lines have been received as compared with a total of 399 last year.

The number of exhibitions seems to be increasing, and some of those that are coming on cover very different fields as indicated by the following titles: "Hairdressing," "Inventions," "Medical," "Radiological," and "New Health."

* * * *

L.T.S. Bowls.

It cannot be claimed that the London Telephone Service have in the past particularly impressed the sporting critics of the Service with their achievements in the many branches of sport indulged in, and until the formation of the Bowls section in 1927 the L.T.S. was not regarded as a serious contender for any of the Civil Service honours.

In three seasons, however, the Bowls section have attracted considerable attention by providing the winning rink in the London Area competition, which also represented England in the International tournament at Cardiff last year, and this season they have headed the league, and succeeded in winning the "Bunbury Cup" by beating the Admiralty in the final tie played at Chiswick on Sept. 26, 1929. It was a severe test to be called upon to play the Admiralty in such an important game. The Admiralty had displayed wonderful form throughout the season, and one gathered from the whisperings round the green before the match commenced that the favourites were certainly not the L.T.S.

This did not seem to affect the L.T.S. who, no doubt, were well aware that favourites have before failed to land the "spoils." The strength of the opposition only served to increase the determination of the supposed weaker side, and ably led by the skips., Messrs. Livermore, Cleland, and Heard, the L.T.S. went to the front from the beginning and never relaxed their grip on the game.

The importance of the encounter was reflected in the unusual stillness of the atmosphere, the early part of the game being played with a grimness seldom experienced in ordinary league games.

The match was witnessed by many Service enthusiasts and was distinguished by the presence of Mr. A. V. Alexander, M.P., First Lord of the Admiralty, and Mr. C. G. Ammon, M.P., Parliamentary Secretary to the Admiralty.

The scores are given below:—

L.T.S. v. Admiralty.

1.	Messrs. Grove, Evennett, Gregory and Livermore (skip.)	26	Messrs. Stevens, Veness, French and Kenyon (skip.) ...	24
2.	Messrs. Hutchison, Dickinson, Weaire, and Cleland (skip.) ...	28	Messrs. Olford, Partridge, Puddey and Pelling (skip.)	23
3	Messrs. Mantle, Collins, Demment and Heard (skip.)	42	Messrs. Lomax, Wilson, Rolls, and Bernthal (skip.) ...	8
		96		55

* * * *

L.T.S. Football.

The Club commenced the season with a rousing victory over the War Office on the last Saturday in September by 5 goals to 1. The match was played at a good pace throughout and the victory was mainly due to the better finishing of the L.T.S. forwards.

On Oct. 5 the Taxes were met on the latter's ground, the result being a draw of 4 goals each.

Dollis Hill, a very successful team in last year's competition, were played at Chiswick on Oct. 12 and provided us with another victory by a margin of 4 goals to 1. It was a finely contested game, particularly in the first half, when some good football was shown by both sides, and it was Futerman's fine shooting—he obtained 3 of the 4 goals—that really turned the tide and enabled the L.T.S. to annex another two points.

Dollis Hill are a nicely balanced team and put up a very good fight, and the final result hardly represents the difference between the two teams. The L.T.S. defence was very sound under pressure.

The matches to be played in November are as follows:—

Nov.	2.	Land Registry ...	Home.
„	9.	Customs	Away.
„	16.	Taxes	Home.
„	23.	Ministry of Health ...	Away.
„	30.	Board of Education ...	Home.

* * * *

London Telephonists' Society: Presidential Address—"The Value of Tradition."

It is a tradition of the London Telephonists' Society that the opening meeting of the Session shall take the form of a Presidential Address; and the success attending the first meeting of the present Session on Friday, Oct. 4, furnishes another instance of the value of tradition.

(Mr. Mantle's paper appears in abridged form in another column.)

An animated discussion, in which a rapid succession of speakers participated, showed that Mr. Mantle's subject had aroused wide interest. Nearly all supported his main contention that tradition plays an outstanding part in the attainment of efficiency—though one bold iconoclast advocated a complete breach with tradition! Rarely has any subject produced such a ready debate; and though, in spite of Bailey's "Festus," we do live in figures on a dial and count our time in milli-seconds instead of heart-beats, the response of the audience to Mr. Mantle's paper showed that, happily, we may still invoke the aid of tradition.

* * * *

L.T.S. Sports Association.

Swimming.—The Eleventh Gala was held at Pitfield Street Baths on Oct. 11. The Founder, Mr. E. A. Pounds, and the officials of the Swimming Association are to be congratulated upon such a successful event. There are 38 clubs in the Association with a total membership of 1,600, the largest organisation of its kind in the country. These figures may appear astounding, but those of us who attended the gala and saw tiers upon tiers of packed seats, reaching up at one end of the bath to the ceiling, are not surprised at such a large membership. Although the time of commencement was advertised as 7 o'clock, owing to the number of entries preliminary heats were started at 6 o'clock. The 33⅓ yds. handicap drew no fewer than 144 entries, and these had to be divided into 24 heats. A result was, however, finally reached, the placing being as follows:—

1st.—Miss Campbell, Kensington.
2nd.—Miss Woodley, Willesden.
3rd.—Miss East, Bishopsgate.
4th—Miss Parfitt, Primrose Hill.

The team race for the Pounds Challenge Cup followed. Here was the most exciting event of the Gala. Twenty-nine exchanges entered representative teams of 4 swimmers.

As the race progressed the cheering of the supporters was simply deafening, and the swimmers were no less excited. One could see that each team was straining every effort to secure the treasured trophy for their exchange, and the following indicates the close fight that resulted:—

1st.—Regent, 1-37.2.
2nd.—Gerrard, 1-40.
3rd.—Trunks, 1-40.3.
4th.—Victoria, 1-42.3.
5th. Clerkenwell, 1-50.4.
6th.—Avenue, 2-5.

In the preliminary heat Regent swam the distance in 1-34.2 and Gerrard 1-37. The judging in this race called for considerable alertness and skill and the officials are to be commended for the minute accuracy of their timing.

The result of the sealed handicap was:—

1st.—Clerkenwell, dead heat.
2nd.—Streatham, one-fifth second out.
3rd.—Holborn, three-fifths second out.

Another interesting competition was the Learners' Race for "Agnes Cox" Cup. There were 32 entrants and the result was:—

1st.—Miss Hiscock, Regent.
2nd.—Miss Smith, Primrose Hill.
3rd.—Miss Jones, Paddington.
4th.—Miss Rymer, Museum.

The surprising feature of this race was the efficiency of some of the learners, and speaks well for their training during the summer months.

Next followed the L.T.S. Breast Stroke Championship. There were 5 heats, made up of 27 competitors.

The final resulted as follows:—

1st.—Miss House, Regent.
2nd.—Miss McBirney, Trunk.
3rd.—Miss Palmer, Regent.
4th.—Miss S. Wilson, Gerrard.

This is always an interesting race, and the winner not only displayed superiority in speed but her style was very graceful. An excellent example to some of the other competitors.

Four teams entered for the L.T.S. Men's Race for the Prosser Cup. "A" Team, comprising Messrs. Pettigrew, Frier, Armstrong and Bishop, won the Cup, Mr. Frier finishing in fine style.

The Supervisors' Race of one length was won by Miss Daves (Trunk), followed by Miss McNee (Avenue) 2nd, and the 3rd was Miss Lloyd (Bishopsgate).

A polo match was played between the Post Office and the rest of the Civil Service, which resulted in a win for the P.O. 4-1.

The A.D.A. high and fancy diving was exceedingly well done, and evoked much applause.

A report of the gala would not be complete without again referring to the efficient manner the various officials carried out their duties.

* * * *

Lawn Tennis.

The competitions for the Agnes Cox Cup and the one presented by Mr. and Mrs. Pink have now concluded. Clerkenwell, the original holders,

regained the former and Miss Wilson, representing A.R.I Section of the Accounts Branch, the latter.

Both finals were played at Regents Park and on each occasion the donors of the trophies were present.

* * * *

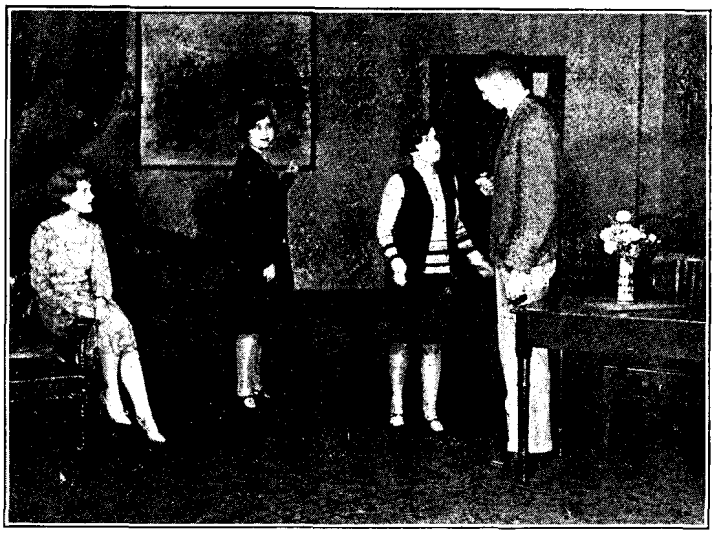
Stamford Dramatic Society.

On Oct. 8, at the Cripplegate Institute, we had the pleasure of being present at the Stamford Dramatic Society's first play in their second season. Having watched with interest the progress made by the Society since its formation, we were not surprised to find that their latest production was of a more ambitious nature. One of the earlier works of Noel Coward, "I'll Leave it to You," is a light satirical comedy, showing the amusing behaviour of a youthful family when their ambitions are stirred by their uncle's promise to leave his fictitious fortune to the one who achieves most success. Differing from "Tilly of Bloomsbury," the Society's last play, which was borne along on an air of sentimentality and boisterous humour, "I'll Leave it to You" requires a slickness and facility in dialogue which can only be obtained with considerable dramatic experience. We understand that the play was produced in an unusually short space of time, and bearing this in mind we congratulate the Society on the success of their very creditable enterprise. Were there one or two slight mishaps, they were such as might have been apparent *only to one acquainted with the play; incidentally, we seem to remember,* when we last saw the play, an amusing quarrel between Bobbie and Oliver in the breakfast scene; at the Cripplegate Institute we wondered why this little flare of misbehaviour, an index to the domestic situation, had been omitted.

We were pleased to see how enthusiastically Henry Dean, in the part of Uncle Daniel, was received. From the outset he maintained our interest with the unstudied humour he gave to the character. Mrs. Dermott, the doting mother of the four expectant legatees, was played by Louisa Curtis, whose versatility in the display of emotion found natural expression.

Kathleen Goff, as Sylvia, the most engaging of the children, found quick favour with her delightful air of sincerity.

Bobbie, Sylvia's witty and nonchalent brother, was elegantly played by Frederick Crossley, and the increase of confidence which he showed was an added asset to his former acknowledged ability. His display at the piano showed a musical talent which was new to us. The subtlety of expression in Eveleen Brereton's accomplished performance as Mrs. Crombie evoked much laughter, and we could have wished that she had appeared more often.



"SOMETHING WONDERFUL HAS HAPPENED, OLIVER. WE'RE RUINED!"
(I'll Leave it to You.)

The part of her daughter, Faith, Bobbie's charming but mercenary sweetheart, was played well, though somewhat ingenuously, by Freda Bruce. Of the rest of the children, Evangeline, the eldest and intellectual, was skilfully played with mock dignity by Vere McKenzie; the character of Joyce, the schoolgirl, received freshness and happy irresponsibility from Phyllis Lee; and an amusing brusqueness was given to Oliver, the eldest son, by Maynard de Borde, who, however, seemed scarcely so much at home in this indefinite part as when we saw him last in clerical garb. David Smith, as Griggs, was an efficient and unobtrusive butler.

It was apparent that the play had been given careful and skilled direction, and we consider that the Society owes a tribute to their producer, Mr. David Noble. The orchestra, comprised of members of the Service, and conducted by Mr. J. Curr, A.C.V., provided light music, which was much appreciated.

The Society has every reason to be satisfied with its latest achievement, and we are looking forward to a pleasant evening on the occasion of their next production.

GLASGOW TELEPHONE NOTES.

MISS ALICE F. CAMERON, the subject of our sketch, entered the service of the National Telephone Company as an operator on Mar. 20, 1893. Promotion not being so rapid as Miss Cameron desired, she "joined up" in the Corporation of Glasgow's service in March, 1901, as Second Chief Operator, and in June of the same year attained to the rank of Chief Operator.

MISS ALICE CAMERON.

Five years later the Corporation transferred its telephone system to the Post Office and Miss Cameron then entered the service of the State, being appointed to a Supervisorship in June, 1907, which position she has filled with distinction ever since.

Miss Cameron is at present in charge of the Glasgow Central Exchange and, as the Senior Supervisor of the District, has duties allotted to her other than the control of the staff at this important centre of Glasgow's telephone activities. For example, she is a member of the Committee which interviews and selects for nomination the most suitable of the many applicants for girl probationer and telephonist posts. The present-day standard of the Glasgow telephonist is due in no small degree to her discrimination and judgment.

Miss Cameron is a worker in a very practical sense. She is a most popular officer and makes many friends wherever she goes. Her activities are not restricted to official duties, for they find vent in many and varied acts for *the common good; the fact that these are not advertised detracts in no* way from their value, rather the reverse, in fact. Work is not her only hobby, however, for she is fond of country walks and, so rumour hath it, is rather partial to an annual joust with Father Neptune and the more "windy" he is the better Miss Cameron is pleased.

Mr. J. Dick, lift attendant at the Wellington Street Office, has left his homeland for America. By his fellow workers, friends in the Central Telephone *Exchange and Parcel Post, Mr. Dick was presented with a gold timekeeper,* and a travelling rug for Mrs. Dick. A pleasant evening was spent at the Kenilworth Hotel on Friday, Sept. 20. Mr. Dick was given a good send off.

We wish him a happy voyage and a successful career in his new venture, and trust that his "ups and downs" in life are over.

Congratulations to Miss E. McBeth, telephonist with supervising allowance, on her promotion to an Assistant Supervising post, Class II.

It is gratifying to learn that the subscriptions to the Glasgow Post Office War Hospitals Entertainments Committee made by the Telephone Branch for 1928-1929 reached the sum of £87 1*s* 5*d*., an increase of £11 over the amount collected for 1927-28.

Bell Golf Club Autumn Meeting on Sept. 20, 1929.

1st.—W. Campbell.
2nd.—J. Gibson.
3rd.—J. A. Matheson.

Such is Fame!

Referring to a case of abusive language on the part of a subscriber, a Glasgow Officer writes:—

"The language he used was . . . I cut him off. . . . Exchange again put him through and I suggested that he could lodge a complaint with the . . . Superintendent on duty. *His reply to that would make any Superintendent blush!*"

Why a Superintendent particularly?

"Lectures on the telephone are being offered by the District Manager of Telephones in Glasgow. Personally we find we get enough lectures on the 'phone, having unfortunately connected our place of employment with our place of residence."—(*Glasgow Evening News.*)

Calls made during period house was closed. Line signal glowed and when operator answered someone passed a call. Operator said "I thought this house was closed." Calling party answered "Yes, but I'm the next-door neighbour. I come in to water the flowers."

Contract Branch Notes.

The Money Magnet.—The brighter prospects now possible in the commercial world continue to attract our younger officers. Following closely on the resignation of our esteemed colleague, "Bill" Norris, came the departure of our tall friend Thomas Coyle.

Our good wishes (and a cigarette case and wristlet watch) went with these two lads.

The G.O.D.'s.—We rejoice to learn, as the Vicar of Mirth would say, that Glasgow's Own Development Officers who have been transferred and lent to other districts are doing well.

Jas. Blackwell has returned from Liverpool owing to distress at home.

Our travelling sample of cheerfulness, J. F. Brodie, paid us a visit on his way from Aberdeen to Nottingham. We envy him having spent so much of the summer at Whitley Bay and the Granite City.

Reiditski says:—The Contract Officer's sure road to success is "Station" Road.

THE POST OFFICE TELEPHONE AND TELEGRAPH SOCIETY OF LONDON.

SESSION 1929-1930.

THE opening meeting of the Session was held on Monday, Oct 21, at the Institute of Electrical Engineers, Victoria Embankment, W.C.2, when Mr. H. E. Powell-Jones (Secretary, Telephone Development Association) gave an address on "Work and Methods of the Telephone Development Association." Mr. F. W. Phillips (Assistant Secretary, Overseas Telegraph Branch), the Chairman for the session, presided. Prior to the meeting, from 5 p.m. to 5.30 p.m., tea and light refreshments were provided for members and visitors in a room adjoining the Lecture Hall.

(It is hoped to print Mr. Powell-Jones' paper in the next issue of the *Journal.*)

Particulars of the other meetings during the Session are as follow:—

Meeting Place—Institution of Electrical Engineers.

1929. *Monday.*		
Nov. 18.	"Wireless Aids to Navigation."	Mr. F. Addey, B.Sc., F.R.A.S., M.I.E.E. (Wireless Telegraphy Section, Secretary's Office, G.P.O.).
Dec. 16.	"Work of the Research Section, Engineer-in-Chief's Office."	Mr. S. A. Pollock, O.B.E. (Engineer-in-Chief's Office, G.P.O.).
1930.		
Jan. 20	"Aspects of Industrial Psychology."	Major G. H. Reid (Royal Air Force).
Feb. 17.	"Transatlantic Telephony."	Lt.-Col. A. G. Lee, M.C., O.B.E., M.I.E.E. (Assistant Engineer-in-Chief, G.P.O.).
Mar. 17.	Open Debate: "How to Improve the Telegraph Service."	Discussion will be opened by Mr. L. Simon (Assistant Secretary, G.P.O.).
April 7.	"Picture Transmission."	Mr. E. S. Ritter, D.F.H., M.I.E.E. (Engineer-in-Chief's Office, G.P.O.).

All members of the staff of the Post Office are eligible for membership on approval by the Committee. The annual subscription, payable in advance, is 1*s.* 6*d.* for women and 2*s.* 6*d.* for men. Application for membership should be made to the local agent or to the Hon Secretary, Mr. A. J. Wadey, Secretary's Office, G.P.O. North, E.C.1 (Central 3600, Extension 768).

DORIDE LADIES' SWIMMING CLUB.

THE thirteenth annual display of this Club, formed of members of the A.G.D. staff, was held at Holborn Baths on Oct. 18 last. The principal events were:—

Sir Charles King Challenge Cup (100 yds. Championship).—1. Miss Deighton. 2. Miss Banger.
Two Lengths Handicap.—1. Miss Coleman. 2. Miss Law.
One Length Handicap.—Miss V. Smith.
Diving Championship.—1. Miss Coleman. 2. Miss Langham.
Schneider Trophy.—Miss Matthew and Miss Banger.
Ladies' Invitation Race.—Ministry of Labour (Kew).

MISS DORIS DEIGHTON, WINNER OF SIR CHAS. KING CHALLENGE CUP.

There were several pretty and entertaining items on the programme, including a League of Nations Race, a Flower Show, Huntsman and Fox Obstacle Race, a Life-Saving Display, a Cat and Canary fight, a Historical Costume Race and others. The Lantern Team Race, won by Miss Banger's team, was a particularly effective item, and the fancy costumes generally reflected great credit on the contrivers of them. Miss Sanday, O.B.E., presented the prizes.

C.T.O. NOTES.

Promotions.

Misses E. F. Duncan, Supervisor to Supervisor (Higher Grade), A. F. Smith and M. T. Tynan, Assistant Supervisors to Supervisors.

Retirements.

Messrs. J. E. Barrett, W. A. Cox, F. W. Martin, Telegraphists, Misses A. M. Finch, Supervisor, Higher Grade, M. McLaren, Supervisor, and A. M. Messeder, Telegraphist.

Music.

The Centels Operatic Dramatic and Orchestral Club, on Wednesday and Thursday, Oct. 9 and 10, gave delightful performances of Messager's light opera, "Veronique," which were well attended and thoroughly enjoyed. The name part was admirably played by Miss Winnie Lenthall, and her duets with Mr. C. G. F. Blundell, as "Florestan de Valiancourt," were very pleasing. Mr. Blundell, although badly handicapped by a cold, made a very successful first appearance. Miss Florence Pennicard's "Ermerance" made one feel that her grand manner was a thing to be feared. Mr. Bertie Figg, as "Coquenard," was able, perhaps for the first time, to play his part in his own manner, and was thus able to give a notable performance. Miss Ivy Clarke, as "Agatha" (Coquenard's wife), provided just sufficient contrast to depict the waywardness necessary. Mr. A. W. Haddock, as "Seraphim," the groom, Miss Marie Thornton, as "Denise," and Mr. Arthur Boyce, as "Loustot," gave very good performances, and completed an efficient cast.

The chorus work, especially the dancing, was a matter for sincere congratulation, and the orchestra, under the direction of Mr. Arthur Brough, was thoroughly adequate.

The Dramatic Section's first performance of the season is "Ambrose Applejohn's Adventure," and will be given at King George's Hall on Dec. 3 and 4.

Sport.

Cricket.—The Centels can say they had a successful season, having played 20 matches, won 10, lost 6 and drawn 4. The batting averages were headed by the Captain, Mr. T. Hellicar, with an average of 29.1 for 11 innings, whilst Mr. A. Pepper headed the bowling averages with the following analysis: 136 overs, 24 maidens, 408 runs, 40 wickets, 10.2 average runs each wicket. The "A" team of the Cable Room won the C.T.O. Divisional League with 24 points out of a possible 24.

Bowls.

In the final of the C.T.O. Pairs Championship, Messrs. L. J. Small and H. J. Cook beat Messrs. E. C. McCartie and T. G. Donno by five shots, 22-17.

The final of the C.T.O. Rink Championship was won by the Controller's Office (Messrs. G. T. Archibald, A. Faull, R. C. Cross and T. G. Donno), who beat the "E" and "F" Division rink (Messrs. G. Defoe, G. Nason, E. C. McCartie and C. T. Drywood) by 16-13.

Swimming.

The Cable Room held a very successful Swimming Gala at Holborn Baths, the Club Championship being won by Mr. McGenis.

Obituary.

We regret to record the death of Mr. W. J. Jones ("Taff"), a much respected man of sterling qualities, whose sudden and unexpected death came as a shock to his many friends. To his widow (who was one of us) and son we extend our deepest sympathy in their sad loss.

Rambles.

The members and friends of the "F" Division Rambling Club took as a route for their final ramble, Oxshott, Ashtead, and Epsom, and had a most enjoyable walk.

Oxshott Common, Ashstead Woods and Epsom were also favoured by the Night Staff for their last ramble, and a glorious day spent in these parts went all too quickly.

Art Exhibition.

The C.T.O. Art Society held their Fourth Annual Exhibition during the week ending Oct. 18. The exhibits were much admired. The judges were: Art—Mr. E. J. Halliday, R.S., A.R.C.A.; Photography—Mr. S. Brigden, R.P.S.; and Crafts—Miss W. Tuckfield. The Justins Award for painting was granted to Mr. S. E. Morton. Mr. A. J. Ginger took the first prize for black and white. Mr. F. A. Christopher holds the Bigmore Award in the Photographic Section. Miss Anglesea took first prize in the Art Needlework Section, whilst Miss F. E. King won the first prize for Craft Work. Mr. H. Davey won the special prize given by Mr. D. M. Ford, Deputy Controller, for all-round merit. It was very pleasing to notice exhibits by boy messengers and it is hoped that the membership of the Society will increase. The exhibition was well attended throughout the four days it was opened.

PLYMOUTH TELEPHONE GIRLS' SWIMMING CLUB.

SINGLE-SIDED RACKS.

IN the article on the new Metropolitan and National Exchanges in our October issue, a paragraph appeared regarding the introduction of Single-Sided Racks and referring to racks of this type as a "novel feature."

Since this may give rise to a wrong impression it should be stated that single-sided racks have been installed in many of the Department's other automatic exchanges, for example, in those supplied by Messrs. Siemens Brothers & Co. from very early days. The expression "novel feature" referred particularly to their use in other Strowger equipments.

A.G.D. SPORTS ASSOCIATION

THE next dance arranged by this Association will be held at Lever House, Victoria Embankment, on Monday, Dec. 2. Tickets, 2*s.* 6*d.* each, can be obtained from the various officers of the Association.

GLOUCESTER.

MR. R. S. GROSVENOR, Traffic Superintendent, Class I, South Wales District, was recently the guest of the Gloucester District Office Staff, when he was presented with an oak bureau "in happy remembrance" as the inscription on the plate had it—"of his stay with Gloucester folk." The presentation was made by the District Manager, Mr. J. H. Storrie, before a large gathering representative of all sections of the Postal, Telephone, and Engineering Branches. The District Manager, in congratulating Mr. Grosvenor on his preferment to the higher class at Cardiff, made feeling reference to the excellent co operation between the various departments which had prevailed during the three years he had spent at Gloucester.

Mr. Grosvenor, in a characteristic speech, returned thanks not only for the tangible expression of goodwill but also for the very lively assistance he had received from everybody in the district. His only regret was, he said, that his promotion necessitated his leaving his Gloucester friends, of whom he would always retain the very happiest memories.

PRESENTATION TO MR. A. BARKER, SOUTHAMPTON.

ON Sept. 17 last a large number of his colleagues gathered in the District Manager's Office to say an official goodbye to Mr. A. Barker, Assistant Traffic Superintendent, who left to take up his appointment as Traffic Superintendent, Class II, at Gloucester.

The District Manager, Mr. O. G. Lee, presided, and on behalf of the Staff congratulated Mr. Barker on his well-earned promotion. Mr. Barker was asked to accept a canteen of cutlery as a tangible expression of the esteem with which he was held. Mr. A. L. May, Traffic Superintendent, supported the District Manager and wished Mr. Barker success in his new district. Messrs. C. S. Weston, Staff Clerk and J. W. Stelling, Traffic Superintendent, Class II, also spoke and extended their congratulations and good wishes. Mr. Barker feelingly responded, and thanked the District Manager and Staff for their kind wishes and useful gift which, he said, would always revive cherished memories of his happy associations in Southampton.

Mr. Barker was a very popular and genuine colleague. His transfer to Gloucester separates his associates in the offices of the District Manager, Sectional Engineer and Head Postmasters from a sincere friend.

NEW TRANSOCEANIC RADIO SYSTEM BETWEEN EUROPE AND SOUTH AMERICA.

A PARAGRAPH recently appeared in the daily press commenting on the opening from Sevilla by General Primo de Rivera of the new Spanish—Argentine radio link. This new service, which will connect the Spanish telephone system through the International Telephone and Telegraph Corporation's network in Sevilla to the Argentine, Uruguay, and Chili, marks a great advance on anything before used in radio telephony, in that complete privacy is obtained. Overhearing by unauthorised listeners is no longer possible as the waves are transmitted in a distorted form that is unintelligible to the ordinary radio receiving station. Except for the one working between Great Britain and the United States, this radio telephone link of 9,600 Ems. (the longest of its type yet in existence) is the only one that is connected with the ordinary public telephone systems at both ends, permitting distant subscribers to converse from their ordinary telephones without either of them having to go to a central station cabin.

It is interesting to note that the subfluvial cable under the River Plata connecting the Argentine and Uruguayan telephone systems, and the transmitting and receiving stations for this new link, were supplied by Standard Telephones & Cables Ltd., and manufactured in their factories at Woolwich and Hendon.

A BRIEF CHRONOLOGY FOR STUDENTS OF TELEGRAPHS, TELEPHONES AND POSTS.

By HARRY G. SELLARS.

(*Continued from page* 20.)

1886, Dec. 15 ... *Equitable Telephone Association, incorporated to exploit* Swinton Patent Electric Telephones.

United Kingdom Postal Clerks' Association formed.

Number of telegrams dealt with annually reached 50,000,000.

Number of parcels rose to 33,000,000, of which 394,000 passed between the United Kingdom and places abroad.

1887, March ... Dr. Cornelius Herz tried the micro-telephone between Paris and Brussels successfully. Hughes' Microphone was adapted by Herz.

Campbell Swinton designed a telephone switchboard.

Oliver Heaviside showed that, by the addition of inductance to a telephone line possessing harmful capacity, speaking would be improved.

1887, May ... British Admiralty promised to arrange for a gradual survey of the Pacific Ocean in connexion with the suggested Pacific Cable.

1887, June 1 ... Horse-drawn coaches for parcels began to run between London and Brighton, and on other roads where the cost was less than that incurred on the railways.

Gustave Roberts Kirchhoff died.

Colonial Conference discussed Canada-Australia Cable.

Bernardo, of Russia, introduced a method of welding metal plates electrically.

Bristol-Gloucester trunk telephone line opened.

Carpentier, of Paris, devised a telegraph keyboard tape perforator which punched, with square holes, the five-unit code.

Cassagnes inserted a resistance in the battery circuit of the phonic wheel system.

Elihu Thomson found that a sheet of copper held over an alternating current electromagnet was repelled.

Eichberg, Winter and Latour invented commutator alternating current motors.

Righi showed that a Holtz electrical machine could yield continuous current.

1887, Oct. 1 ... Sample Post established—rate 1*d.* for 4 oz.

Sir Oliver Lodge produced stationary electric waves on long wires. H. R. Hertz invented a method of generating electro-magnetic waves.

Bose, Fleming, Lebedew, and Righi devised apparatus for producing electric waves only a few inches in length.

1887, Nov. 10 .. Hertz introduced his "Resonator" to pick up electric waves and discovered the necessity for the receiver to be "in tune" with the vibration rate of the waves set up by the transmitter.

Prof. Chunder Bose, of Calcutta, exploded powder and rang a bell by a local current brought into play by wireless electric waves.

Colonel Gouraud exhibited Edison's new phonograph in which sounds were recorded on wax, the machine being driven by electric motor.

Checking of insured parcels discontinued. Insurance fee of 1*d.* on registered letters abolished and registration fee of 2*d.* admitted liability up to £5. Insurance fee of 2*d.* still required for compensation up to £10.

1888, Feb. ... Associated Chambers of Commerce passed a resolution in favour of Government control of telephone communication.

1888, March ... Inter-colonial Postal Conference met at Sydney, N.S.W., and offered to pay the cost of surveying for the Pacific Cable.

Great Britain hoisted her flag on Fanning Island.

Dom and Munier devised methods of multiplexing the Hughes printing telegraph.

(John B. Chapman, of England, duplexed, and Banzati, of Italy, quadruplexed, the Hughes printing telegraph.

Olsen suggested a duplexed quadruple Hughes circuit in which a distributor connected the transmitters alternately to line. Banzati supported the suggestion and during the European War the method was adopted in Austria, Hungary, &c.)

Dom, of France, proposed a correction of telegraph distributors by means of the working signals.

(G. R. Benjamin and G. M. Yorke devised a bipolar method of phase correction on multiplex telegraph distributors.

Halter, of the Western Electric Company, invented a method of speed correction for telegraph distributors.

Rothermel invented the epicyclic mechanism used in American multiplex systems.)

Graphophone produced by Prof. G. Bell, Dr. C. Bell and Mr. C. S. Tainter.

Schallenberger, of Pittsburg, devised a meter for use with alternating currents.

Professor Forbes introduced a meter for measuring either continuous or alternating currents.

1888, May ... Maximum compensation for uninsured parcels of 12*s.* and 20*s.* where the limited weights were 7 lb. and 11 lb. respectively, which had been in force with foreign administrations, extended to certain colonies.

From 1871 until this date the business of issuing and paying Money Orders at the Chief Office was performed under contract, the contractor being an officer of the Post Office, but the clerks being his own servants.

"Raikes" revision of pay, &c., took place in the Post Office.

1888, Sept. ... Electric dog-cart made for the Sultan of Turkey.

Photo-electric cells constructed.

Cable rate London-New York fixed at 1*s.* a word.

Dr. Hertz and Herr von Bezold confirmed the theories of Riess and Henry concerning the discharge of a Leyden jar.

Hertz showed that electric undulations, like light-waves, are propagated across space, that they could be reflected like those of light and sound, and concentrated into a beam.

Hertz and Lodge proved that the vibration rate of ultra-violet rays assisted electric waves.

Law and Jarvis Patten introduced methods of driving the reed in a phonic wheel system by current impulses from the distant station.

Suez Canal route adopted for Indian Mail.

1888, Nov. 24 ... Western Electric upright multiple telephone switchboard installed in London.

1889, Mar. 12 ... Almon B. Strowger, of Kansas City, patented an automatic telephone system. Five wires were necessary between each subscriber and the Exchange.

French Minister of Posts and Telegraphs suggested telephonic communication between London and Paris. (Longest telephone lines then existing were New York-Chicago, 900 miles, and Paris-Marseilles, 600 miles.) London-Paris telegraph lines were tried, but were found unsuitable.

1889, April 30 ... The United, the National, and the Lancashire and Cheshire Telephone Companies amalgamated under the title "National Telephone Company" and proceeded to buy up smaller concerns.

"New Telephone Company" wound up, as a result of action taken against them for infringing Edison's patents.

Girl telephone operators now replaced generally boys previously employed.

1889, May 31 ... Post Office obtained decision that the Postmaster-General was entitled to tender post letter bags to vessels owned or chartered by certain large companies, and to have them conveyed and delivered without delay.

W. F. Melhuish experimented in Wireless telegraphy in India.

Sir Oliver Lodge invented a wireless "coherer."

(*To be continued.*)

THE

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CONTENTS.

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TELEGRAPH AND TELEPHONE MEN AND WOMEN.

LXXI.

MR. H. G. G. WELCH.

MR. WELCH was educated at Merchant Taylors' and St. John's College, Oxford, and entered the Post Office service in 1913. He served most of his early years in the Mails Branch of the Secretary's Office, and acted as Private Secretary to Mr. Hartshorn during the Labour Government of 1924. He was promoted Principal in 1925, and shortly afterwards was sent to the Overseas Telegraph Branch, where he has remained ever since.

Thoroughness and neatness are the outstanding characteristics of his work. Neatness with him is not merely an external attribute, but the manifestation of an essentially orderly mind, which can seize a bewildering medley of facts and figures and sort them into compartments. A memorandum by him is a pleasure to read; he first of all deploys his forces, the A, and B, and C,

[*Photograph by Howard M. King, Croydon.*

with (i), (ii) and (iii) supporting each, and then leads them together to a well-nigh irresistible conclusion.

As external characteristics of his qualities we may mention that he writes a copperplate hand, he draws up graphs in inks of many colours, he has a wonderful system of filing and records, and can usually say where even the most elusive papers are to be found.

It is difficult to write of his kindliness, his loyalty and the singular charm of his personality. It suffices to say that in an office where gossip abounds, of which not all is kindly, he has never been known to say an ill word of anyone, nor has anyone been known to say an ill word of him.

The telegraph service provides, and will probably continue for a long time to provide, plenty of knots for him to unravel and labyrinths for him to unthread; and gives ample scope for his gifts of sympathy, courtesy and good fellowship.

THE TELEPRINTER.

A. P. OGILVIE (*Headquarters Traffic Section*).

(I.)

REFERENCES to the Teleprinter, in articles dealing with proposals for the improvement of the telegraph service, have appeared from time to time in these columns, and their frequency is indicative of a growing interest in the development of this type of apparatus. During the past few years considerable progress has been made in the British Post Office in the testing and installation of different models of Teleprinters, and in standardising training, operating, and maintenance arrangements. The results are now becoming apparent, generally, and it is no exaggeration to say that the Teleprinter is capturing the imagination of telegraph men as few other systems or machines have done. Its reception at first was, perhaps, somewhat cool, but telegraph men may claim to be justified in adopting a critical attitude towards innovations, for there is no business more exacting than telegraphy, and it is a common experience with many systems and devices which survive technical tests to fail on reaching the supreme test which working conditions impose. Besides a British telegraph service without morse was inconceivable, and here was a machine attempting the impossible in invading the stronghold of the sounder.

The newcomer, however, withstood early vicissitudes, surmounted difficulties, and finally made friends. There is now a widespread demand for this class of machine throughout the world. In this country, installations are being completed on public and private circuits as rapidly as apparatus can be obtained: in the United States, thousands of sets are being absorbed by American telegraph companies annually: while in the Dominions and in France, Germany, Holland, and Denmark, considerable similar activity is in evidence. New conditions are being created and new hopes for the future are being stimulated.

Interest in the Teleprinter is therefore spreading beyond the confines of the telegraph room, and has given rise to requests for information, not in technical details alone, but of a more general nature which an extensive, rather than an intensive view of the subject would afford. To meet this demand it is proposed to deal discursively, in a short series of articles, with the principal features of Teleprinters, their capabilities and limitations, the variety of conditions in which they have been tried and the results obtained, in the hope that the matter may prove interesting if not informative, to the general reader.

To those who wish to explore the technical intricacies of the apparatus and to study the subject in its purely technical aspect, the proprietary instruction booklets published by respective manufacturers are recommended. These may be obtained from Messrs. Creed & Co., Croydon, for the Creed Teleprinter: from the Morkrum-Kleinschmidt Corporation, Ltd., Chicago, for the Teletype: and from Messrs. Siemens & Halske, Berlin, for the Siemens Halske Telegraph Printing or Writing Machine.

Perhaps more suitable for the Post Office student is a series of excellent articles entitled "Start-Stop Printing Telegraph Systems," by Mr. A. E. Stone, A.R.S., Sc., which appeared in the *Post Office Electrical Engineers' Journal* in 1928-1929.

The first Teleprinters to be tried in this country were produced by the Morkrum Corporation under the proprietary name of "The Teletype." In 1914 a promising design had been outlined by Mr. H. H. Harrison, the well-known British telegraph engineer, whose book on the principles of machine telegraphs is accepted as authoritative, but unfortunately subsequent war conditions prevented the apparatus from being placed in production. It was therefore due in a great measure to the work of the Morkrum Corporation that rapid progress in this direction was possible in the early post-war period. Teletypes were installed in fairly large numbers by the British Post Office in 1923 and 1924. Messrs. Creed about this time also entered the field with a British machine. Trials over an extended period took place and as a result of continuous improvements in design the operation of the Teleprinter No. 3a reached a high standard of efficiency. There are at present three models of Teleprinters in use, and to avoid confusion with proprietary names the Post Office decided to adopt the generic term of "Teleprinter" and to number the models as follows:—

Teleprinter No. 1a (formerly Teletype No. 1).
" No. 2a (" " No. 2).
" No. 3a (" Creed Combined Printer).

Messrs. Creed followed Post Office practice and now use "Teleprinter" as a trade description for machines of this class.

When originally introduced the Teleprinter No. 1a was so arranged that only one message could be signalled at a time in either direction, the characters transmitted being recorded on a local tape as well as at the distant station. Two machines, or one complete machine and a separate printer unit had to be provided at each office for duplex operation, i.e. the signalling of telegrams simultaneously in both directions, an arrangement which considerations of space and cost rendered unacceptable although it was understood to be standard American practice. It was found ultimately that by a simple alteration in the connexions, the transmitter and printer could be operated separately, at the expense of the local record which was not required, and one machine was made to provide for simultaneous transmission and reception under duplex conditions. This stage represented a definite advance in development as the traffic carrying capacity of each machine is, by this alteration, practically doubled with completely satisfactory results.

Another advantage determined during those early trials led to the working of Teleprinters over long circuits. The term "short line printer" had been accepted as a measure of their limitations, so much so that the circuit on which the machines were first installed between the Central Telegraph Office and Croydon did not exceed 15 miles in length. Experience on that circuit encouraged a belief in greater things, and a trial took place between the Central Office and Carlisle, a distance of approximately 300 miles, on a circuit consisting of one wire of a cable loop, the second conductor acting as a screen. The results obtained exploded the short line fallacy and again impetus was imparted to development. Concurrently, improved acquaintance with the keyboard made operators confident and efficient. Hourly outputs of 70, 80, and 90 telegrams in one direction or the other were being obtained on the trial circuits: the indications were becoming pronouncedly favourable for further progress.

Since 1923 approximately 400 Teleprinters with appropriate reserve machines, have been installed on public circuits, 50 have been used in equipping private wires and 60 are employed on Totalisator arrangements and at special events, a creditable record which but for delivery and other difficulties would have been even better.

Without assuming the mantle of a prophet it can be said that the day of the morse sounder as the pre-eminent system is passing: and there is ample evidence that with the improved methods of superposition now becoming available the extension of Teleprinter working on routes hitherto equipped with multiplex is a practical proposition.

In a later article it may be possible to expand this phase of development. Next month it is proposed to devote some time to a brief description of the machines themselves, their principle of operation and their outstanding mechanical features.

(*To be continued.*)

ON ONE NOTE.

By T. B. S. (*London Telephone Service*).

PERFECTION, whether in musical composition or in business organisation, finds its expression in terms of harmony.

The trio of the telephones is as effective an exponent of this as is its musical prototype. Contracts, with its introduction, sparklingly attractive; Traffic, the vehicle of the motif, smilingly engaging; Accounts, in its capacity of root finance and liaison, the substantial foundation.

Accounts may extend the analogy further in the contribution of a "note"—the advice note—which is distinctly a dominant. With the exception of certain damaged apparatus debits, call fees, trunk and telegram charges and charges for specially bound directories, no initial rental debit or removal charge can be brought into a ledger or a recurring debit removed from one without advice note authority. Advice note control also applies to the fitting, removal and recovery of apparatus. In this connexion the Advice Note Section in London is known alternatively and perhaps more impressively as the Installation Branch.

Ordinary wear and tear replacements are covered by engineering maintenance orders and not by advice notes. On receipt of the agreements and orders, advice notes are issued from books in which is retained an office copy. The advice notes are separately numbered and each specially coded before the number according to the work required. Carbon copies are prepared—for internal work a blue, a pink and a buff copy; for external work a blue, a pink, a buff, a yellow and a white, with an additional green directory copy for new lines, removals and changes of number.

The green copies reach the Directory Section with the minimum of delay—direct when a number is retained or reserved and from the exchange in other cases immediately a number has been allocated. The accounting is carried out from the completed blue which is associated with the exchange pink in external cases. The buff serves as an acknowledgment from the subscriber of satisfactory completion and is retained by the Fitting Office. After serving their purpose in the engineering routine the white is held as a record by the External Engineer and the yellow by the Superintending Engineer. The code letters before the number of each advice note facilitate expeditious treatment in all its stages of progression.

Where several advice notes are associated in one accounting or engineering transaction the code letters are prefixed with a "K" and the relative advice notes are cross-referenced. This is a particularly important feature of advice note control, for in circumstances where apparatus is taken over *in situ* the question of the abridgment of notice to cease or the waiving of a removal charge is governed by the proper association of advice notes in conjunction. Advice notes have a direct bearing on the compilation of the Directory and also on the Daily Report, which keeps principally the Directory Enquiry Centres constantly informed of the changes taking place pending the issue of the next Directory. Cards detailing each subscriber's installation and rental are originated and maintained by advice note.

Agreements, removal and recovery orders reach the Advice Note Section from Contracts; orders for external removals circulating by way of the installation card duties to pick up particulars of the installations affected.

Subscribers' requirements decided in an interview with the Contract Officer change in quite a number of cases in the interval between the issue of the advice note and the Fitter calling. Control points known as Query Duties to ensure that the advice note on completion shall be a perfect covering authority are included in a system which is an example of thoroughness.

It will be observed that this brief reference "sounds" a "note" which contributes in no small measure to the intrinsic harmony of our "trio."

RISK.

BY F. J. LANE.

(Contract Officer, Class II., Reading.)

THE world of men may be roughly divided into two classes :— Those who are honest and those who are not. The existence of the latter class, the individuals of which cannot be at once identified, brings the element of risk into all commercial transactions ; it is the large preponderance of the former section which permits industry to operate and makes the taking of risk worth while.

Critics of the Post Office Telephone Service frequently base their arguments on the proposition that the Civil Service operated system cannot, and does not, take any risk. This bald statement is manifestly absurd, since immediately the Post Office embarks on an undertaking where the allowance of credit is unavoidable, it becomes involved in the risk inseparable from such a proceeding. But since no one desires to expend energy and wealth for no return, commercial risks are not taken for the joy of the thing. Effort is made by all concerns whether privately, or publicly, operated to insure against risk. The danger here, is the tendency to pay an uneconomical premium to insure the capital, and the peculiar position of a Government Department, with its public responsibility, makes the exact determination of an economical premium very difficult. The writer hastens to say that he has not the slightest intention of of attempting this intricate calculation : but merely to make some observations by the way on small everyday transactions which seem sometimes to become a little warped out of shape through excessive caution. Pardon is craved if it appears that the advice printed on the box of a much advertised ointment is followed too zealously— ascribe it to enthusiasm, or, if preferred, to bad temper.

The 3-inch magneto extension bell is a small thing in size, in intrinsic and rental value ; but in spite of the fact that, as the writer hinted in a previous paper on Recovering the Waste, its value in operation to the Department is almost equal to that to the subscriber, the way of its renter cannot be said to be smooth. The subscriber must take it on the same terms almost and in the same manner as a sizeable private branch exchange. He must sign an agreement bearing at the top his full name and at the bottom his (not his deputy's) signature duly witnessed.

Should the bell outlive its usefulness in the course of structural alterations the hirer must embark on the heavy ceremony of giving three months' notice (from a quarter day) to say "Goodbye" to his erstwhile friend.

If this is not enough let him desire to move this system to which *the bell is attached to another site. Then no one asks him* to pay the standard charge of 5*s.* for the work : on the contrary, he may avoid doing so by the "simple" trick of giving three months' notice (from a quarter day) to cease the bell and then signing a fresh agreement for it bearing at the top.....

And why should all this be ? It is simply because —by a quite natural process, mark you— the unfortunate little bell has been caught up in the procedure appertaining to major transactions where the strong element of risk has to be guarded against. Thus involved the importance of the bell swells to grotesque proportions— a fantastic premium is paid for a minute risk.

Supposing the bell is torn from this tangle and treated thus :— A request is received for it and an acknowledgment is sent informing the subscriber that the desired bell will be fitted as soon as possible and that a quarterly rental of 1*s.* 6*d.* will be charged for it. If, eventually, it is no longer required—then recover it. If it must be moved—then move it. A deal of administrative trouble is saved. And what is wrong with it ?

There is perhaps the hundredth chance that the subscriber will not pay—then go to recover the bell and the subscriber reviewing *the semi-paralysed condition of his telephone service before the bell's* advent will at once pay up. There is possibly the millionth chance of the subscriber who still holds out and the bell goes : then the Department loses—a tiny portion of what it has been gaining in saving of paper time and temper (of the subscriber and others) and administrative expenses generally. In point of fact, it will probably be found that this millionth subscriber is being eagerly (and unsuccessfully) sought for the whole of his telephone account to say nothing of his gas bill and rates.

The case of the bell has been dealt on so much because it always seems to present the best (that is the most fantastic) examples but it is not altogether isolated.

Removals, one might observe, are not always as straightforward as they might be. A special form is usually insisted upon and one feature of this form, which sometimes operates to the mutual disadvantage of the Department and the subscriber, is the requirement that it must bear the same signature as the principal agreement. There is something to be said for this : but there are times when a trivial removal is required by an important departmental manager who has full authority for expenditure in his branch. Unfortunately, however, it is usually found that the agreement bears the secretary's signature and then we begin to look ridiculous, and only very slightly less so if we permit the manager to sign at same time, stating his authority to do so.

The obvious cure for this is more elasticity of mind. Generally if there is no good reason to doubt the validity of a request for a removal, then proceed with it. In the case stated above there is no risk at all and the awkward method is simply the malign influence of the "caution complex." It is this habit (when it becomes a *bad* habit) that is at the bottom of the trouble. How it develops is illustrated by the following example : A letter was received from a reliable and well-known firm requesting and exactly describing a small removal. It was signed by a director and was remarkable indeed for its final paragraph which read :—"We hereby undertake to pay all charges in connexion with the work." This letter was forwarded to an outstationed Contract Officer with instructions for him to obtain the necessary (!) removal order.

There is no objection to the general use of the form—the Department's forms, the Press might observe, frequently serve the purpose of a tediously composed letter, but the insistence on it for nothing but its own sake shows how far the working of the mind can be divorced from ultimate objects. It is the development of this state of mind which is a real danger, adding very appreciably to administrative costs, slowing down real work and bringing the service into disrepute. Though its roots go far down in the laudable desire to minimise risk, it reaches far beyond and away from its purpose. In fact the original purpose is partly neutralised by the fact that a sense of security is engendered by the adherence to certain formalities which some flexibility and agility of mind would show to be a false one. A thought is cultivated that provided everything is *formally* in order the bird is in the hand ; whereas anyone who has attended the proceedings of a County Court knows that it is still in the bush.

Another curious effect observed is that whilst transactions of almost any magnitude are speedily concluded over the telephone daily, the telephone administration itself will have none (or very little) of it. Subscribers making trivial requests are frequently asked to put them in writing, or, at the best, laboriously (and expensively) connected to more exalted officers apparently because some half-witted cantankerous old gentlemen may deny having made the request.

One would not grumble if the system were an infallible one but that system is but a will o' the wisp, the pursuit of which does incalculable harm. It is better to recognise frankly that all risk cannot be eliminated and cheerfully go on with the work of doing the greatest good for the greatest number.

It might be objected that if instructions regarding certain removals, extension bells and other small transactions are to be taken in the same manner as say, the Gas Companies take minor orders, there would be no logical reason why the method should not be extended to every transaction with probably disastrous results. This criticism pre-supposes the conduct of the service by an army of automata in place of an intelligence capable of distinguishing between slackness and elasticity. Uniformity can be an *intelligent* uniformity without being just mechanical sameness. System can be a fine ideal aimed at by flexible rational minds without being a god before which all men bow at exactly the same angle and abandon themselves with oriental resignation.

[We comment on this article in an Editorial.—ED., *T. & T. J.*]

TELEGRAPHIC MEMORABILIA.

THE kindest thoughts to all for Christmas and 1930. I have been almost at my wits' end to know,—not, gentle reader, where to find sufficient matter but what, out of a basketful of interesting subjects, to consign to an undeserved limbo.

The following three items have been considerably condensed, but those which follow are quite skeletonised, and, it is hoped, will nevertheless fulfil their informative purpose.

There is the Royal Commission report on broadcasting in Canada which recommends that, "broadcasting should be placed on the basis of a public service and that stations providing a broadcasting service should be owned and operated by one national company."

It also recommends as a minimum plan to commence with, the erection of high-power stations across Canada as but the nucleus of a publicly-owned service. There is naturally quite a number of details, ways and means, &c., of a deeply interesting nature.

Turning to another portion of the Empire, the position of the Australian Broadcasting Company which is supplying programmes for the national broadcasting service of the Commonwealth Government, is a curious one. The company, it is stated, is losing between £10,000 and £15,000 per annum in its endeavour to give a better service to the listening public, and reveals another side to broadcasting, that is to say under certain geographical conditions where the areas covered are very large and comparatively sparsely populated by potential clients. It is hoped, however, that during the next four or five years sufficient headway will have been made to compensate the A.B.C., as it is commonly referred to down under.

Another Australian complication is apparently that of the Amalgamated Wireless (Australasia) Ltd., which, says the London *Daily Telegraph*, after an interval of twenty-one months has only just published its balance-sheets for the last two years. These, however, show profits of £47,000 and £80,000 and dividends of 6 and 8% respectively. "The company had previously paid no dividends and made no profits," says the same authority, and continues thus: "The Commonwealth subscribed capital shown on the balance-sheet, as at June 30, is £744,000, while the Commonwealth *contribution* is £300,000, which is £73,000 below a majority holding. The Commonwealth contribution covers practically the whole cost of the beam radio-telegraph services, which is recorded in the balance-sheet as £304,000. Regarding the combined working of the cable and wireless services the Amalgamated Company is the only organisation in the Empire which has not co-operated in the amalgamation. An anomalous position thus exists by which the Amalgamated Company cannot dispatch a single word either to England or Canada without the willingness of the Communication Company to receive, and it therefore has no complete international service itself!"

A matter of world-wide interest is what it is hoped will now prove to be the settlement of the League of Nations Wireless Station question, as the final sub-committee has unanimously pronounced in favour of the proposal that the League's wireless station shall be worked in normal times by the Swiss Wireless Company and handed over to the League in times of crisis, when a Swiss observer would be present. The Swiss Wireless Company would undertake to establish alongside the existing station at Pragins, near Geneva, short-wave transmitters for extra-European communications.

CANADA reports that in response to letters and petitions in Eastern Canada the Northern Electric Company's broadcasting station (CHYC) has resumed broadcasting on 775 kc. It is satisfactory to hear as we go to press that the broadcast by the B.B.C. of the Cenotaph service on the 11th ult. was well and truly carried out by all concerned, both here and in Canada. The wavelength employed on the trans-atlantic multiplex beam link was 16.575 metres. COLOMBIA has authorised the I.T. and T. Corporation to construct a radio station at Bogota and two additional coast stations, one on the Atlantic and one on the Pacific. FIJI ISLANDS have made a new link in Empire communications by the opening of a high-speed wireless telegraph service between Suva, Fiji, and Sydney, N.S.W. By arrangement between the Colonial Office and the Government of Fiji, says *The Electrical Review*, Amalgamated Wireless (Australasia) Ltd., in which the Commonwealth Government has a controlling interest, has reorganised the wireless service in the islands. The Company, says *The Times*, has now established three large centres in the South-West Pacific, at Fiji, New Guinea, and Papua. The Fiji station is in direct touch with three other stations in the Fiji group, viz., Labasa, Savu Savu, and Taviuni, and maintains communication with Samoa, the Friendly Islands, Gilbert and Ellice Islands, New Caledonia, and the New Hebrides. The Suva station collects and distributes traffic from all wireless equipped stations in the North and South Pacific, while its daily broadcast reports have proved of great value to shipping in the neighbourhood. HOLLAND has been much troubled of late by radio interference not only from electrically worked railways but from illuminated advertisements and sky-signs. ICELAND is soon to have its first broadcasting station—at Rekyvik. Marconi interests are to build a new wireless station of 16 kw. and arrangements are to be made for facilities for broadcasting in addition to the wider telegraph uses. PORTUGAL now has direct wireless telegraph communication between Macao and Lourenço Marques. SPAIN'S direct radio communication with the U.S.A., Brazil, Argentina, and Cuba was inaugurated on Oct. 21 by the King of Spain.

Sundry Matters.—As a piece of helpful information, especially as enquiries concerning the existence of a similar work have from time to time been received here, it is not inappropriate to mention that Sir Isaac Pitman & Sons, Ltd., London, have just published a "Technical Dictionary of Engineering and Industrial Science," in seven languages, at the net price of £8 8s. the set.

The National Telewriter Co., Ltd., according to the financial editor of the *Electrician*, will be granted a new licence by the P.M.G. for the use of telewriters on Post Office private wires, "on satisfactory terms for 14 years from April 30 last." When this slow and simple telegraph system was installed, some time prior to the war, few of us thought it would have survived these years of keyboard transmitters and direct typewriter telegraph circuit, but though its use is restricted, it has evidently found a niche in the commercial world where speed is not a first consideration. As a strange set-off to this survival, there is the recorded case of the Siemens high-speed apparatus with its typewriter keyboard perforators, well known as a rapid and reliable telegraph system. During the last Olympic Games held at Amsterdam the Dutch Telegraph Administration agreed to work eight Siemens

perforators and to accept perforated slip from the German press representatives at the price of 1 franc 50 per metre for certain offices in Germany. Throughout the whole of the period covered by the games, only *one* such band was handed in at the Stadium, and that was so badly perforated (by the pressman) that the transmission took 1½ hours to complete it.

It was very gratifying to read the *Daily Telegraph* critic's verdict on the C.O.D.O.C.'s performance of "Veronique," at the King's Hall, Covent Garden. Mr. Arthur Brough and his orchestra should feel particularly proud of the "more than usually efficient orchestra."

Personal.—It is a long time since we Londoners have met Mr. T. Herbert, M.I.E.E., Asst. Superintending Engineer of the South Lancs. district P.O. Engineering Department, and the author of certain standard works on Telegraphy and Telephony, so that when one met his photograph in a current number of the *Electrician*, one could only remark upon his well-preserved appearance! He was recently elected Chairman of the N.-West Centre of the Institution of Electrical Engineers, and gave a very interesting address at the opening of the present session on "The Inland Telegraphs: A Forecast of Some Possible Developments."

On Nov. 7 the Mayor of Hastings unveiled a tablet in honour of Mr. John L. Baird on the building where, in 1923, he began three years' experiments in connexion with television.

For the Research Department?—A woman applicant at a London Police Court recently complained of her neighbour's aerial, on the ground that, "it was the wrong wavelength, upset her washing, and made it as black as soot!"

Women as Mechanics.—It is wrong to say that a woman cannot adapt herself to a mechanical career, nor is it correct to say that she has no inventive turn of mind.—*Miss C. Haslett.*

J. J. T.

NEW ZEALAND TELEPHONES.

AMONGST other interesting statistics given in the report of the New Zealand Post and Telegraph Dept. for 1928-9 are the figures showing the proportion of dial and manual telephones in the Dominion. They are 42 to 58% of which latter figure 5 are common battery. The number of extension stations to main stations is also shown. There are 53 extensions to every 100 business stations, and 3 extensions to every 100 residence stations. The actual totals for the Dominion are 124,831 main and 23,105 extensions or 147,936 telephones in all, an increase of 5.9 on last year.

The carrier current system is to be introduced on the New Zealand trunk lines, contracts for 5 carrier current telephone systems having been let last July for channels between Auckland—Hamilton; Christchurch—Seddon; and Hamilton—Palmerston North.

The report gives the following succinct account of the advantages of this system:—

"Application of the new system constitutes perhaps the most remarkable change and progressive move that has taken place in telephone practice for many years. To the layman the working of the system is something akin to sending a wireless message along a wire which is already being used for transmitting other messages without interfering with such messages. Wireless energy is released, but instead of being broadcast it is directed along a telephone circuit. Under carrier current principles a circuit is capable of carrying at the one time several different radio-frequency bands, and each frequency band provides a channel for a separate conversation. The several conversations, although carried on simultaneously, are delivered separately at the distant end. By the use of the system, therefore, the carrying-capacity of a telephone circuit may be increased several times. That is to say, the application of carrier current enables several persons to hold conversations over the one circuit at the one time. Not only is the carrying-capacity of the circuit increased, but the volume of speech over long distances is considerably improved. Thus, in addition to enabling the Department to defer for many years the erection of additional toll circuits, the advent of carrier current gives to the public the direct benefit of greater ease in making long-distance communications. In the near future carrier current will enable a person in Auckland to converse with a person in Dunedin at any hour of the day or night with the same facility as if he were in the same city."

MRS. NORMAN, Grass Dale, St. Lawrence, Jersey, is in her 82nd year, and is the caretaker operater of the St. Lawrence Exchange, Jersey, which has 60 subscribers.

In addition to attending during the whole 24 hours to her exchange, she has a small farm, chickens, vinery with greenhouse 60 ft. long, and large greenhouse with hot-house plants, and attends to her large garden.

Mr. Stanhope (the Engineer-Manager of the Jersey system) assures us that she is a very capable operator and that her ready French and English speech to subscribers is really astonishing.

TELEPHONIC ATTACHMENTS.

THE description of a new dance hall and restaurant in Berlin, with a telephone on every table and also "a pneumatic postal plant" for the immediate delivery of letters to other diners or dancers, suggests a certain flightiness on the part of a race that used to be regarded as phlegmatic. It is true, of course, that "night life" in the German capital is now understood to be more highly organised and prolonged than in any other European city, but one would have thought that it was still possible to go out for an evening and remain satisfied with the person or persons at your own table. These elaborate facilities for getting in touch with more amusing parties are ominous; they suggest that fidelity cannot be guaranteed for even five minutes.

In one way, of course, it is no more than a return to the older idea of a different partner for every dance; but the hopeful applicants of those days, dangling their programmes politely, did have to walk round and tender their own requests in person. Now they will just sit still and book a telephone call—or puff a brief note off by compressed air.—*Manchester Guardian.*

THE NEW PRESIDENT OF THE INSTITUTION OF ELECTRICAL ENGINEERS.

ONCE more has the honour of the presidency of the Institution of Electrical Engineers been conferred upon an official of the Post Office, Colonel Sir Thomas F. Purves, O.B.E., M.I.E.E., the present Engineer-in-Chief of that particular State department. The simplest and the truest thing to say in these circumstances is that the Post Office is itself honored by this unanimous vote of the Institution.

Colonel Sir Thomas delivered his presidential address at the headquarters of the Institution in London, but thanks to the efficiency and co-operation of the British trunk telephone service, the occasion was utilised as a demonstration of a telephone service known as "Conference communication," for, not only was the president clearly heard in two halls of the Embankment building, but the I.E.E. local centres at Manchester, Liverpool, Birmingham, Glasgow, Leeds, Newcastle, Cardiff, Southampton, and Portsmouth, were all within easy range of the speaker's voice, the speakers at these various centres all taking part in the discussions. In fact at the conclusion of the address Mr. Harcourt Wilson *at* Manchester proposed, and Dr. Magnus Maclean *at* Glasgow seconded, the cordial vote of thanks which was instantly and unanimously passed to Col. Purves by London and the nine centres mentioned above.

The opening phrases of the address were arresting. "Whilst the dissemination of power, light, and heat by electrical means is an achievement in the service of humanity," said the new president, "the Communication Engineer is inspired by the reflection that his *métier*, the transmission of thought, intelligence, and information is a no less worthy contribution to the status and to the legitimate pride of the electrical engineer." Then came the startling truth in a few words which much less than a decade ago would have startled the whole globe. "To-day 90% of the telephone stations of the entire world can be spoken to from London."

Our E.-in-C. anticipates that in seven years' time the number of automatic exchanges in the Central London business area will have reached one hundred, leaving only five manual exchanges for conversion, and that :—50,000 lines will be added annually to the London automatic system until the conversion of that area.

When one realises that the greater portion of the president's listeners were business men interested and engaged in the Electrical Engineering industry, though in other directions, the clear and concise manner in which the question of *Telephone Development* was dealt with could not but have deeply interested his listeners. Emphasising the point that the cost of elaborate and careful development study is richly repaid to an administration such as the Post Office, which is actually sinking about £10,000,000 per annum in the provision of additional plant to meet growing requirements, the speaker at once admitted that "the number of telephones *in use* in Great Britain is far smaller than it should be," but quietly added, "unfortunately, the same remark applies to the amount *of use* made of the service." Obviously, if the total traffic originating at 300-lines exchanges and higher only amounts to an average of 5.3 calls per line per day, "it would indeed be putting the cart before the horse to pour more capital into the system."

The presidential references to "the study of the ideal wave-transmission line, and to the efforts made to realise its qualities in practice, and the striking progress made towards world-wide range," were specially interesting and were not unnecessarily couched in ultra-scientific terms. On "loading-coils, one would rejoice," he said, "to find it possible to supersede inductive loading by some less formidable means of reducing attenuation and the various forms of distortion which appear in unloaded underground cables. Methods by which this may eventually be accomplished, by compensating devices at the ends of the cables, are, however, appearing and coming into use."

The matter is admittedly one of extreme complication, sometimes, as is well known, the "remedy" produces another "disease," so that "the answer to the frequent question whether amplifying and distortion-correcting devices have sounded the death-knell of inductive loading is therefore decidedly in the negative, while it is clear that the art of cable manufacture will need to achieve another order of freedom from cross-talk before an answer in the opposite sense can be given. This is not intended to imply that telephone-cable design and manufacture are in any sense open to the charge of being non-progressive," concluded the speaker when dealing with this particular point.

Sir Thomas paid due tribute to the presidential address of Mr. Frank Gill (at present in Japan), in 1922—which no doubt many readers will recall—and which address created a marked and lasting impression on the continent of Europe and no doubt resulted in the foundation and success of the C.C.I.

Speaking of the transatlantic and other long-distance telephone radio services and the question of privacy, the president guardedly said that he did not wish to suggest that secrecy in radio-telephony is yet in sight, in the sense that a competent outsider who is prepared to spend money in making arrangements to overhear conversations would never be successful, but he had little doubt that the system will ere long be equipped in such a way that a sustained and very elaborate attempt would be necessary in order to do so.

Reference to telephone repeaters and the possibility in the near future of Imperial Telephony by means of short waves led to "Maximum distance conversations and power used," and to an illustration of the fact, now well known, that the dimensions of the earth do not now set bounds to the range of telephony. Col. Purves related how two P.O. members of the engineering staff spoke from Stockholm to an official of the American T. and T. Co. in New Jersey by the following linked-up route :—Stockholm via Berlin and Amsterdam to London, thence to New York by radio, then stage by stage via Chicago to San Francisco, to Los Angeles, and back by another channel to New York, with a final extension to New Jersey, a total distance of 14,000 miles, and an aggregate length of copper conductor of 40,000 miles.

It is permissible, said the president, to think of the power which would be required to deliver currents of telephonic magnitude at the *far end* of such a circuit *in the absence of* repeaters. We start with an acoustic energy equal to about 10 microwatts delivered into the telephone transmitter by the voice of the speaker. Now to deliver even *one* microwatt at the far end of such a circuit *without* intermediate amplification, the initial energy must have the inconceivable value of 10^{2321} kilowatts. . . ." Making a brief calculation and accepting the estimate of a professor regarding the possible number of suns within the "world-line,"—then it comes about that "the whole *radiant* energy of nature would fall immensely short of meeting requirements, and," added the Colonel, with a twinkle in his eye, "it seems evident that the invention of the telephone repeater has tended to simplify certain problems!"

J. J. T.

[*With due acknowledgments to "The Electrician" and "Electrical Review" for their assistance.*]

A ST. ALBANS NOTE.

AN incident is reported from Radlett, Herts, displaying the promptitude of the local caretaker-operator. A man called at Dr. Wilson's house after he had gone out for the afternoon one Sunday, and finding the maid alone in the house, forced his way into the hall. He attempted to gag the maid, who pluckily resisted him and managed to knock the telephone receiver off the hook and scream loudly enough to attract the attention of the exchange before she was gagged. The Radlett operator, hearing the screams, had the good sense to notify Dr. Wilson's partner and also the police, who both went at once to the girl's assistance—not, however, unfortunately, in time to capture the thief.

The caretaker-operator has been commended for his alertness.

THE TRANSATLANTIC TELEPHONE.

By HENRY T. RUSSELL, *United Press Staff Correspondent.*

"Hello, New York!" calls a feminine voice with an afternoon-tea sort of pronunciation, in London. An instant later a typical New York "Hello, girl," with the familiar and sometimes nasal accent, replies from across the Atlantic: "Yes! London!"

These two brief remarks are the prelude to a transatlantic telephone conversation. They are all the talking that is required to set in motion the machinery which enables any one of 25 million telephone subscribers in many parts of the world to speak to a friend thousands of miles away by the mere lifting of a telephone receiver.

To-day, scarcely more than half a century after Alexander Graham Bell made the telephone a commercially practical proposition, telephone users in Paris, Berlin, Rome and Madrid can call New York, Chicago or San Francisco, as easily as though they were trying to communicate with a secretary in a next-door room. So can Holland, Belgium, Switzerland, Austria, Hungary, Norway, Sweden and Denmark talk with transatlantic friends *often with no more trouble than the actual lifting of a finger.*

Perhaps one of the most fascinating aspects of this development of human inter-communication comes from the fact that all these calls have to go through a single organisation known as the London Telephone Service. Indeed, Europe's calls for the United States, Canada, Mexico and Cuba, and *vice versa*, are centralised in London, thus modernising into "all wires lead to London" the ancient saying that "all roads lead to Rome."

Standing at the cross-roads of the world's telephone system, through the courtesy of the Superintendent of the American Service, the United Press correspondent was privileged actually to witness the manner in which some 20 million miles of telephone wires in Europe are linked with fifty odd million miles of wires in North America.

Paradoxically enough, this, the final act to what may be described as one of the greatest romances in the history of the world's scientific progress, is one of the simplest operations imaginable—or at least so it appears to laymen visitors. The "trunks" (English for long-distance) office of the London Telephone Service is so organised that officials there think no more of connecting Madrid with San Francisco, a wire, submarine cable and wireless distance of over 6,000 miles, than they would of switching a grumpy London subscriber on to a supervisor less than one mile away.

"Actually the longest connexion which we have ever put through from this office," explained the Superintendent to the United Press, "is one from Ceuta, Spanish Morocco, to Havana, Cuba, which by wire, cable and wireless is a distance of approximately 7,000 miles. It can be safely said that, assuming conditions to be normal on the wires traversing the six countries concerned" (Spanish Morocco, Spain, France, England, the United States and Cuba) "and providing the submarine channel cable and transatlantic wireless channels are functioning properly, we can put through a Ceuta to Havana call in about the same time as it would take us to connect Liverpool with Wolverhampton, England, less than 100 miles distant."

An even greater distance than from Ceuta to Havana can be covered by telephone through London, explained the official, although nobody has yet put through a call. For instance, he added, communication by telephone can be established through London from Ceuta to Mexico City. And in the not-far-distant future, he explained, it was hoped that London would be able to hold routine conversations by telephone with Sydney, Australia, 10,000 miles away. So far, however, although frequent excellent conversations had taken place between the two cities, he said, the service had not yet been opened to the public.

Visualise a large room in a telephone exchange in which from one to several hundred attractive young women wearing headphones respond to anything up to 60 demands each per hour. In one corner of this room, scarcely larger than the space in front of a soda fountain in a side-street New York drug store, sit the staff of 15 expert operators, the human link in the chain of wires by means of which human speech in many different languages is almost instantly transmitted over half-way round the world.

Suddenly a light appears on a small switchboard above a hole of no greater circumference than that of a pencil. A girl known as a "recording" operator sticks a plug into this hole and listens to a London subscriber asking for a call to New York, for instance. Particulars are quickly noted on a slip of paper. This is promptly handed over to an operator in charge of another switchboard who, simply by moving a switch with one finger, opens a circuit to New York, and with a calm "Hello, New York," asks for the number she has been instructed to get.

If, instead of originating in London, a call for the United States is put in from some point on the continent, the procedure is slightly different. A girl known as a "preparing operator," who sits right beside a colleague known as the "controlling" operator, takes the call from the continental city in whatever language she may be expected to specialise. Then, translating the particulars of the call into English, she hands them to her team mate, a mono-language girl who deals with New York only.

Although, according to the number of people who may be placed on a waiting list for transatlantic calls, a call may require anything up to two hours to put through, assuming that the lines are free and traffic is very slow, it is quite possible for a man in Madrid to get through to New York within from two to five minutes. Some idea of the formidable feat of organisation required to enable such rapidity of service can be gained by considering the route which such a call would have to travel by. In effect it is transmitted over the landlines of Spain and France. At Boulogne, on the French coast, it goes by cable beneath the English Channel. It then crosses England's landlines until it reaches the wireless terminal at Rugby, and from there it is sent across the Atlantic via the ether to the United States.

All transatlantic telephone calls are timed with a stop-watch. Girls known as "observing operators" sit at a special table and "listen-in" to all conversations for this purpose. At the same time, they make note of atmospheric disturbances, and anything that interferes with the efficient transmission of a call, scrupulously *deducting from the $45 charge per three minutes of conversation* even the number of seconds which they believe it would not be fair to make the subscriber pay for.

"Get me New York, please, Miss," suddenly asked the Superintendent, adding: "It will be a Service call." And so saying he beckoned to the correspondent.

"If you will take that lady's place" (he pointed to one of the operators at the observing table), "put on her headphones and listen, you shall see and hear for yourself just exactly how we put through a call from London to New York."

But before the suggestion had been carried out an impish voice called out in a tone as innocent as that of a schoolgirl excusing a prank: "You are through" (pronounce thr-r-rough, which is the English way of saying "here is your party"). "Excuse me, Sir, but New York is waiting!"

REVIEWS.

"A.B.C. of Television, or Seeing by Radio," by Raymond Francis Yates. Published by Chapman & Hall, Ltd. viii + 210 *pp. Price* 10*s.* 6*d. net.*

This volume has been produced for the amateur who wishes to obtain a working idea of the principles upon which television is based, and of the types of apparatus by which these principles are carried out in practice, without having to study books and papers written for professional specialists in the subject.

The whole subject is dealt with in a very readable and non-technical manner, and hints are given to help anyone who wishes to take up actual experimental work in this field of applied electricity.

The text is fully illustrated with clearly drawn and well reproduced diagrams, together with many interesting photographs of apparatus. In conclusion, a chapter is given describing how the amateur can make a television receiver for himself.

This book is the best popular account of the subject with which we are acquainted.

"Telegraphy and Telephony, including Wireless Communication," by E. Mallett, D.Sc. Published by Chapman & Hall, Ltd. ix + 413 *pp. Price* 21*s. net.*

This book has been produced to fill the gap between the elementary descriptive text-books written for linemen and mechanics and the specialised treatises on the various sections of the subject which are needed by professional engineers engaged in one or other of the many branches of the art of Electro-Communication.

It assumes a knowledge of the fundamental facts of electricity and magnetism and some acquaintance with the elements of the calculus. Given this preliminary equipment the book takes the student through the whole field of the theory of present-day telegraphy and telephony.

Part I. on Line Telegraphy, treats of simple apparatus and systems, short and long lines, transients, and high-speed apparatus and systems.

The second part, on Line Telephony, commences with a mathematical chapter on alternating quantities, and then deals with speech apparatus, transmission theory, the use of valves in telephony, and the arrangements used at exchanges, both manual and automatic.

Part III. on Wireless Telegraphy and Telephony, has chapters on Electro-magnetic Waves, High Frequency Circuits, the production of Transmitting Currents, and Reception.

The book concludes with a series of appendices in which are given a very complete collection of mathematical formulae, and mathematical discussions of certain important circuit arrangements not dealt with in the text.

The book is very fully illustrated and the diagrams are exceptionally well drawn and clearly reproduced.

With the exception of the constructional side, which is not touched, the book is the finest treatise which has yet appeared dealing with telegraph and telephone engineering. It presents the student in one convenient volume with information for which he would otherwise have to seek from many different sources, with possibly doubtful success.

"Introduction to Theoretical Physics," by Arthur Haas, Ph.D. Vol. II. Second Edition, revised. Published by Constable & Co., Ltd. xi + 492 *pp. Price* 21*s. net.*

Some months ago we noticed in these columns the first volume of the revised Second Edition of Dr. Haas' "Introduction to Theoretical Physics." The second volume has now appeared, and fully comes up to the standard of the first one.

The volume under review commences with a section on Atomic Theory, in which, as far as is possible with such a rapidly developing subject, the latest advances are dealt with, including De Broglie's and Schrödinger's wave theories of the electron, and the quantum mechanics of Heisenberg.

The next section deals with the theory of Heat, prefaced by a chapter on statistics as an introduction to the statistical methods used in thermodynamics.

In the final section the theory of Relativity and its consequences are discussed.

The book concludes with a summary of the ground covered in the preceding chapters, tables of the symbols most frequently used for the various quantities dealt with, and a table of the universal constants of physics.

The same clearness in discussion is evident in this as in the previous volume, and the whole work forms the best introduction to modern Physics with which we are acquainted.

"Private Automatic Branch Exchanges," by R. T. A. Dennison. Sir Isaac Pitman & Sons, Ltd. Price 12*s.* 6*d.*

This new volume will undoubtedly be welcomed by Departmental officers in particular, and will be a useful addition to technical manuals on Automatic Telephony. The author confines himself to the facilities, apparatus and circuit operations of four types of P.A.B.X. equipments in use by the Department at the present time—the reasons for standardising the particular facilities, however, are not given, but this does not materially detract from its use as a book on how the facilities are furnished.

The systems described are those of the Relay Automatic Telephone Co., the Standard Telephones & Cables, Ltd., Automatic Telephone Manufacturing Co., and Siemens Bros. & Co. By far the bulk of the book deals with the first-mentioned system, as used for small two-digit exchanges, but this is no doubt explained by the fact that by far the larger proportion of P.A.B.X.s in service in this country are of this type, whilst the step-by-step P.A.B.X. equipments of the A.T.M. Co. and Siemens Bros. are essentially similar to the public exchange systems which have already been dealt with in other text-books.

The book is not only lucidly written, but it is complete with excellently drawn and clearly made-out diagrams which should prove extremely helpful to all concerned in any way with private automatic exchanges both with and without connexion to a public exchange system. It will probably not rank as a general text-book on P.A.B.X.s, since practice abroad varies considerably, in fact, a study of other administrations' types indicates that this particular branch of automatic telephony appears to be a fruitful field for the adoption of such varied facilities as private users desire and some administrations agreeably furnish.

So far as British practice is concerned, however, Mr. Dennison is to be congratulated on the compilation, in a very comprehensive and excellent manner, of a long overdue text-book.

BETTER, CHEAPER, AND LARGER TELEPHOTOGRAMS!

THE transmission of pictures by telegraphic means is coming to the front in the U.S.A., so it would appear from the latest information received from that country. For example, an enterprising firm in New York recently sent out 300 telephotographs of the latest feminine fashions to all parts of the States, and it is recorded that no less than 212 business orders were received in return.

The *Telegraph and Telephone Age* uses the term "broadcasting" in connexion with this adventure, but one is scarcely prepared on this occasion to accept the term in the specific sense in which the word is at present understood, and it seems more likely that there were separate transmissions to a number of towns, possibly with multiple addresses in each, and perhaps in due course our transatlantic friends will be good enough to amplify the present information.

This expression of doubt is by no means intended to detract from the fully acknowledged value of the system as such, but is due solely to a certain looseness in the lay press of utilising the verb *to broadcast*, which term in wireless and scientific circles has a very definite and circumscribed meaning.

Having revealed something of the censorious in his nature the writer hastens to record that the Vice-President of the R.C.A. Communications Incorptd. announces reduced rates for the transmission of facsimile pictures between New York City and London, which it is said has been made possible by the installation of new equipment.

A departure has been made on the basis of charging for pictures by the metric system. The former charge was $3.20 per square inch. The new rate is now approximately $2 per sq. inch, or exactly 32 cents per square centimetre.

The minimum rate is now reduced from $50 to $48 and the size obtainable for the minimum fee is now increased to 150 square centimetres, or approximately 23¼ sq. inches instead of 15 sq. inches.

The maximum size coming within the minimum rate of $48 is 150 sq. centimetres, or 4 by 6 inches.

The centimetre has been adopted, says *The Age*, because it is anticipated that it is only a question of time (short with Germany) when a picture service to Europe will be opened.

The new equipment mentioned above has been developed by Major Richard H. Ranger, design engineer of the R.C.A. The instrument is more compact than the old type and offers the *advantage of working direct from original pictures submitted without necessity of photographic copying.* At the receiving end it is no longer essential to use visible recording as the finesse of photographic recording is obtained directly on photographic paper.

On development this paper gives a copy immediately available to be delivered to the customer, and a 5 by 7 inch picture may now be sent complete, including developing and drying operations, at the receiving end in 30 minutes.

"Various refinements," continues my source of information, have been worked out to improve the sharpness of detail, so that far better results are obtained on printed matter as small as "eight-point" type.

Typewritten matter is now handled so expeditiously that a growing usefulness for the service is expected, as facsimiles of documents of all sorts may henceforth be handled backwards and forwards as quickly as letters are now exchanged between various parts of the same city.

J. J. T.

PROGRESS OF THE TELEPHONE SYSTEM.

THE total number of telephone stations in the Post Office system at Sept. 30, 1929, was 1,814,263, representing an increase of 10,336 on the total at the end of the previous month.

The number of stations working at Sept. 30 in London, England and Wales (excluding London), Scotland, and Northern Ireland was as follows:—

	No. of Stations at Sept. 30, 1929.
London	647,967
England and Wales (excluding London) ...	982,225
Scotland	161,623
Northern Ireland	22,448

The growth for the month of September is summarised below:—

	London.	*Provinces.*
Telephone Stations—		
Total at Sept. 30 ...	647,967	1,166,296
Net increase for month ...	3,527	6,809
Residence Rate Subscribers—		
Total	157,083	247,645
Net increase	1,361	2,067
Call Office Stations (including Kiosks)—		
Total	5,717	22,952
Net increase	15	501
Kiosks—		
Total	1,479	5,662
Net increase	34	114
Rural Party Line Stations—		
Total	—	10,526
Net increase	—	33
Rural Railway Stations connected with Exchange System—		
Total	17	1,230
Net increase	—	36

The total number of inland trunk calls dealt with in July 1929 (the latest statistics available) was 10,653,433, representing an increase of 1,150,626 or 12% over the total for the corresponding month of the previous year.

The outgoing international calls in July, 1929, numbered 46,774 and incoming international calls 49,742, representing increases of 11,031 (30.9%) and 11,236 (29.2%) respectively over July, 1928.

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

LONDON—Colindale (automatic), Hillside (automatic).

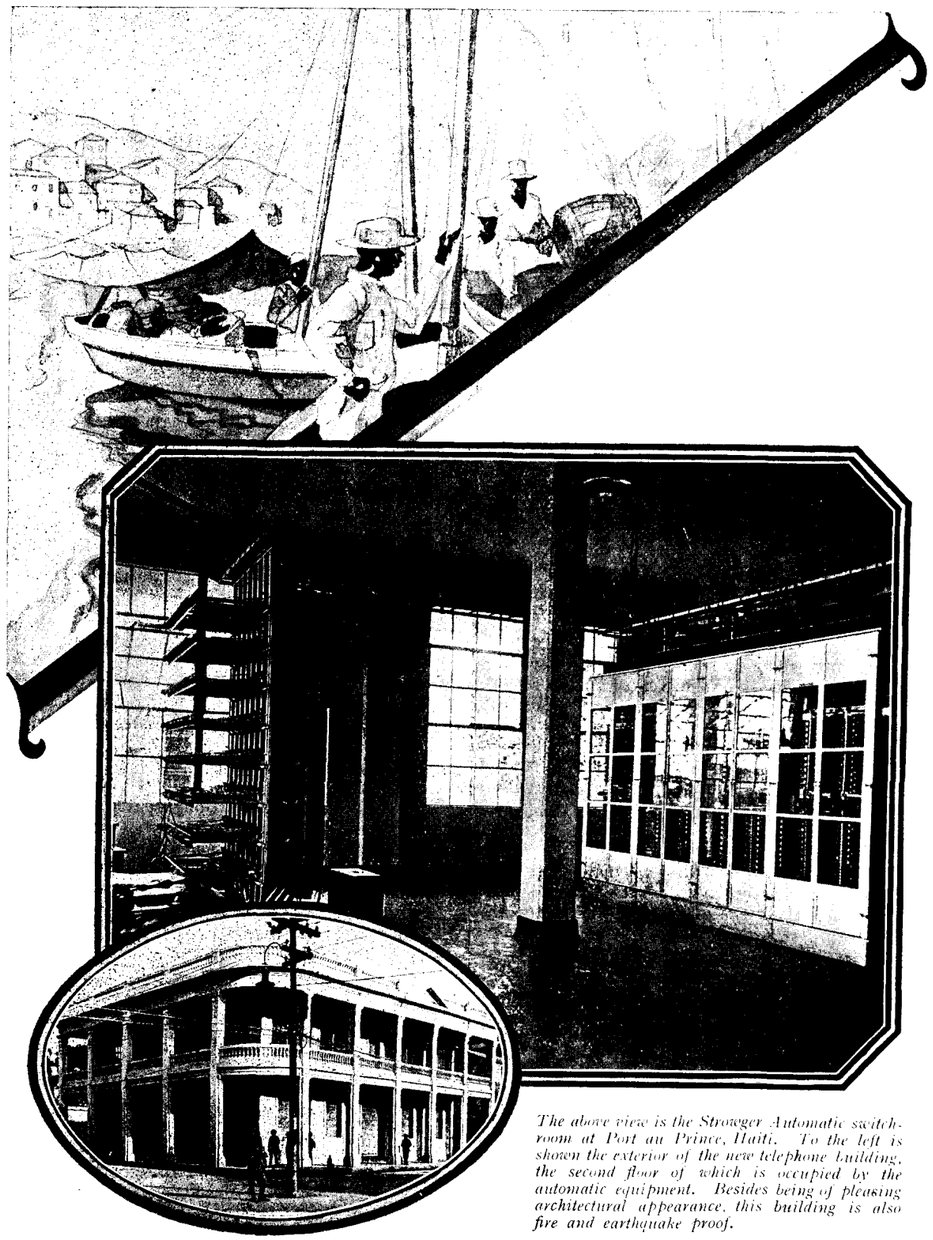
PROVINCES—Crewe, Nantwich, Mumbles (automatic): Badingham, Brancaster, Comberbach, Crossford, Hunmanby, Kilmours, Lockeridge, Long Sutton, Terling, Tunstall (Lancs.) (all rural automatic): Bourne End and Canford Cliffs (manual).

and among the more important exchanges extended were:—

LONDON—Addiscombe, Battersea.

PROVINCES—Barnsley, Barrhead, Birkenhead, Eagley, Farnworth, Haslemere, King's Lynn, Sittingbourne, Sketty (automatic), Slough.

72 new overhead trunk circuits were completed, and 85 additional circuits were provided by means of spare wires in underground cables.



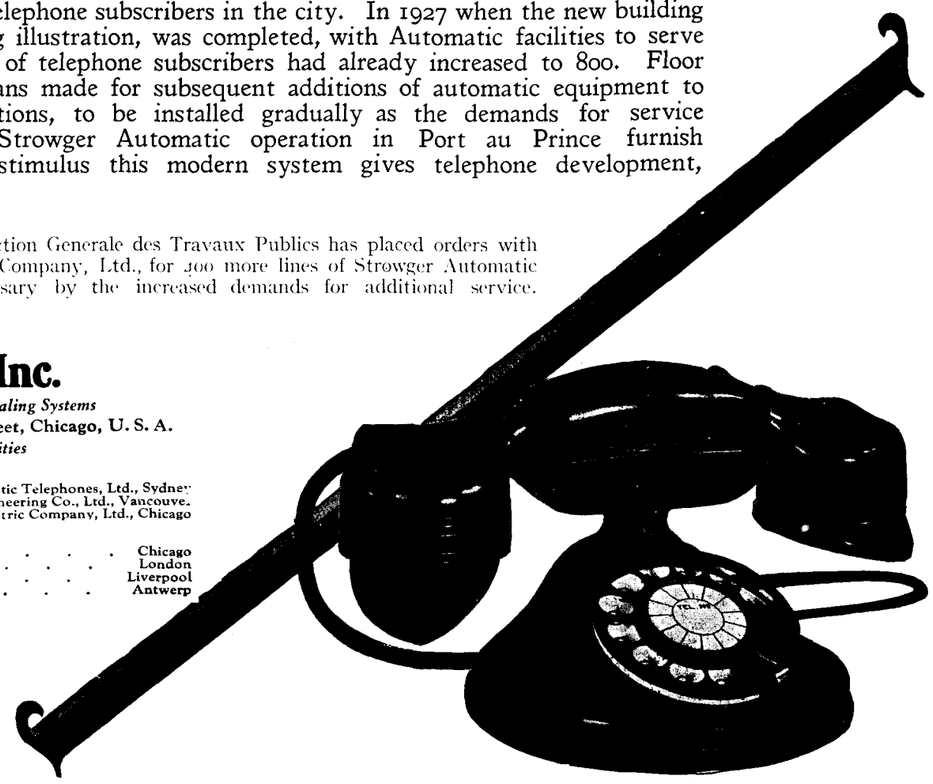
The above view is the Strowger Automatic switch-room at Port au Prince, Haiti. To the left is shown the exterior of the new telephone building, the second floor of which is occupied by the automatic equipment. Besides being of pleasing architectural appearance, this building is also fire and earthquake proof.

·t Au Prince Makes Progress in Telephone Development

DER the guidance of the United States Navy, the introduction of up-to-date methods in the republic of Haiti has effected considerable improvement in general ions on the island and in many directions has placed the activities of its citizens on modern basis. One of the most important departments in which this change has ccomplished is the telephone system.

the capital city, Port au Prince, was converted to Strowger Automatic operation in here were only 104 telephone subscribers in the city. In 1927 when the new building in the accompanying illustration, was completed, with Automatic facilities to serve stations, the number of telephone subscribers had already increased to 800. Floor was reserved and plans made for subsequent additions of automatic equipment to 2,000 additional stations, to be installed gradually as the demands for service e.* Six years of Strowger Automatic operation in Port au Prince furnish ing record of the stimulus this modern system gives telephone development, ver it is used.

*Just recently the Direction Generale des Travaux Publics has placed orders with the Automatic Electric Company, Ltd., for 300 more lines of Strowger Automatic equipment, made necessary by the increased demands for additional service.



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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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LESSONS FROM MOTOR STATISTICS.

THE year book of the Motor Industry of Great Britain always interests us, not so much *qua* motorist or pedestrian, although it is full of instructive statistics (gratifying to the former and ominous for the latter), but rather as telephone men, because of the fortuitous relation between the development of motor cars and telephones both in this country and America. Excluding motor cycles, there were in the United Kingdom 1,205,990 motor vehicles on Jan. 1, 1928, and 1,330,456 in 1929. In the United States there were 23,253,882 motor vehicles on Jan. 1, 1928, and 24,493,124 in 1929. These figures compare with the telephone development in the two countries as follows :—

		Motors.	Population per Motor.	Telephones.	Population per Telephone.
1928.					
Great Britain	...	1,205,990	36.5	1,633,802	27.8
United States	...	23,253,882	5.1	18,523,500	6.26
1929.					
Great Britain	...	1,330,456	34.3	1,759,686	25.8
United States	...	24,493,124	4.9	19,341,000	6.6

A few years ago the development of telephones and motors in the United States was about level; the motor vehicles have now drawn ahead. In this country the motor development is catching up more slowly; indeed, in the year 1928, telephones rather more than maintained their lead, increasing, like the motor vehicles, by a figure of about 125,000.

The year book has a list of the persons per motor vehicle in the principal motor using countries. These countries, except that Italy and Belgium replace Denmark and Sweden, are identical with the principal telephone using countries. They may be divided into two groups :—

I.—COUNTRIES WHERE THE MOTOR DEVELOPMENT APPROXIMATES OR EXCEEDS THE TELEPHONE DEVELOPMENT.

	Persons per Motor.	Persons per Telephone.
U.S.A.	4.9	6.6
New Zealand ...	9.6	9.7
Australia	13.2	12.8
France	37.4	42.2

II.—COUNTRIES WHERE THE TELEPHONE DEVELOPMENT IS THE HIGHER.

	Persons per Motor.	Persons per Telephone.
Canada	9.1	7.2
Great Britain ...	34.3	25.8
Germany	117.2	21.4
Italy	215.5	111
Belgium	70.2	34.5

It will be seen that Germany, which is fairly well developed telephonically, is behind France and Belgium in motor development.

The only lesson to be drawn from these tables is one which we need not elaborate, since we have touched upon the question before. It is this that, seeing how the motor car has outpaced the telephone in the United States, it is not the question of private ownership of the telephone system which is the deciding factor—as every economist and psychologist already knows—in the superior telephonic development of America.

STEAM HAMMERS AND NUTS.

IN those gossipy portions of the text-books of our youth which sought to humanise the hardest of hard facts, we used to read that the Nasmyth steam hammer was so powerful that it could be employed to drive piles and so delicately adjusted that it could be used to crack nuts. The auditing machinery of a State service may be likened unto this famous implement. It can come down like a "hundred of bricks"—if we may use so homely an expression in connexion with so august an institution—on the miscreant who is trying to defraud the State of a considerable sum; it can make its pressure felt on the member of the public or official who has failed to sign or cause to be signed some agreement or form in connexion with a two-and-sixpenny or twopenny-halfpenny matter.

We are moved to these reflections by an excellent article by a contributor on the subject of "Risk." Mr. LANE, in making a plea for the abolition of certain forms and formalities at present requisite when a subscriber desires a small removal undertaken, or an extension bell supplied, points out that whatever checks are imposed, whether justifiable or vexatious, by an undertaking

which trades and necessarily allows credit, *some* risks must inevitably be taken. He is evidently of opinion that though it is a fascinating and admirable property of the steam hammer to be able to crack nuts, this is not perhaps an economic or ideal task for that instrument.

It has of course to be remembered that a service like the Post Office telephone service, being under Treasury control, and subject to audit by the Comptroller and Auditor-General, and to criticism by the Public Accounts Committee and by the public and Parliament, does not enjoy the same freedom of action as an ordinary commercial concern, which, subject to such checks as its managers and accountants may consider adequate and reasonable, needs regard no external criticism. We nevertheless realise that the present procedure for small removals, &c., is amenable to improvement, and our readers will no doubt be interested to learn that the Administration already has the whole question under consideration.

HIC ET UBIQUE.

MR. POWELL-JONES, of the Telephone Development Association, in the paper which he recently read before the Telephone and Telegraph Society of London, gently chaffed us because, as he said, advertisers in this, a telephone journal, did not always quote their telephone numbers in their advertisements. (As a matter of fact, most of our advertisers do quote them.) Mr. Powell-Jones has since discovered on analysing the advertisements in the widely read American journal *Telephony*, that 72 out of 73 firms making display advertisements omit their telephone numbers. There must be some underlying reason for this at which we cannot even guess. We should have thought that in America the telephone number was almost an integral part of a man's address.

A complaint of a familiar pattern appeared recently in the *Daily Telegraph*. It was that the writer's calls (i.e. outward calls) cost him *5d.* apiece, if he makes 100 calls a quarter. The reason why the calls appear dear is, of course, that he makes so few. If he made only 15 a quarter, they would cost him about *2s.* each—and so on. Such critics sometimes forget that even with a low unlimited rate of about £8 10*s.*, each call would cost a subscriber over *5d.* if he made only 400 in a year. They forget also the incalculable advantage of being available on the telephone—a boon no call office service can replace.

The *Bournemouth Echo* says with regard to

"THIS DIALLING BUSINESS.—A friend of mine has decided that the automatic telephone is not all honey—as it promised to be from the praise that preceded it. He has found that his telephone account is much heavier than he bargained for, and it has been officially explained to him that the automatic 'phone records as well as puts through the calls automatically. It therefore seems that this heavier account is the penalty of incorrect dialling. The man who makes mistakes has to pay for all the wrong numbers that he dials. This is the best thing I have yet heard on behalf of the automatic. It will be some consolation to me to know that the duffer who calls me up erroneously has to foot the bill for his mistakes."

We hardly like to spoil the aggrieved gentleman's satisfaction by remarking that the duffer can call up the operator and inform her that he has dialled a wrong number for which he should not be charged.

It would appear that in Kenya Colony the Telegraph Administration published in the local Press a list of telegrams which for some reason or other could not be delivered. A question was asked in the Kenya Parliament whether a more thorough system for tracing addresses, &c., &c., could not be adopted. The reply was as follows :—

"The system for delivery of telegrams now in operation in the Department provides for full and every reasonable enquiry being made with the object of effecting delivery even in those cases in which the addresses would be considered as wholly insufficient by most other Telegraph Administrations. The publication of the lists referred to is an additional and special measure not in general use elsewhere. There is no record in the Post and Telegraph Department of any recent complaint of non-delivery of an adequately addressed telegram of which particulars were published."

Some people are never content.

The *Spectator*, always interested in natural history, says with regard to the protection of birds from power-wires :—

"Apart from humanity, they would be liable to lose a great deal of money by such short-circuiting, which might divert the county supply for hours. One or two instances have occurred in the past, even in England, but the most elaborate means of prevention have been found necessary in countries where very big birds are common, such as storks. One would expect that those tame and attractive cranes, called "native companions," would be the most likely victims in Australia, as the storks undoubtedly are in Palestine. Generally on this subject there is still need in Britain for a much wider distribution of the corks, which the Post Office are ready to affix to telegraph wires over reaches where the need is greatest."

On the other hand, the birds from which the British telegraph and telephone system suffers most are *canards*; from which no amount of corks will adequately protect it.

The annual report of the Posts and Telegraphs Department of Nigeria for 1928 shows that the number of telephones working is now 2,041. The total number of telegrams dealt with increased from 804,486 to 879,647.

Our well-known Paris contemporary, *La Revue des Téléphones Télégraphes et T.S.F.*, is publishing a translation of our series of articles "How to Improve the Telegraph Services." It makes the following introductory comment :—

"The telegraph crisis rages more or less in all the nations of Old Europe, and if America seems to have escaped it up to the present, this is no doubt due rather to the geographical conditions of that country than to its methods of working. It is in fact conceivable that in a country 15 times larger than France the telegraph can struggle more successfully than with us against the competition of the telephone and motor car. Is that to say that there is no remedy and that we must look on with resignation at the decay of that mode of communication at the very moment when experts are endowing it with the prodigious devices of which our readers are accustomed to find long descriptions in our pages?

This is the question which our excellent confrère, the *Telegraph and Telephone Journal*, has put, on the other side of the Channel, to British telegraphists. All categories of the staff bend in their turn over the invalid, and the replies—I almost said the consultations—are interesting and numerous.

Why should we not benefit by them?"

CONTRACT NOTES FROM THE NORTH-WESTERN TELEPHONE DISTRICT.

THE following appeared in the *Preston Herald*, Friday, Nov. 1 1929 :—

A well-known townsman told me a glowing story to-day.
He had been waited on by a Government official—(no, not the Tax Collector)
Who courteously explained the cost and the many advantages of a telephone;
Either at home or at the office, or both.
My friend had little use for such an instrument—
But the Government man was so disarming, agreeable and persuasive
That he nearly succumbed;
Some salesman, that civil servant.
It is pleasant to chronicle such praises;
Too often we have nothing but grumbles.

It is cheering to know that in some quarters at least our efforts are appreciated.

THE WORK AND METHODS OF THE TELEPHONE DEVELOPMENT ASSOCIATION.*

BY H. E. POWELL-JONES.

I AM quite frequently asked to describe briefly what the Telephone Development Association is—what the letters T.D.A. stand for.

What we are really, of course, is "Eat more fruit" applied to telephones, and just as the "Eat more fruit" movement aims and succeeds in increasing the business of fruit growers, fruit shippers, fruit dealers, both wholesale and retail, fruit carriers and others, so this "Use more telephones" movement is intended and designed to increase the turnover and business of all those who are in any way connected with the production and the supply of plant and material of all sorts required to create and maintain a complicated modern telephone system. This embraces, as you will see, a very large body of trades. There are, for instance, to name some of the principal ones, the exchange equipment makers, instrument makers, cable makers, drawers of copper wire, battery makers, duct makers, road contractors, who take up the roads for laying the conduits, and a whole host of smaller but nevertheless important people—smaller only in comparison with capital invested—dependent to a greater or less degree on these: insulating paper makers, furnishers of cotton, silk and yarn which are used in the flexible cables; gold, platinum, lead, and so on, almost *ad infinitum*.

There is a Post Office list of trades which benefit by the issue of orders for telephone plant, and it contains just over 50 trades. One cannot stimulate the demand for telephone service without automatically giving a stimulus to every one of these 51 trades. Incidentally—though I think that is not perhaps the right word, because I was going to speak about the employment aspect, and just now the burden of unemployment certainly falls like a heavy hand upon every industrial nerve centre in this country; the solution of that problem constitutes perhaps the most serious internal problem confronting the Government of the day, to whatever political party it may happen to belong. Incidentally, then, you will not be slow to realise what I may call the employment aspect of this movement for a more rapid, widespread development of the telephone habit in this country. You will agree, too, that this many-sided telephone manufacturing industry lends itself perhaps more than any other industry to the idea of communal advertising. It would be superfluous to advertise in the newspapers that A's telephones are better than someone else's, that B's cables are superior to someone else's, that C's telephone poles last longer than anyone else's, that D makes better porcelain insulators than his rivals and that E's copper wire is better drawn than anyone else's in the trade. The public, when they ask for a telephone, merely want an efficient telephone, and it is a matter of perfect indifference to them, so long, of course, that it is British, whether the instrument is made by A, B or C. They do not want to know who makes the cable or the wire clamp supporting the insulator, or who supplies the timber or anything else. So instead of, or as well as, each firm doing individual advertising of its own products, we have brought together in the T.D.A. an organisation to advertise the product of the whole industry, and to increase the demand for that product which, in this case, is telephone service. We are, in one word, the propagandist and sales department for the industry as a whole, and I cannot help thinking that it does say a good deal for the enterprise of British manufacturer that they are all unanimous in putting their hands in their pockets to maintain this organisation, the results of whose work and activity must, in the special circumstances of the case, be very largely indirect and only visible in the bulk after a period of some years.

It is rather fashionable just now in some quarters—perhaps it has to a certain extent always been one of our typical national characteristics—to talk and write pessimistically about British industry and the immediate industrial future. Why this should be so is not quite clear. Surely there is something rather exhilarating and encouraging in the contemplation of what is going on in our country just now. Here is a nation showing extraordinary patience and a very high degree of economic resilience. Here is a country which has been for ten years facing the strain of our war debt repayments, of unexampled, unprecedented taxation, of abnormal unemployment. And here is this country still carrying on, smiling, I might almost say; at any rate, reasonably cheerful. We are spending more on amusements, motor-cars and luxury expenditure generally than ever before in our history, and yet still we managed in 1928 to subscribe about 37½ millions of pounds in response to the admirable suggestions which are so commendably advertised by the National Savings Certificates Organisation. These general economic considerations cannot, I believe, altogether be ignored from the telephone point of view because it must surely be true that every tendency in the direction of an improvement in the general standard of living of our population and of any other population for that matter, is itself an argument for development of the telephone system.

If we take a gloomy view of general industrial conditions, our development forecast, or rather the spirit in which the statistical material is interpreted, will be gloomy and meagre. But if optimism prevails, that optimism will be reflected in the growth forecast and again in the advance provision of telephone plant, and also in the enthusiasm in which the service is sold to the public. I think this question of the forecast in all business is extraordinarily important, though a great deal also depends not only on the forecast itself but on the prevailing mood of those who have to implement the forecast. Is it too much to say that the whole history of civilisation is the history of the growth of forecasting? I think not. I think that a fair definition of a savage is that he is a man who does not forecast.

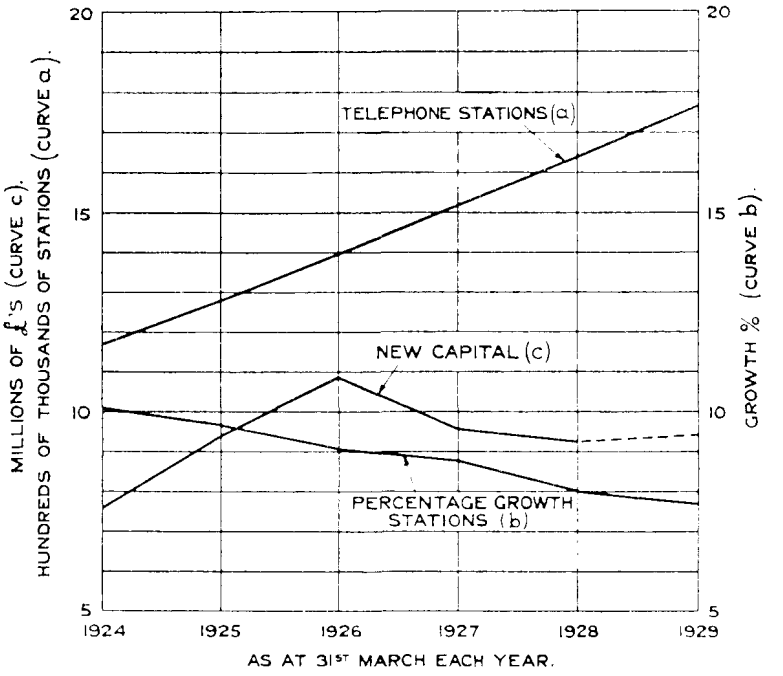

FIG. 1.—CURVE SHOWING RELATION OF GROWTH OF STATIONS AND PERCENTAGE GROWTH TO NEW CAPITAL.

Mr. W. T. Foster, a rather well-known American authority on this question of forecasting, says, not in connexion with the telephone business, but I think it applies, "When a man enters business he enters a forecasting profession. He may forecast badly or well, but forecast he must. He may scorn business forecasters, but he cannot help being one; he may shun statistics but he cannot help using them. Since business is essentially risk-taking with the expectation of profits, every enterpriser runs risks and as a risk-taker he is necessarily a business forecaster." All businesses, then, all enterprises, have to forecast and to take normal risks. These risks vary according to the nature of the enterprise or to the particular product or commodity. The supply of telephone service is a business and a very important one too, and one that in this respect of taking risks is especially fortunate, because though the normal risk has to be, and ought to be, taken, that risk is much less than in most businesses because, as a rule, there is little or no competition, and again for the reason that telephone plant is never wasted or subject to the whims of fashion as is, for instance, the material out of which ladies' shoes are wrought. Who, for instance, would have forecast a tremendous demand for reptile skins? Only those who were determined that they should be in demand and who set out and created that demand. Telephone plant, it is true, taking the worst view and allowing for most adverse circumstances, may prove to have been acquired and put into service a little before its time. But all experience, both here and elsewhere, goes to show that before very long it begins to be used and to earn its keep, especially if determined efforts are made to get in new subscribers whenever and wherever a temporary surplus of spare wires arises. I mention this question of prevailing pessimism because I think it is the worst enemy of the propagandist. There must be no room for it nor for lack of enthusiasm in our organisation. The telephone industry at any rate does not subscribe to any defeatist policy. It scorns pessimism and it is making an honest and sincere attempt to improve both its present and future prospects, with the additional encouragement that in so doing it is making a definite and appreciable contribution not only towards the problem of providing permanent and increased employment in all sections of the industry, but also towards a higher degree of national efficiency in the matter of communication facilities.

It is very encouraging, I think, to observe the tremendous strides that have been made during the last few years toward a more proper and adequate conception of the true importance of communications in this modern world of ours. You know very much more about it than I do, but there are outstanding examples on every hand. Two of them are the transatlantic service and that constant enlargement of the network which places every individual telephone subscriber in this country in touch with a score or so of European countries. In fact, keeping up the note of optimism, I suppose it will be safe to say that by the end of the year you will be giving us Australia

* A summary of the paper read before the Telephone and Telegraph Society of London.

as a matter of course. Your department has taken these two great achievements, as it takes your other achievements, in its stride, but if both or either of them had been created and perfected by a less modest organisation than the British Post Office, say, for instance, a commercial company that believed in advertising itself, perhaps the general public would have appreciated still more fully what is going on in the communication world and what is being done to make their life more efficient, safer and more commodious. I think, too, they would by now have made a much fuller use of the facilities you have provided, but then I need hardly say I am very firmly of the belief that it does pay to advertise.

I will mention one more instance of this importance of communications.

At Amsterdam this summer, there was held the biennial congress of the International Chamber of Commerce. Now the agenda of a body like that presents in tabloid form a picture of the subjects in which business men of all nations are deeply interested. On the agenda there was a whole section devoted to Communications. As a matter of fact, there is a permanent section of the Chamber's work devoted to the subject. I was rather pleased to see on this year's agenda that Communications were set out in what I believe to be the right order of importance. No. 1 was Telephones, No. 2 Telegraphs, No. 3 Mails. Here is another reference I came across the other day in the newspapers: "Never was the highest possible degree of cheapness, efficiency, speed and volume in all forms of written or spoken communication so necessary to the well-being of British industry." That is a good and true note and I doubt whether it would have occurred to any British journalist to write that sentence ten years ago.

Now I go back to 1924, when this Association was born. That there was very urgent need for somebody to do some selling at that date is made clear by the comparative figures then available. I need not go over them; they are all quite familiar. One gets into the habit of repeating these figures and I sometimes think they lose their force with repetition and their full significance is not appreciated. Briefly, the United States headed the list with 146 telephones per thousand inhabitants; Great Britain was 14th with 26. We have now gone up to 36, a gain of 10 points. Incidentally, I notice that the Bell System in America are cheerfully going to spend this year 110 millions sterling on extension of plant and service improvement. That is more than the total book value of our entire system. That figure rather disposed of any suggestion that even in America are they approaching saturation point. It will be an inducement to all of us interested in telephone growth here to take courage and confidence and go full steam ahead. I do not want to labour those figures. Figures are sometimes said to prove anything, but I have made an attempt here to illustrate our comparative telephone density in the light of one common factor, and that common factor is that, whatever nationality we are, we have all got money to spend. I know it does not always feel like it at the end of the month, but at any rate on paper, we all have money to spend. That is common to all countries, and if we plot telephone density in comparison with individual wealth, I think we have a fair basis of comparison. With this diagram, Fig. 2, I try to show you what I mean.

The normal line of telephone development in conjunction with individual wealth is the line to which the majority of the x's, representing individual countries, approximate. The countries to the left of the line are, comparatively speaking, over developed telephonically in relation to their wealth and those on the right, with Great Britain rather prominent, are under developed telephonically. The key to the respective countries is:—

(1)	... ...	United States.	(9)	... ...	Germany.
(2)	... ...	Canada.	(10)	... ...	Great Britain.
(3)	... ...	New Zealand.	(11)	... ...	Netherlands.
(4)	... ...	Denmark.	(12)	... ...	Belgium.
(5)	... ...	Sweden.	(13)	... ...	Austria.
(6)	... ...	Australia.	(14)	... ...	France.
(7)	... ...	Norway.	(15)	... ...	Argentina.
(8)	... ...	Switzerland.			

Going back again to 1924, you must picture me a rather forlorn, lonely little man in the middle of London, told to go away and find some offices and furnish them with a telephone, of course and engage staff and create the telephone habit. Now you cannot create the telephone habit, or any other habit for that matter, in five years, but it can be created just like certain other habits. Take the cigarette habit. We used not to smoke cigarettes in this country; it is entirely an artificial growth. I noticed in a newspaper this morning that the cigarette habit in America has now reached the stage at which the average consumption per head is 1,000 per year, an average of three a day, including babies and old women who don't smoke! Another habit created artificially is the holiday habit. That owes its inception to the skill with which railway companies and the Mayor and Corporation of places like Margate and Blackpool have instilled into our minds the idea that Blackpool is really a bracing place and that you will enjoy a cheap trip on a certain railway. If I had time, I should like particularly to mention and to pay tribute to the Underground advertising. A few years ago, when traffic conditions were really at their worst, one used to travel in an underground carriage, hanging precariously to a strap under really impossible conditions for a civilised nation to travel under. But on a level with your eye was the most delightful picture of the place you were going to. Now that advertising lifted your mind out of the discomforts of the present by showing you those delightful little rabbits you were to see at Kew.

I must enunciate here one or two principles about advertising to illustrate what we have in our minds. The first principle, I think, in all good advertising is that you must have the goods. And, *vice versa*, that it is no good having the goods if you don't advertise them. Going back to a few years after the war, you will remember how motor-car manufacturers were busy creating a demand for cars. They built up waiting lists. The first manufacturer who could deliver cars collared practically the whole of the lists.

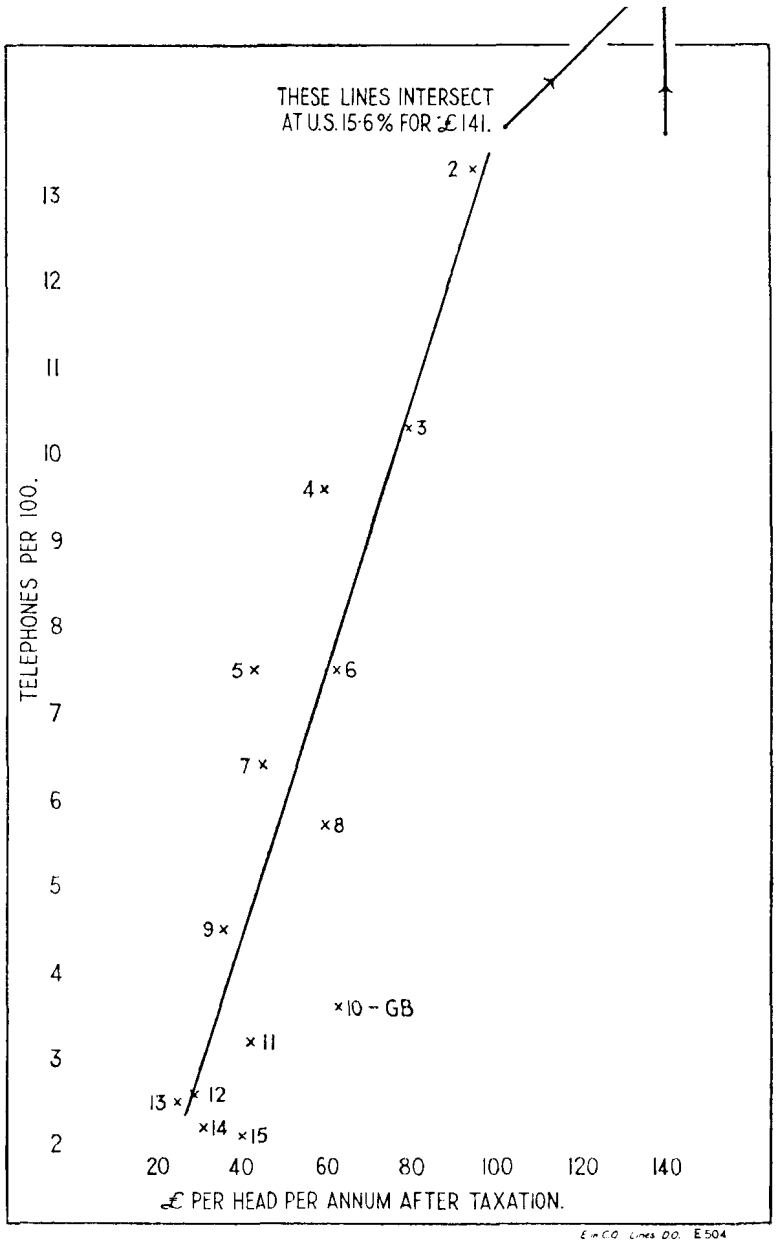

FIG. 2.—THE FIGURES IN THE GRAPH (1-15) REFER TO THE LIST OF COUNTRIES IN THE PREVIOUS COLUMN.

Here we are, then, in 1924, setting out into unexplored territory with the possibility of making very dreadful mistakes and with the consciousness that we could not control the supply of the product for which we were seeking a demand. It was an experiment that had its risks because all advertising experience insists that you can get a man or a woman to ask for a thing once, and if you cannot then supply, it is much more difficult to do it a second time. If you create a dissatisfied applicant it does a lot of harm because he or she becomes a focus of discontent. We recognised in those days of 1924 that anyone standing up to praise the telephone became a target for all sorts of critical sneers, as well as the natural prey of all the well-known cranks all over the country. It falls to us, in the course of the very large correspondence we now have, to pass on to District Managers all over the country, all sorts of letters of complaint. Well, now, I want to make it clear that the spirit in which we pass on those letters to District Managers is not that of associating ourselves with the complaints. We regard ourselves entirely as a funnel through which this kind of correspondence can pass without doing any harm, perhaps even doing a certain amount of good. Some funnels have filters. We like to think we have one in our organisation, and we filter out all the

unnecessary abuse that comes into these letters. What we allow to pass through are the nice words that are very frequently said about the telephone service and the Department. Do not think of us, please, as necessarily associating ourselves in the slightest degree with these letters of complaint which are passed on.

In 1924 the attitude of the Press, I think, towards telephones was very different from that to-day. I believe it is true to-day to say that you get more friendly, intelligent comment on the value of the telephone service in this country than you did five years ago. Practically without exception, those old sneers have disappeared.

I am going to show next the first advertisements we issued, our first plunge into the icy waters of public indifference. We know now, in the light of our further knowledge, that they were very largely wrong in conception.

If you have an unpleasant subject to advertise, you must do the best you can. But do not bring this into telephone advertising. The telephone is not only or chiefly a thing for emergencies; it is a thing for every-day fun and comfort and convenience. It is a very comforting reflection, I think, that old Mother Nature, in spite of all her faults, has implanted in us a sort of subconsciousness that makes us think of things like fires and burglaries as always happening to the other fellow. So in our telephone advertising we do not want to suggest that the telephone is a thing for emergencies because they always happen to someone else who is on the telephone. We want to suggest that the telephone is part and parcel of daily life.

Then follow a long series of advertisements in the Wembley Exhibition programme.

The next is the first "coupon" advertisement issued.

Here is our most improved slogan—"half-a-crown a week," which is based upon the current fashion of budgeting our income on the instalment basis, sometimes known as the "never, never" system. The booklet describes *the various uses of the telephone and invites people to send for a form of* agreement or for an official to call for an interview. Of the names of all the senders of post cards, 73% appear in the directory in the next issue. That is a great tribute to the way in which those inquiries are handled by your Department.

I would ask you to keep in mind the class of people we are trying to reach by this advertising. I do not know that it can be closely defined beyond saying loosely that it is the "lower middle classes." We are not advertising for the cream; you have that already. We are trying to get below that, and more particularly we are going for women, as they are the controllers of household expenditure. They are the people who get what they want sooner or later, by fair means or foul: if *she* wants a telephone she will get it sooner or later. We choose media for advertising which have a deliberately feminine appeal.

Here is another type of advertisement—an appeal to those who control the purse of the nation. In all this next series we were making a definite appeal to Parliament to realise the value and importance of the telephone industry.

(At this point of the paper, a number of slides were exhibited illustrating various phases of the Association's advertising campaign, composite pages of provincial newspapers featuring telephone service, &c.)

A "routine" item of our daily work is to write to people who do not put their telephone numbers in their advertisements. It is all wrong for any firm to start advertising without stating their telephone number, an essential part of their address. A difficulty we have here is that some of our own firms, the manufacturers, are almost the worst offenders in this respect. They will not put their own numbers in. There is evidence of this in the current (October) number of the *Telegraph and Telephone Journal*. *Quis custodiet ipsos custodes?*

We did a whole series of Christmas advertisements on the same lines, which was very successful. I would like to tell you about exhibitions, but it is a question of time, so I will only say this: that we are making a definite attempt through these exhibitions to get to the younger generation—the modern, post-war vintage.

Pre-war people who have got along so far without a telephone are rather hopeless, but the new generation has speeded up; they expect to find a telephone in their homes just as much as they expect to find the wireless, electric light and a bath or two. So we are making a special effort to get at the schoolboy and schoolgirl, which is the underlying reason in encouraging these visits to exchanges. Eighty-five schools have already acted on this suggestion this term and have sent their scholars to get an idea of what telephone service means in modern life.

I have not time to deal with many other phases of the Association's propaganda.

As regards the direct results of all this work, of course, they are only partly traceable, and we shall not expect to see them except in bulk in the annual increase figures. They are certainly improving, as you know, but of course we do not claim credit for the whole of that increase. I should like to show you how the position is as compared with one or two of our neighbours. This diagram shows the line of growth, percentage growth, and the capital invested.

It is often said that monopolies are slothful, because they have no *competition to meet and are not under the necessity of struggling to improve* their methods, and keep advancing. This is a false idea if applied to telephone service. The telephone, though administered by a monopoly, is in daily competition with a long and increasing list of time- and labour-saving conveniences. The Greek currant growers are spending money to make English housewives buy currants. When you have the public being urged to use more gas, drink more milk, use more paint, eat more fruit, &c., telephone service is in competition with all these other claimants for the spare money of the British housewife. Surely we must preach "Use More Telephones" with as much insistence, as much skill and as much confidence as do these energetic competitors of ours. That is the point I want to make: that just as the public needs an incentive to buy, so an administration has an incentive to sell. Do not misunderstand me about this. I say at once that we all recognise that the Department possesses the highest incentive of all—their high conception of duty to the State and their ideal of conforming to well-established traditions of the Service.

I have tried to give you in brief and with due allowance for that natural modesty which distinguishes every advertising man, a review of some of the directions in which this Association is setting about its self-imposed task of blowing your telephone trumpet, of letting people know about the *value of your service and of lifting this country up from that lowly position* we saw on the chart, but I feel I shall have wasted not only your time but also the much appreciated opportunity you have thus provided for me if I have not succeeded in drawing a picture of an Association genuinely anxious to be your friend and to supplement the good work which you are doing and do all we can to remove some of the difficulties that, as we very well know, confront you. If, occasionally, we seem to criticise, what is the use of a friend who *does not tell you when you have a smut on your nose? Please take it* as criticism offered in the most friendly and helpful spirit.

My last word is this: that one of the really pleasant features of our work is the encouragement we get from District Managers and telephone men and women all over the country, from whom we get helpful suggestions and kind criticisms. We want as many suggestions as you can give us; we appeal for more. Tell us what you want, and if funds permit and if our ingenuity is adequate to your demands, we will do it, because, after all, we are all treading the same road and heading towards the same goal and that goal is a telephone, and a well-used telephone, in every office, shop and home, where the presence of one of the most useful adjuncts to daily life can reasonably be expected.

CORRESPONDENCE.

HOW TO IMPROVE THE TELEGRAPH SERVICE.

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

SIR,—With all due respect to W. H. L. and J. S., and the spirit which prompted their deliberations, I submit that any attempt to increase the telegraph tariff would be the signal for a further outburst against State control. Far from helping it would hinder us in the project.

I, too, agree that the shilling telegram has outstayed its welcome. But, like the majority of contributors, our Carlisle colleagues would appear to confine their propounding to within a certain circle; in fact, the senders' point of view does not seem to have been considered (and he is the man that *must* be studied). This omission has been conspicuous throughout the series. To me the explanation is simply that the writers' experience is bound up within the narrow confines of the Department. I do not wish to disparage but it would be interesting to know how many have been engaged elsewhere.

It cannot be too often repeated that a very large proportion of the public are not telephone subscribers. These people would feel the effect of an increase in rates based on mileage, for they sometimes have occasion to send a telegram of an urgent nature destined to travel two or three hundred miles. They comprise the majority of the populace, and that being so, the factor of time alone should be utilised for the purpose of compiling a deferred tariff, thereby hoping for an increase in revenue by enticing quick returns. *Apropos, one must be careful not to mention the word "profit."* But, providing that they do not accrue at the expense of the staff, or the public, and that substantial reserves are set aside for general improvements, why on earth should it be considered a greater sin for the Department to increase the talents than for a private company to do likewise?

Apart from the comment in your footnote, one trembles to think of the effect among members of the Stock Exchange on being compelled to pay 3*s.* for 12 words for their traffic to (say) Dublin. Although, in my opinion, business people, generally speaking, may find it convenient to take advantage of deferred rates, yet there are many "houses" whose traffic must of a necessity be of an expeditious character in every instance. They certainly would not see any humour in paying extra charges for the purpose of balancing our traffic receipts. Neither would they see the logic in an increase of 50%, should the establishments of their agents, representatives, or customers, be situated over 100 miles away; even if we offer the very small potato of 30 minutes maximum delay to the office of destination—which is, not by any means the same thing as the place of delivery.

It is submitted that guarantees would do more harm than good—far better omit them. And if ever an inland deferred tariff were introduced, the method of application would be the fundamental basis of minimum *delay on the fully-paid urgent traffic*, for the service of which it would be fatal to increase the existing flat rate.

W. T. L. (*C.T.O.*).

C.T.O. NOTES.

Promotions.

MESSRS. W. A. LOCK, Superintendent (Lower Grade to Higher Grade), W. G. Godden, Assistant Superintendent to Superintendent Lower Grade, C. Buxton and F. W. Dare, Overseers to Assistant Superintendents.

Retirements.

Miss A. M. Finch, Supervisor (H.G.); Messrs. A. Hardman, Overseer; and E. P. Ellis, Telegraphist.

Obituary.

We regret to announce the death of Mr. Carl Radway. He was a very popular member of the Threadneedle Street B.O. staff and an unusually bright and cheery companion.

Gardening.

The C.T.O. Gardening Association held a very successful Autumn Show. The fruit and vegetable classes were well contested, and particular mention should be made of the vegetables shown by Mr. H. Savage, the dainty arrangement of Michaelmas Daisies staged by Mr. H. Lang and the tempting apples shown by Mr. C. Land. The Cable Room are now leading the Inland Galleries in the competition for the Hooper Cup.

Sport.

Chess. The Seventh Season of the Centels Chess Club was opened by the President and Vice-President (Mr. D. M. Ford and Commander Grattan). The prizes were presented as follows:

The Laxton Cup	...	Mr. D. J. Charlton.
The President's Prize	...	Mr. J. Fennell.
The Vice-President's Prize		Mr. F. Lobb.
The Junior Knockout	...	Messrs. Evans, Irons, Taylor and James.

The programme for 1929-30 includes Civil Service Cup, Civil Service League, Divisions 3 and 5 and London League C.

THE INSTITUTION OF POST OFFICE ELECTRICAL ENGINEERS: BOOTH-BAUDOT AWARD.

THE Council wishes to call attention to the "Booth-Baudot Award" of £5 which is now offered annually for the best improvement in telegraph, telephone or wireless apparatus systems. The award for the year 1929 is governed by the following conditions:—

1. The award will be restricted to employees of the British Post Office.

2. Applications for the award should be made between Jan. 1 and Mar. 31, 1930, and such applications should refer to improvements made, or suggested, during the twelve months ending Dec. 31, 1929.

Attention is drawn to the fact that recipients of awards via the Post Office Awards Scheme in respect to any improvement in telegraph, telephone or wireless apparatus or systems are eligible to apply for the Booth-Baudot Award in respect thereto.

3. The award may be withheld at the discretion of the Council of the Institution of Post Office Electrical Engineers if, after full consideration of the applications received, the adjudicators appointed by the Council are of the opinion that no award is warranted.

4. Applications for the award, accompanied by full details of the improvement, should be addressed to the Secretary, The Institution of Post Office Electrical Engineers, G.P.O (Alder House), London, E.C.1.

November, 1929. H. L. DUNSTER, *for Secretary.*

RETIREMENT OF MR. W. J. MARSH.

THE staff of the South Wales District held a Whist Drive and Social in the Y.M.C.A. Lecture Hall, Cardiff, on the evening of Nov. 1, to do honour to our late Traffic Superintendent, Mr. W. J. Marsh, on the occasion of his retirement. There was a large and representative gathering, the company numbering about 80, and among the guests of the evening were Mr. J. S. Terras, Superintending Engineer, Major D. K. Hopkyns, Assistant Surveyor, and Col. S. H. G. Dainton, Postmaster of Cardiff.

The presentation, which took the form of a handsome walnut compactum, was made by Mr. Waite, the District Manager, who referred to the excellent work done by Mr. Marsh, particularly in connexion with the transfers of the Cardiff and Newport Exchanges. Mr. W. McDonald, Traffic Superintendent, Class II, also paid tribute to the sterling qualities of Mr. Marsh, and the latter replied very suitably. A most enjoyable evening was completed in song, the vocalists being Misses G. Morgan and L. Purnell and Mr. A. W. Trethewy.

LEEDS DISTRICT NOTES.

A MEETING was held recently under the chairmanship of the Postmaster-Surveyor of representatives of all departments of the Leeds Post Office, including the Engineers, to consider how best to stimulate interest in and increase the circulation of the *Telegraph and Telephone Journal*. Various views were expressed and suggestions made.

At the end of October the total number of Telephone Kiosks working was 590, of which 361 are now artificially lighted. The number that are now working in the Leeds Head Post Office area is 250. The collections obtained from the Leeds boxes during the month of October were £735 which constituted a record.

A feature of the Kiosk development has been its extension to rural districts.

We have many visitors to Leeds Exchange, but rarely has one arrived so unexpectedly as did the Postmaster-General recently. The visit, which was none the less welcome because of its informal character, was followed by equally surprise visits to the Keighley Exchange and to a small exchange at Steeton, where the caretaker shares with a Sub-Office Postmaster, of whom we have heard, the felicity of having had a heart-to-heart talk with the head of the service.

Leeds Automatic Exchange was opened in May, 1918, but so great has been the development of automatic equipment since then that it is with something of the feelings of a great grandmother gazing at the latest bud on the family tree that we in Leeds await the opening of our first rural automatic exchange, a tiny mite of 8 lines now almost completed at Lothersdale, a little village set in some wonderful Yorkshire scenery. From accounts which reach us of the working of these tiny robots in other districts, they give an almost perfect service, and we have been able to re-assure one subscriber who expressed some misgiving at losing touch with the philosopher at the local Post Office, who is at present the helpful guardian of his telephone service.

Much of the humour of the telephone service is to be found in happenings at the small exchanges rather than in those hives of industry which are the nerve centres of commercial cities. At a little village in "Bronteland" the Post Office is situated next door to the local "pub." Outside the Post Office is a kiosk which is classified as "Attended" whilst the Post Office is open. One day recently a caller went to the kiosk to make a trunk call, and when asked by the telephonist to "please pay at the counter," he responded with, "Wheer, Miss, at t' Black Bull"? Can it be that a new source of call office discrepancies has been tapped?

The Bradford Post Office Ladies' Swimming Club has concluded a very successful season. The membership was so much higher this year that a larger swimming bath was rented, and to this latter must be attributed the extraordinary mistake of one telephonist who, dressing in a hurry to catch a train, stepped out of her cubicle straight into the bath. She was rescued, firmly clasping an attaché case in one hand and a pochette in the other, and, although the modern girl is not credited with a superfluity of clothing, sufficient dry garments were forthcoming to send her home dry, but not by the train she intended to catch.

Telegraph Branch Re-Union.—The second Annual Re-Union gathering of the male Telegraph staff took place at the Guildford Hotel, Leeds, on Oct. 24. The Chairman was Mr. C. E. Mulholland, late of the Telegraphs, and he was supported by the Postmaster-Surveyor, Lt.-Col. A. A. Jayne, D.S.O., O.B.E., M.C., and Mr. C. H. Mansell, Chief Superintendent, Telegraphs.

A large number of colleagues on the retired list responded to the invitations and a thoroughly enjoyable evening was spent. After a wholesome repast the Chairman in a witty speech recalled the mannerisms of what he described as "a delightful procession" which he would remember to the end of all time, and evoked much laughter as he recounted the comic deeds of some of the old-time stalwarts.

Col. Jayne expressed his pleasure at being present. He spoke of his long association with the Telegraph Department and of his belief in the adaptability of the telegraph man to many other forms of activity.

Other speakers included Mr. Mansell and Messrs. Whitley, H. Brown, J. T. Parkinson, H. Kendal, G. Barthram, J. Thompson, and J. Pattison.

An interesting and lively musical programme occupied the remainder of the evening.

Leeds Post Office Sports Club.—The Football Team is gradually regaining the position held by them before the war, that of taking all before them as the following results will show:

Matches played 7, Won 5, Drawn 1, Lost 1.
Goals for, 22; goals against, 11.

A Leeds Civil Service Golfing Society is proposed, and a provisional committee is now arranging an inaugural meeting in the nature of a "smoker."

LONDON TELEPHONE SERVICE NOTES.

The London Telephonists' Society.—Mrs. Anne Corner's lecture on "Speaking and Voice Production" attracted a large number of members at the second meeting of the current session of the London Telephonists' Society, on Nov. 1.

The subject is of vital interest to the staff of the London Telephone Service, and Mrs. Corner, with her fine sure touch, at once created an atmosphere of warmth and colour which gained and held the interest of her hearers.

It would be impossible in the small space at our disposal to develop to its full extent the theme of the lecture, or to do justice to the depth of knowledge of her subject which Mrs. Corner displayed. The simplicity and clarity of treatment was such that one could not but obtain the greatest possible benefit from the lecture, and one's sensation when listening to the poems, which were so beautifully read, was one of sheer pleasure.

There is no doubt that this feeling far outlasted the span of the lecture, and the thanks given to Mrs. Corner were obviously the sincere appreciation of a very successful meeting, the benefits of which will, no doubt, be reflected in the quality of the Elocution Competition to be held later in the season.

* * * *

Contract Branch Notes.—The business done by the Contract Branch during the month of October resulted in a net gain of 6,461 stations, as compared with 6,587 in October last year. Last year's figures, however, included one order for 472 stations, whereas the biggest order this year did not amount to a third of this figure.

There were 380 exhibitors at the Commercial Motor Show this year and 278 of them, or 73.2%, rented lines. The lines ordered by exhibitors at the Motor Show increased from the 383 given in these notes last month to 387, or 73.7% of the exhibitors.

The number of kiosks in use on Oct. 31 was 1,492, and advice notes were outstanding for a further 108. There were 44 applications for new sites submitted to the Ministry of Transport during the month of October.

Our congratulations to Mr. W. R. Hudson (Clerical Officer in the Western District Office), on obtaining a 1st Class in Telephony (Intermediate) in the last City and Guilds' examination.

* * * *

L.T.S. Bowls.—The annual general meeting of the section was held on Nov. 15, 1929, followed by a supper. The gathering was very representative of the strength of the membership, and much enthusiasm was displayed during the evening at the club's success in winning the Bunbury Cup.

Captain Berry, in moving the toast of the club, remarked on the wonderful progress of the section during a short life of only 3 years, and in a happy speech referred to the history of this noble and ancient game. Mr. G. W. Livermore, who responded, considered that the splendid team work, and excellent support afforded the skips, was mainly responsible for the team's fine record, and concluded by very adroitly drawing a simile of Admiral Drake's famous game on Plymouth Hoe, with the Spanish Armada threatening without, and our team's famous victory against the Admiralty in the final for the Bunbury Cup, in the presence of the First Lord of the Admiralty.

The toast of the visitors was given by Mr. Dickinson, and Mr. Hugh Williams replied. Messrs. H. Williams, J. E. Williams, Captain Berry, Messrs. S. P. Wilson, J. Collins and J. C. Atkins contributed to the evening's enjoyment, and Mr. Bradshaw obliged at the piano. The whole proceedings were excellently controlled by the club's captain, Mr. P. J. Mantle.

* * * *

Football Notes.—The impression obtained at the beginning of the season when watching the team at practice, that the introduction of several new men would materially improve the club's prospects in the league competition, is being fully endorsed by results to date. Up to and including Nov. 9 seven league engagements have been completed, five of which have been won, and the remaining two drawn. Twelve points have been annexed out of a possible 14, and 28 goals have been scored against 10. Futerman has scored 19 of the 28 goals recorded, his shooting being a feature in every match, and the club are distinctly fortunate to find a successor to Cowdrey, who last season was responsible for most of the team's goal-scoring successes. But the most improved part of the team, as compared with other seasons, is the defence, which, apart from the match against Taxes on Oct. 5, when 4 goals were yielded, has only been penetrated on 6 occasions in six matches.

If this form is maintained, the club will certainly be concerned with some of the honours to be gained. Such form must be very satisfying to Secretary Evans, who has piloted the team throughout the period since its resurrection a few seasons ago. Since the last results were announced in these columns the following matches have been played:—

Oct. 19.	High Commissioner for India. ...	Draw, 2—2.
„ 26.	War Office	Won, 3—0.
Nov. 2.	Land Registry	Won, 6—0.
„ 9.	Customs	Won, 4—2.

* * * *

L.T.S. Sports Association.—A Social and Dance was held on Friday, Nov. 22, more particularly for the presentation of the Summer Sports Trophies. Owing to the absence of the Controller, who, as it was subsequently ascertained, was rehearsing a B.B.C. surprise item, the President of the Association was represented by Mr. Tinneswood, the recently appointed Assistant Controller on the Accounts side.

As the L.T.S. Bowling Club won the Bunbury Cup this year, the opportunity was taken of inviting Sir Henry to present his own cup as well as the rest of the prizes. The Association were fortunate in securing his co-operation, and Mr. Tinneswood, in introducing Sir Henry Bunbury to the audience, referred to the pleasure it gave him in doing so and assured Sir Henry of the warm welcome the L.T.S. Sports Association extended to him. After giving a brief résumé of the summer activities of the Association, Mr. Tinneswood called upon Sir Henry to present the trophies. Before proceeding with the presentations, Sir Henry expressed the great pleasure it gave him to be present and the honour accorded him in being invited to distribute the sports prizes.

A very appropriate reference to the visit was the analogy of a neighbour visiting the next-door garden, and Sir Henry threw out a hint, which will certainly not be forgotten, that he would like another peep over on some other occasion.

Mr. Hugh Williams, the Sports Association Chairman, in requesting Sir Henry Bunbury to present the Cricket Shield, stated that the first holders were the Accounts Branch, followed in the second year by the Contracts, and this year's winners were the Traffic Branch. A fourth competitor had joined the league this year, consisting of a team of Messengers, and no doubt they had their eyes on this trophy for next year. The Agnes Cox Cup (Lawn Tennis) was the next presentation, and Clerkenwell, the first holders, regained the cup after a hard and well-played struggle with A.R.4, of the Accounts Branch.

A new trophy this year was a Cup presented by Mr. and Mrs. Pink. This was open for competition amongst representatives from any of the exchanges or ladies' office sections. The winner was Miss Wilson, of A.R.1 office section. So valiantly, however, did Miss Parker, of Maryland, fight, under considerable difficulties, for the treasured prize, that Mr. and Mrs. Pink decided to present her with a replica of the Cup.

Mr. Williams then informed Sir Henry that the Swimming side of the Association was such a huge organisation that they had to have an evening to themselves for prize distribution. It consists of 38 clubs, with a membership of over 1,600, a result that Mr. Pounds, the founder, was justly proud of.

The final presentation was the Bunbury Cup. Sir Henry, in handing the trophy to Mr. P. J. Mantle, the bowls captain, congratulated the L.T.S. Bowls Club on their success.

Mr. W. R. Bold, Principal Clerk, Accounts Branch, a very keen supporter of the sports movement in the L.T.S., then proposed a vote of thanks to Sir Henry, which was seconded by Miss Cox, who gave him a very pressing invitation to visit our garden on some future occasion and see how things were going.

* * * *

Temple Bar Swimming Gala.—Bravo, Temple Bar! The latest Club formed, and yet in their first year arranged a gala. True, it was only in miniature, but the members showed keenness and skill worthy of a more ambitious venture.

The principal races were the one-length handicap, won by Miss Olwen Williams, Miss Morris and Miss Saxton tieing for second place; the one-length open breast stroke, again the winner was Miss Williams, Miss Jones being second; and the walking race. Reference is made to the latter in order to indicate the size of the bath, which is one of the smaller baths at Holborn.

Miss Harlock won this race, and as she also won the learners' race later, described as a "walk over" for the winner, it is evident this competitor is making rapid strides in swimming.

The Supervisors' race was won by Miss Smith in 22 seconds, followed by Miss Richmond, who completed the distance 8 seconds later. "A" side were the winners of the team race, but only beat "B" side by three-fifths of a second. Thread-needle, balloon, egg and spoon, number finding, leap frog, fancy dress and good-night races all contributed to the enjoyment of the spectators and, indeed, to the competitors. Miss Olwen Williams, a promising young swimmer, gave a four-length demonstration of various styles of swimming. Mr. Pounds acted as M.C., and generally supervised the competitions. Miss Clement distributed the prizes at the close of the gala, and congratulated the winners on their success.

* * * *

The Royal Swimming Club.—Under the Presidency of Miss E. R. Johnstone, and with the co-operation of the Monument Club, the annual Swimming Gala was held at Pitfield Street Baths on Thursday, Nov. 14. The Royal Club Championship was won by Miss Brook, Miss Thorby being second. The Monument champion was Miss Medley, and Miss Goodacre gained second place. Miss Philpott won the learners' race, and Miss Wilkins followed 5 seconds later. Other results were: Novices' race, Miss Reece; balloon race, Miss Lidbury; novelty race, Miss Sharp; diving, Miss Lidbury; scratch race, Miss Thorby; handicap, Royal and Monanto, Miss Medley (Monanto). A team race, Telephonists *v.* Engineers, resulted in a win for the latter.

An exhibition of fancy swimming by Misses Coles and Elliott, two professors of the noble art at the baths, was greatly enjoyed. The final event was a polo match between the Engineers and Telephonists. The Engineers won, in spite of their fair (or unfair) opponents having 3 goalkeepers. The weaker side, however, managed to score a goal before the whistle went, by the aid of the referee and one of the Telephonists waiting in the Engineers' goal to receive the throw-in. It was all good fun though, and added much to the enjoyment of the spectators.

Welcome.

WE—and when I say "we" I am not using the pronoun in the editorial but in the contributorial sense—we are glad to be able to announce that *our Editress has returned and we offer her our sincere congratulations upon* her recovery. Our feeling of pleasure is such that, once mastering the emotion of the moment—pass me the cambric once more—we want to say with Lewis Carroll

"Then fill up the glasses with treacle and ink,
Or anything else that is pleasant to drink:
Mix sand with the cyder and wool with the wine
And greet Jean McMillan with ninety times nine."

We want to be riotously festive and to fill the column with all sorts of *joyous whoops and other happy noises*. Wherefore we bought ourselves a mouth-organ—in this case the we is singular (very)—and we practised (again singularly) assiduously in the hope that we might produce sounds which, out of kindness of heart, the Editress might mistake of a pæan. But alas, before we were able to conjure the immortal sounds in their full perfection we were waited upon by a zealous officer of the R.S.P.C.A., who produced a basket and said severely that he had called for the cat and that next time it would mean a summons. So that was that, and we are in consequence instrumentally mute.

I infer from the poem of C. A. S. that in certain quarters the return of the Editress had become a matter of the utmost urgency in order that I might be dealt with according to my deserts. To this austere view I merely say "Pooh." But whether an urgent necessity or not, I consider her return at this juncture to be singularly appropriate, for this is the festive season—or soon will be—of Christmas. This is the season of reunion and of goodwill (and, C. A. S., it is under the goodwill clause that I hope to escape the consequences of my alleged curbless flights). It is particularly appropriate, therefore, that we should be more than ever festive on this occasion. You may not care for a cocktail of treacle and ink, you may prefer your sand without cyder and your wine without a fleecy flavour. If you have any such objections you can follow the advice offered by Mr. Chesterton in relation to another sort of liquid:—

"If an angel out of Heaven
Brings you other things to drink,
Thank him for his kind intention—
Go and pour them down the sink."

But appropriate as is the festivity, it is even more appropriately appropriate to utter the welcome in statistical terms. Think of it—ninety times nine. Can you imagine a more perfect symbol of finality. How could a welcome be expressed to convey better the sense of fulness and completeness? And so we are glad to have her with us again after so long a separation. In the words of that old quotation, so familiar to us all and so very true, "Absence ——"—er, now how does it go—"absence ——"—um, er—ah, I have it, "Absence makes the ribs grow stronger."

PERCY FLAGE.

The Editress Returns Thanks.

A thousand thanks I fain would say
For all the letters, grave and gay,
Which readers very kindly sent
To cheer me in my banishment.
Each day the number larger grew—
Ten, thirty, fifty, ninety-two,
Till, when they'd totalled fourteen score,
I lost all count—yet longed for more.

Then, to beguile the pain-fraught hours,
They sent me flowers and flowers and flowers,
Books, chocolates, scent—and cigarettes
Unsmoked, "the Editress regrets;"
And records too, but not, O joy,
A single one of "Sonny Boy."
Next telegrams with cheery tone,
And kindly words by telephone—
Oh, everything was mine, I'll swear,
Except a greeting "on the air."
And as I stronger grew apace
I longed my colleagues to embrace,
So welcome were their words of cheer
(*Not* male staff—*cela va sans dire*
Yet, if this ruling they deny,
My lipstick's kiss-proof—so am I).
And now to airy Percy Flage
Whose nimble wit keeps bright this page,
Sub-editor—and loyal friend,
Deep gratitude I gladly send,
His misquotations, too, endorse
(There's nothing else to do, of course).
And so to all I send anew
My warmest thanks—long overdue—
For cheering me in my distress,
My love as well to "C. A. S."
For whom I feel much tenderness,
Yours gratefully, the Editress.

Our Portrait Gallery.

No. 4.—MISS R. JAMES.

With many other senior telephone women, Miss R. James' experience as a telephonist was gained in the National Telephone Company. In the period of her service with that company she saw several changes in the systems of working commenced and ended. When she transferred to the Post Office in 1902, Central Battery exchanges had been opened, but the system was still only slightly developed. The knowledge she had acquired, however stood her in good stead. The end of 1908 found Miss James in the position of Supervisor-in-Charge at the Victoria Exchange. Only those who remember how quickly that exchange grew and served all the Government Departments,

can realise how strenuous her period of service there must have been. After the closing of old Victoria Exchange, Miss James was appointed to take charge at Mayfair, the first large ancillary exchange in London. In 1918 Miss James took over the charge of Gerrard, at that time one of the largest exchanges and busiest junction-lending centres in London. There she remains.

A keen and sometimes conflicting realisation of her responsibilities to the Public, the Staff and the Department has generally been apparent in Miss James' handling of official problems, but she has always managed to reconcile the interests affected with satisfaction to herself and those concerned.

Her love of home is strongly reflected in the provision of home comforts which have appeared for the staffs at all the exchanges with which Miss James has been connected. It is, however, in her outside interests that the many-sidedness of Miss James' character is fully shown.

The London Telephonists' Society has benefitted greatly by her consistent support. That her efforts have been successful is revealed by the fact that she is a Past-President and remains an Acting Vice-President, despite many years of service.

The formation of the Gerrard Swimming Club, of which she is President, and which grows in strength yearly, was the beginning of the large Swimming Association formed in the London Telephone Exchanges.

The work originated by Miss James in 1918 for Sidcup Hospital for disabled soldiers and sailors is detailed in the *Telegraph and Telephone Journal* for November, 1929, but the account gives little credit for the resourceful manner in which the monies required were found. Dances, concerts and Sales of Work provided the wherewithal. In no case was failure experienced. Their number was great and showed what organising ability enthusiastically applied can achieve.

Withal, Miss James' hobby and study is humanity and its adaptation to changing conditions. That she is successful there can be no doubt. It is apparent in the affection and esteem she receives everywhere.

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.1.

LONDON ENGINEERING DISTRICT NOTES.

THE LONDON TELEPHONE SYSTEM.

A NOTABLE ACHIEVEMENT.

THE traffic from certain manual exchanges in the London telephone area will henceforth, during the night period, be routed via the semi-mechanical Tandem Exchange. In other words, the night traffic hitherto dealt with between "A" operators at originating exchanges and "B" operators at incoming, will be passed to the Tandem Exchange. There the operator will key the required exchange and number into a "sender," which will select a junction and transmit the number. At the distant manual exchange this traffic will be received on C.C.I. equipment and it will be unnecessary to staff the manual "B" positions. Should the night operators at originating exchanges depress an order wire key associated with a day-time group of junctions, then a tone will indicate that the traffic should be passed via Tandem.

Ultimately this development may result in a saving of night staff at the incoming exchanges which may more than balance the cost of the increase in staff required at Tandem to dispose of the concentrated load.

The extension of the functions of Tandem as outlined in the foregoing is noteworthy as a practical recognition of its efficiency as a "clearing house" for telephone traffic: otherwise it would be unwise to route night traffic via that exchange.

It is infelicitous that writers and speakers on the London automatic system should so often stress its complexity. Such emphasis tends to produce an unfortunate psychological effect upon subscribers upon whom it would surely be far wiser to urge the simplicity of the system so far as they are concerned. Yet, having in mind the possible faults which may arise from apparatus troubles, from incorrect manual operation at originating, Tandem, or C.C.I. Exchanges, from careless dialling, from faults on external plant, and also not forgetting that these may exist either separately or coincidentally, then a practical recognition of the reliability of the semi-mechanical Tandem Exchange and its associated C.C.I. system is a tribute to those responsible for securing the efficiency of London's telephone network.

The fact that semi-mechanical Tandem has "made good" is due not alone to improved maintenance made possible by mechanical and manual routining. It is also attributable to the exercise of close co-operation between Engineering and Traffic Officers, and to the creation and stimulation of an attitude which compels a vigilant scrutiny of adverse conditions and results in a determination to secure their elimination.

It is the existence of such a spirit, permeating the efforts of those associated with the conversion of London's telephone system, that will secure the highest efficiency.

New Automatic Exchanges.

Name.	*No. of Lines Equipped.*	*Opened.*	*Manufacturer.*
Hendon	4,200	Nov. 23	A.T.M.
Ilford	3,000	Nov. 28	Siemens.

GLASGOW TELEPHONE NOTES.

THE subject of this sketch, like many of her colleagues, had experience of the telephone service before being taken over by the Government.

Miss Margaret Wilson Kay entered the service of the National Telephone Company, Ltd., on June 6, 1892, rising to the position of Clerk in Charge before transfer to the State on Jan. 1, 1912, which service she entered as Assistant Supervisor, Class I.

Miss Kay was in charge of various local exchanges until her promotion to the rank of Supervisor on Mar. 1, 1926, when she was placed in charge of the Glasgow Trunk Exchange, a position of considerable responsibility, for not only is Glasgow the zone Centre for Scotland, but also many of the trunk lines radiating from it are of great length and importance.

MISS M. W. KAY.

Glasgow is the appointed office for a large number of telegrams and phonograms. Not only is the daily traffic heavy, but during the season it is not unusual to handle over 5,000 messages.

It is thus apparent that Miss Kay and her staff of Supervisors have sufficient to occupy their time and energy. It is all to their credit that the services given are very good.

After 37 years of service, Miss Kay still retains her sense of humour and delights in hearing and in telling a good story, therefore she is an acquisition in any social gathering.

Miss Kay is fond of good music, is a lover of the country and delights in a holiday in the wilds of Arran.

On Oct. 17 the schoolroom at South Exchange cast aside its quiet, subdued and sombre look and, as if by some fairy wand, was transformed into a beautiful bower of flowers and palms.

THE occasion was a Whist Drive, arranged by Miss Clark and staff of South Exchange.

The various departments were well represented, as were also the personal friends of the staff. The atmosphere that prevailed during the evening indicated the feeling of good fellowship which exists between the departments at Glasgow.

Mrs. Coombs, in her usual graceful manner, presented the prizes, and a hearty vote of thanks was called for by Mr. Coombs on behalf of the Committee.

The proceeds go to augment the Ex-Service Men's and War Widows' and Orphans' Funds.

Miss Clark, in a short but charming speech, thanked the friends for their support.

It was apparent from the "Smiles in the Voices" that a most enjoyable evening had been spent.

A. W. L.

A very enjoyable evening was spent on Friday, Nov. 1, in Douglas Exchange dining-room, when the staff, numbering about sixty, held a little social in the form of a Hallowe'en party.

The room was transformed, the lights being covered with bright coloured lanterns which gave out quite a warm glow.

High tea was served at 6.30 p.m., and afterwards the evening was spent in merrymaking. Miss Mortimer, our Supervisor, acted as M.C. Two members of the Test Room staff, Mr. Mellish and Mr. McDougall, who are always very willing to help us, were responsible for a good part of the fun. Songs and readings were rendered by members of the staff.

We were all very sorry that time would not permit us to go on longer and we finished up by singing "Auld Lang Syne."

We thank Mr. Johnson, our Traffic Superintendent, for allowing us the use of the premises on those happy occasions.

A. B. M.

"The Play's the Thing."

(A criticism, with apologies.)

Invitations were issued to the staff in November for repeat performances by the "T.B. Optimists" of the several-years-old but ever-popular play, "The Meetings." The play is well known to us all, the plot, and, indeed, a good part of the play itself, being taken from the "Early History of the Telephonus Serviscus."

As is portrayed in other dramatic productions, in this also we find that human nature alters little, if at all, so that the situations that arose and the difficulties that presented themselves in the "good old days" are still with us in this modern era. But we hope that a solution to all these problems will be forthcoming in the next work from the same author's pen. We await with impatience the production of "The Settlement."

As the scenic effect of "The Meetings" is practically a minus quantity, and there is very little action, the play depends largely on its "lines" for its success. The cast was much the same as on former occasions, and we were glad to welcome "Matheson-Lane" in his accustomed role. At one or two performances there was a slight delay and it was suggested that the play should commence before the hero arrived, but at this there were loud cries of "No! No! Wait till he 'Coombs!'" In order to keep things going "Flotsam and Jetsam" — no, "Tohnson and Jhenson" — gave their splendid turn, bringing in much "Palky" patter. Other curtain raisers which took almost as well as "The Meetings" itself were "The Hamilton Diggins" and "Brown's Hunter *versus* O'Rourke's Roan," whilst Sir "Kerr Harvey" scored a great success in "Mrs. Reid's Ward." During an interval "Angus Macdonald" was rendered with great feeling, but the staff found this somewhat hard to "enDewar," because it was drama, not opera, they had so eagerly anticipated. Indeed, someone was "Hastie" enough to ask "W'atson" now? But just at that moment the curtain rose.

The audience was requested to participate in the performance, this being one of the peculiar features of the production. Some were enthusiastic and others rather diffident, but on the whole the chorus went with a swing, so to speak. There is much that is real and earnest in the various character roles in "The Meetings" and the drama of life as it is here enacted is full of interest and artistically coloured by the sidelights of humour and pathos.

M. L. TULLOCH.

On Economy and the Acquisitive Impulse.

"Discharging the part of a good economist." (Terence.)

"Economy is only a transient and monetary twinge of conscience." (Scott.)

"The acquisitive or hoarding impulse creates a strain of meanness and excessive caution in the character which kills every generous impulse."—(Bligh.)

"The man who cannot and does not save money cannot and will not do anything else worth while." (Carnegie.)

"I saw that riches are not to men of understanding. . . . . There was a little city, and in it a poor wise man, and he by his wisdom delivered the city." (Ecclesiastes.)

"To the zealous people who wanted to get me a special train to speak with the King, I said that for me a compartment in the usual train was quite enough. Engines and coal should not be wasted. Economise! That is the first and acid test of a true man of Government." (Mussolini.)

"As an occupation in *declining years*, I declare I think saving is useful, amusing, and not unbecoming. It must be a perpetual amusement. It is a game that can be played by day, by night, at home and abroad, and at which you must win in the long run." (Thackeray.)

"There is an Italian proverb which says that woman is to money as the sun is to ice. According to my observation, a woman is more naturally disposed to thrift than a man, whenever she is answerable to others for her expenditure. Women who are reckless in spending their own money are scrupulously frugal in spending their husband's. Give a woman the sense of responsibility, and she is more conscientious than a man. A woman will spend half the morning in saving fourpence on her household bills and then make up time by taking a half-crown cab to an appointment. Whereat the man laughs consumedly. This, however, is exactly what man does himself. The man who worries an office to save a pound in business will spend ten pounds without a thought on a dinner at the Savoy. Business is business, says the man; the weekly bills are the weekly bills, says the woman. It is the same habit in both. I know a woman who telegraphed to her husband to buy threepennyworth of cream on his way home from business to save her books from exceeding £6 a week. *He* paid for the cream and the telegram. It was an admirable instinct on her part. Similarly, I have known a Government Department spend £5 of another Department's money to save twopence of its own." (Bagshot.)

"Have I not seen a public body pass a vote for £30,000 without a word, and then spend three special meetings prolonged into the night over an item of seven shillings for refreshments. . . . . Political economy and social economy are amusing intellectual games; but vital economy is the philosopher's stone." (G. B. S.)

"6 1 1663: This night making an end wholly of Christmas, with a mind fully satisfied with the great pleasures we have had, and I do find my mind so apt to run to its old want of pleasures that it is high time to betake myself to my late vows, which I will to-morrow, God willing, perfect and bind myself to, under pain of forfeiture, that so I may for a great while abstain from plays, and wine, and other unnecessary expense, and do my duty, as I have well begun, and increase my good name and esteem in the world, and get money, which sweetens all things, and whereof I have much need. . . . ."

"18 1 1663: To my office, perfecting my vows again for the next year, which I have now done, and sworn to in the presence of Almighty God to observe upon the respective penalties thereto annexed. . . . ."

"23 2 1663: Thence to the theatre, and in the midst of the two plays, I was sad to think of the spending of so much money and venturing upon the breach of my vow, which I found myself sorry for, though my nature would well be contented to follow the pleasure still. But I did make payment of my forfeiture presently." (Pepys.)

FOR OUR ADVERTISERS.

The following extracts are open until dates stated, and all references should be made to the Department of Overseas Trade, London, S.W.1:

Melbourne. P.M.G. requires following three items Dec. 17. Secondary batteries (Schedule C. 505) (Ref. B.X. 5777). Telephone fuses, heat coils and protectors (Schedule C. 498) (Ref. B.X. 5784). Loading coil pots (Schedule C. 499) (Ref. B.X. 5785). *Pretoria* P. and T. Dept. Dec. 27. Supply telegraph material, including galvanised iron tubular arms, insulators, upper tubes for 24 ft. poles, bases, and screw rings, rods for stays, crossheads, and stay plates. (A.X. 8734.) *Melbourne* P.M.G. Jan. 7. Supply of timing clocks (Schedule C. 507) (Ref. B.X. 5762). Also same date, supply of testing instruments (Schedule C. 504) (Ref. B.X. 5786). Also same date and department, supply of (1) contact pressure testers and (2) telephone hand sets (B.X. 5821 and 5823). *Wellington*, N.Z., P. and T. Dept. Jan. 13. Supply of four-point jacks (B.X. 5840). *Melbourne* P. and T. Dept. Jan. 14. Supply of (1) telephone indicators and (2) ringing motor generator sets for automatic telephone exchanges (B.X. 5822 and 5839). *Wellington*, N.Z., Government Railways. Jan. 15. Supply of automatic telephone equipment for new station at Auckland (B.X. 5841). *Wellington*, N.Z., P. and T. Dept. Same date. Supply of galvanised iron bolts (B.X. 5848). *Melbourne*. State Electricity Commission of Victoria. Feb. 10. Supply of sine wave-generating equipment and accessories (B.X. 5844). *also* Mar. 30, supply of D.C. neutral relays for power signalling purposes (contract No. 45457) (Ref. B.X. 5793).

J. J. T.

A BRIEF CHRONOLOGY FOR STUDENTS OF TELEGRAPHS, TELEPHONES AND POSTS.

By HARRY G. SELLARS.

(*Continued from page* 40.)

1889, June 1 ... Dane Sinclair and H. F. Jackson patented a horizontal multiple telephone switchboard.

1889, June 4 ... Postmaster-General, H. Cecil Raikes, urged to establish and maintain a telephone system.

Wiedemann experimented at Wolfenbuettel in the photo-electric power of sunlight and diffused daylight.

Svante Arrhenius theorised in connexion with atmospheric electricity.

J. A. Barrett and W. D. Sargent, of Brooklyn, used paper as a covering for cable wires.

1889, July 15 ... W. Deckert, of Austria, patented a granular carbon telephone transmitter with a carbon diaphragm screened with gauze.

Ericeson also devised a granular transmitter.

Parment, of France, devised an automatic method of Hughes working in which he suggested simultaneous printing and reperforation at the receiving end, the reperforated tape to be used for any necessary retransmission.

Baudot multiplexed the Hughes telegraph printer.

Electric omnibus tried in the streets of London.

1889, Sept. 2 ... Issue of Inland Telegraph Money Orders commenced with 17 largest towns.

1889, Nov. ... Insurance up to £50 for parcels to India arranged at a fee of 6*d.* for each £5.

James Prescott Joule died.

Antonio Meucci died.

Submarine Telegraph Company's concessions expired and Post Office took over their cables at a cost of £67,163.

Halifax-Bermuda Cable Company received subsidies (£8,500 *per annum for 20 years) from the British Government* for a cable between Halifax and Bermuda.

British Post Office Savings Bank deposits, £62,999,620.

1890, Mar. 1 ... Edinburgh Chamber of Commerce addressed memorials to the Treasury and the Postmaster-General, advocating purchase of the telephone system by the Government.

Inland Telegraph Money Order system extended to all head and branch Post Offices in the United Kingdom.

International Telegraph Conference held in Paris.

J. E. Kingsbury patented a common-battery system of telephone signalling.

A. Eden, of the British Post Office, devised a system of "Loop" testing for telegraph lines and introduced the Post Office morning test of telegraph lines.

F. H. Pomeroy introduced a method of testing telegraphic "earths" and devised the "earth" test for localising faults on telegraph lines.

Sir William Preece, Matthew Cooper, and A. J. Stubbs, succeeded in raising Wheatstone automatic telegraph speed to 600 w.p.m.

T. Vallance, of France, suggested a method of working the Baudot *by means of perforated tape.*

Ferranti constructed current transformers capable of reducing voltages ranging from 2,000 to 10,000.

Hughes duplex telegraph opened between London and Bremen.

(Battaglia invented a mechanical means of meeting submarine cable capacity difficulties when working Hughes.

Nikola Tesla suggested wireless control of the motions of a boat from the shore or from another boat. He produced a 1-kw. alternator for wireless working for 10,000 cycles a second.

Dewar constructed a capillary electrometer. He also showed that an electric current is set up in the optic nerve when light falls upon the retina.

Lodge devised a wireless receiver consisting of two long copper rods which acted as wave collectors.

Robinson designed an "electric harp" composed of parallel strips of tinfoil affixed to a plate of glass, the ends of the strips at each end of the plate being joined by a strip of tinfoil. The strips were severed diagonally so that the lengths varied and, owing to their consequent varying capacities, the "harp" responded to vibrations extending over a considerable range of wavelengths.

R. Threlfall, of Sydney, experimented in wireless telegraphy.

(*To be continued.*)

THE ST. MARTIN'S SWIMMING CLUB'S GALA NIGHT.

THE Holborn Baths, W.C.1, was well attended on the evening of Oct. 28 last—it was the St. Martin's Swimming Club's (Secretary's Office) Gala Night. Among those present were Mr. Kidner, Mr. Pelgrave, Mr. Strong (President of the A.G.D. Swimming Club) and Mrs. Strong, and Mr. Napier.

The programme was opened by the 30 yds. Ladies' Handicap Race (two heats). The 1st heat was won by Miss Burgin (42⅘ secs.), and the 2nd heat by Miss Mortimer (39⅘ secs.); the final of the handicap was swum later in the evening and was won by Miss Mortimer, who has a strong breast stroke.

There were three entrants for the 30 yds. Veterans' Race. Messrs. E. G. Hayman, A. J. Harris and S. Moore; E. G. Hayman won. The 30 yds. Ladies' Free-Style Championship was won by Miss Sarsfield. B. M. Reeves is to be congratulated on the manner in which he gained the lead and won after "Going at 9" in the Boy Messenger Handicap Race. The three heats of the 30 yds. Club Handicap were won by Messrs. S. A. Manser, W. Hawkes and G. W. Adlam, respectively. The last-mentioned later won the final, beating S. A. Manser by a fraction of a second.

The Type Duty team again were successful in the 30 yds. Ladies' Breast-Stroke Team Race, although at times it appeared that the Registry team were too strong for them.

The teams of the Secretary's Office, S.B.D., and A.G.D. each strove keenly to be the holders of the Sir Herbert Samuel Cup. However, after a while it was obvious that the S.B.D. team were to be the victors. The Secretary's Office team secured second place.

From the start it was apparent that the Admiralty team were intent upon victory in the 90 yds. Team Race (Premier Civil Service League), but their opponents the P.O. Engineers showed themselves to be the faster team. The P.O. Engineers are a comparatively new club, having been formed only three years ago; nevertheless, for the last two years they have been the holders of the Civil Service Championship.

The 1st place in the 60 yds. Ladies' Race (30 yds. breast stroke and 30 yds. back stroke) was won by Miss Clarke.

Professor Jarvis (ex-Amateur Champion of the World) provided an interesting item by giving exhibitions of floating, propelling in the water, &c. Realistic were his emulations of "a seal," "a monkey up a stick" and "a torpedo."

The Telegraphs and Telephones wrested the 1st place from last year's holders—the Mails—in the Inter-Branch Team Championship.

The "Doride" (A.G.D.) were successful in the 30 yds. Ladies' Team Race, beating their opponents, the Secretary's Office, by nearly thirteen seconds.

Intense interest was shown by all present during the exhibition of diving by a team from the Amateur Diving Association.

Some good swimming was witnessed during the 30 yds. Club Handicap Team Race, which was won by the Mails Branch.

During the evening two Water Polo matches were played, one between Ilford and S.B.D., and the other between the P.O. Engineers and the Admiralty. The lack of team play during the first match was at times noticeable, and a more interesting game might have been seen had not some of the players attempted to play a "lone game." The second match provided the onlookers with more thrills, and some clever passing was witnessed on both sides. (Ilford 8, S.B.D. 3; Admiralty 5, L.E.D. 1.)

Wild conjectures were rife during the evening, when a certain young gentleman swimmer wandered aimlessly among the spectators with a white pull-over over his costume and an American sailor's hat resting at a rakish angle on the top of his head. Was he a member of a new cult? Perhaps a member of the Dress Reform Movement. Such were the ideas lent by the imaginative people present as to his classification—however, it was mentioned "*sotto voce*" that he was the Cost of Living Figure. We wonder!

Mrs. Hoare kindly consented to present the prizes.

Winter Swimming.—The Club is running a Winter Swimming Course under the tuition of Professor Jarvis, and applications to participate are invited. Particulars of this course, and of the conditions of membership of the Club, will be furnished by the Secretary, F. J. C. Hoare, Overseas Telegraph Branch, Secretary's Office, G.P.O.

THE

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CONTENTS.

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All correspondence relating to advertisements should be addressed to MESSRS. SELLS, LTD., 168, *Fleet Street, London, E.C.4.*

The Editing Committee of the Telegraph and Telephone Journal wish all their readers a Happy and Prosperous New Year.

THE TELEPRINTER.

A. P. OGILVIE (*Headquarters Traffic Section*).

(*Continued from page* 42.)

(II.)

"*Start-stop*" *Principle.*—The synchronous movement of transmitter and receiver is a fundamental principle of many successful printing telegraph systems. In the Baudot, for example, continuously rotating brushes which sweep over the segmented plates of a distributor at each station are maintained in unison by means of correcting signals. An interruption of these special signals, or a sudden abnormal variation in the speed of one or other of the distributors, results in the loss of synchronism, and all dependent traffic channels, eight in number in the case of a quadruple duplex installation, are rendered unworkable until synchronism is restored.

While the action of the Teleprinter is also based on the synchronous principle, there is an important difference. In the Baudot system the transmitting and receiving brushes rotate continuously. Any difference in speed between the distributors is therefore cumulative over a period of several revolutions and there is continuous change within limits in the phase relationship between the two distributors. In Teleprinter working the distributors, or their equivalent, do not rotate continuously but only throughout the process of transmitting one letter. This is arranged by prefixing to each letter a "start" signal, which brings into action the receiver at the distant station, and by transmitting after each letter a "stop" signal which stops the receiver. Synchronism need thus be maintained during one cycle of operations only, at the end of which both transmitter and receiver remain inoperative until transmission is resumed. It will be apparent from these considerations that the maintenance of synchronism between Teleprinters is comparatively simple provided a reasonably steady drive is applied at both stations, and that, as speed differences are corrected by the return of the mechanism to zero after the transmission of each letter, a fairly wide margin of variation is permissible. Moreover, in the event of momentary interruptions only those signals transmitted during the period of disturbance will be affected; immediately the abnormal condition ceases synchronism is restored by the action of the start-stop correction. It should, perhaps, be mentioned that the term "start-stop" does not apply to the action of the small motor fitted to these machines for the driving of the mechanism. This motor, in Post Office practice, runs continuously, whether telegrams are being signalled or not.

Signalling Code.—The design and action of telegraph printing apparatus is largely determined by the code or alphabet employed. Many promising systems have failed because of an elaborate and variable unit code involving the use of complicated mechanism, and it is interesting to record, in this connexion, that the Morkrum "Teletype," in its earliest form, was handicapped by the use of a similar complication. The adoption of a five-unit code led to considerable simplification in design, and subsequent success. In this code five positive and or negative impulses are allotted to each character. In contrast to the morse code, which consists of signals of varying lengths, a combination of uniform length is always transmitted, a point of considerable importance to the designer. As may be gathered from Figure 1, the permutations are so arranged that the signalling of frequently-used letters entails a minimum amount of movement of the mechanism.

The code illustrated is based on an arrangement promulgated by Mr. Donald Murray, whose object was to provide one suitable for typewriter keyboard transmission also in accord with the letter frequency of the English language. Thirty-two permutations are available, each of which serves as a medium for the transmission of two characters, one on the "letter shift" and one on the "figure shift." Thus, for the letter "E" and the numeral "3," the

		1	2	3	4	5			1	2	3	4	5
A	:	○	○				Q	1	○	○	○		○
B	?	○			○	○	R	4		○		○	
C	(		○	○	○		S	'	○		○		
D	²	○			○		T	5					○
E	3	○					U	7	○	○	○		
F	½	○		○	○		V	)		○	○	○	○
G	¾		○		○	○	W	2	○	○			○
H	⅝			○		○	X	£	○		○	○	○
I	8		○	○			Y	6	○		○		○
J	⅞	○	○		○		Z	.	○				○
K	9	○	○	○	○		/	/		○			
L			○			○	✳	✳	○	○	○	○	○
M	⁴			○	○	○	−	=				○	
N	−			○	○			+		○			○
O	9				○	○	LETTERS				○		
P	0		○	○		○	FIGURES		○	○		○	○

SIGNALLING CODE

FIG. 1

same combination is transmitted, arrangements being made at the printing stage for its correct translation according to whether it is preceded by the letter or figure shift signal.

While five units are sufficient for the transmission of each letter or symbol, the start-stop action of the Teleprinter requires a preliminary start signal, 1½ units in length, and a final stop signal, 1 unit in length. The Teleprinter code, therefore, is one of 7½ units. This is shorter than the morse code, which averages 8 units per letter. A slightly higher speed should thus be possible with a start-stop system on a circuit of a given transmission capacity, or, stated in other terms, a Teleprinter working at 60 words a minute should provide more signal margin than is obtained with a morse system working at a similar speed.

Keyboard Layout.—The arrangement of the British Post Office standard type-keyboard, including an outline of the fingering adopted in touch-typing, is shown at Figure 2.

FIVE-UNIT KEYBOARD.

(BRITISH POST OFFICE STANDARD)
FOR USE WITH TAPE PRINTERS.

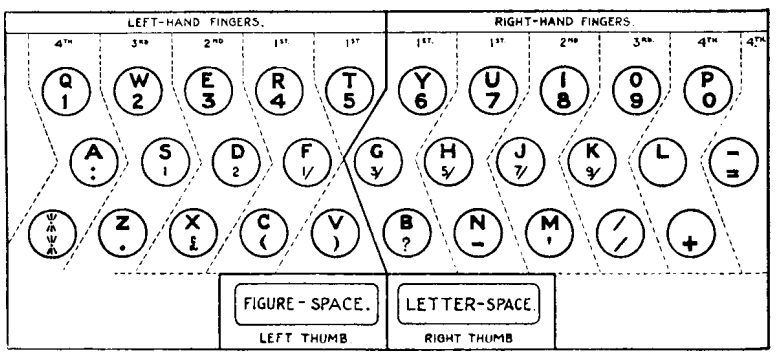


FIG. 2.

Conventional typewriter practice is followed in the disposition of letters and numerals but certain of the secondary characters are distinctive. On the centre keys in the middle bank several numerators are provided to facilitate the transmission of fractions most commonly in use. The denominator is produced by printing

an appropriate numeral immediately after the combined numerator and oblique stroke. By this means a considerable range of fractions can be expressed in fractional form with a minimum amount of signalling. The symbol on the key at the extreme left of the bottom bank is used to indicate an "erasure," while that on the extreme right is operated for the "end of message" signal.

A specimen telegram constructed to include practically all the characters on the British Post Office keyboard is shown at Fig. 3. The use of the symbol for the break between the address and text, the appearance of fractions transmitted in fractional form, and the termination signal, are illustrated. It should, perhaps, be explained that inverted commas are produced by transmitting the apostrophe twice in succession.

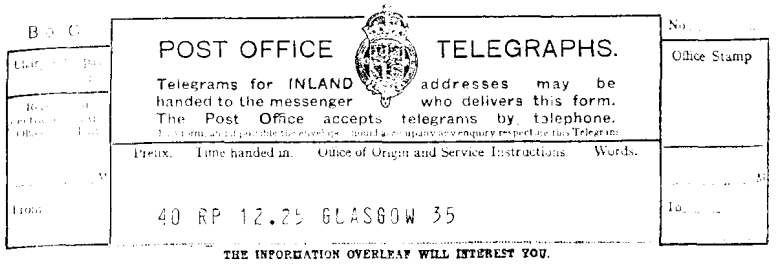


FIG. 3.

A departure from typewriter design is the provision of two space bars. The function of these space bars is two-fold. Not only do they provide the spacing between words or groups, they also determine whether the characters to be printed shall be those on the letter-shift or the figure-shift. To transmit the sentence "Send 123 tons" the space bars would be operated as follow :—

(Letter-space) SEND (figure-space) 123 (letter-space) TONS.

Much operating time and movement is saved by this device. It is also of advantage in limiting the effect of an inversion fault at the printing stage. When successive figure groups are being transmitted, intervening spaces are produced by the figure-space signal and, as this signal at the same time moves the printing mechanism from letters to figures, a fault of reversion of the shift mechanism to letters is corrected when the next figure-space signal is received.

One weakness, in practice the only one, is that of spacing between constituent parts of a word or group in which a character on the opposite shift occurs. For example, in the sentence "IS MARY'S BABY WELL?" the apostrophe and the mark of interrogation are on the figure-shift. The sentence is produced thus: "IS MARY''S BABY WELL?" Fortunately, examples of this nature are infrequent.

From an operating point of view the Post Office keyboard, with double space bar, and only three banks of keys, is more easily mastered than one with a greater number and a wider range of keys. "Touch" operators are taught to work from base keys on the centre bank and, as may be seen from the keyboard diagram, each finger is restricted to an area within which only short simple movements are necessary to reach the required key: a high degree of manipulative accuracy is thereby ensured. Both space bars are worked with equal facility. Excellent results are being obtained by Teleprinter operators, many of them over 40 years of age, trained on this system.

(To be continued.)

TELEPHONE DEVELOPMENT OF THE WORLD AT 31ST DECEMBER, 1928.

By W. H. GUNSTON.

ABOUT 1,740,000 telephones have been added to the total for the world between the end of 1927 and the end of 1928: if the figure of increase for 1928 has been maintained, it may be estimated that there were at least thirty-four and a quarter million telephones in use at the end of 1929. There are indications, however, that the total will be found to be considerably higher when the figures are available. The totals for 1928 and 1929 are distributed amongst continents as follows :—

	Dec. 31, 1927. (*Thousands.*)	Dec. 31, 1928. (*Thousands.*)
Europe	8,541	9,185
Asia	1,103.5	1,205
Africa	187.5	205
N. America	19,979	20,885.5
S. America	463	491.5
Australasia and Oceania	630	672
	30,904	32,644

The figures for Asia and America for 1927 have been slightly adjusted in the light of later information, since last year's figures were presented to our readers (*see Journal* of January, 1929).

Europe shows an increase of 644,000 (much the largest yet recorded) or 7.5% on the previous year, whilst North America shows an increase of over 906,000 telephones or 4.5% on last year. The rates of increase for 1927 over the previous year for the two countries were 6.4% and 4% respectively.

In the eight years since 1920 Europe's total has increased by about 4 million telephones or 77%, and North America by over 6½ million or 46%.

The following table shows the number of telephones per 100 inhabitants in all countries with upwards of 100,000 telephones and a density of at least 2% :—

1.	United States	16.5
2.	Canada	13.77
3.	New Zealand	10.3
4.	Denmark	9.2
5.	Sweden	7.9
6.	Australia	7.8
7.	Norway	6.5
8.	Switzerland	5.9
9.	Germany	4.7
10.	Great Britain	3.9
11.	Netherlands	3.3
12.	Finland	3.2
13.	Austria	3.1
14.	Belgium	2.9
15.	Argentina	2.4
16.	France	2.3

EUROPE.

The annexed table (I) shows that there is one telephone to every 56 inhabitants of Europe. This average is, however, very adversely affected by the comparatively backward development of Eastern and Southern States. If an area comprised within the boundaries of the Scandinavian countries, Germany, Austria, Switzerland, France, Holland, Belgium, and Great Britain be considered separately, it will be found that this Northern and Western part of Europe contains within its limits 7,648 of the 9,185 thousand telephones in Europe, but only 191 out of its 514 million inhabitants, a ratio of 1 telephone to every 25 souls.

The principal increases in growth occurred in Germany 135,434 (nearly 5%), Great Britain 125,884 (7.6%), France 82,113 (9.3%), Austria 43,855 (27%), Russia 39,324 (15%), Belgium 29,311 (15%),

Switzerland 20,651 (9.2%), Italy 20,414 (7.5%), Sweden 18,994 (4%), Holland 16,979 (7%), Poland 13,642 (9%), Spain 11,400 (8%), and Czecho-Slovakia 10,513 (7%).

On Dec. 31, 1928, the telephone system of Great Britain consisted of:—

	Telephones.
Post Office system	1,723,307
Hull Municipal	15,720
States of Guernsey	4,226
States of Jersey	3,319
Railway and private telephones with exchange facilities	13,114
	1,759,686

I.—EUROPE.

Country.	*Population (thousands).*	No. of Telephones. *Dec.* 31, 1927.	*Dec.* 31, 1928.	*No. of Inhabs. per telephone.*
Austria	6,750	165,615	209,470	32
Belgium	7,995	193,755	223,066	34.9
Bulgaria	5,483	15,359	17,091	322
Czecho-Slovakia ...	14,353	136,614	147,127	97
Danzig	390	17,620	18,405	21
Denmark	3,519	319,554	325,596	10.8
Esthonia	1,250	13,209	14,000*	89
Finland	3,582	108,000	116,720	30
France	40,743	883,406	965,519	42.2
Germany	63,100	2,814,996	2,950,430	21.4
Great Britain	45,500	1,633,802	1,759,686	25.8
Greece	7,000	8,000	10,186	686
Hungary	8,522	88,961	93,159	91
Iceland	94	3,811	4,925	19
Irish Free State ...	2,975	26,579	27,000*	110
Italy	40,425	272,433 (to 30 6 27)	300,000*a*	134
Latvia	1,883	29,165	33,390	56
Lithuania	2,000	10,236	11,281	185
Luxemburg	264	9,394	10,000*	26
Netherlands	7,731	240,611	257,590	30
Norway	2,788	178,000	182,500*b*	15.3
Poland	29,589	149,968	163,610	180
Portugal	6,032	26,626	29,517	204
Roumania	17,000	56,024	58,398	291
Russia	146,989	253,490 (to 30 9 27)	300,000*c*	490
Serbs, Croats and Slovenes, Kingdom of	12,800	32,801	40,000*	320
Spain	22,285	142,000	153,400	146
Sweden	6,105	466,787	485,781	12.6
Switzerland	4,035	223,597	244,248	16.5
Turkey	2,000	11,389	11,927	167
Total, including estimates for the Saar District, Gibraltar, &c.) ...	514,300‡	8,541,000	9,185,000*d*	56

* Estimated from previous year's official figures.

‡ Estimated population of Europe in 1926 from League of Nations Yearbook.

a—Estimated from the official total at June 30 1928: 292,867.

b—The official information obtained from Norway showed 106,121 State telephones at June 30, 1928, and 75,004 private company telephones at Dec. 31, 1927. The total for December, 1928, has been estimated from these figures.

c—Estimated from official figure of 292,814 telephones at Sept. 30, 1928.

d—Includes telephones in Russia in Asia, probably upwards of 12,000.

II.—ASIA.

	Telephones.
Ceylon (8,383)	9,000*
China	130,000‡
French Indo China (6,143) ...	7,000*
Federated Malay States	6,711
India (51,925)	53,689
Iraq (1,087)	1,134
Japan (proper)	834,686
Chosen (33,952)	35,500*
Formosa (Taiwan) (12,852) ...	13,000*
Quantung (18,100)	18,500*
Saghalien (4,531)	5,000*
Netherlands East Indies (45,762)	49,398
Palestine (2,945)	3,299
Persia (3,449)	3,827
Phillipine Islands (19,874) ...	20,000
Siam	3,065
Straits Settlements—	
Penang 1,443	
Malacca 609	9,194
Singapore 7,152	
Turkey in Asia (estimated) ...	2,000
	1,205,000

* Estimated from last year's official figures (shown in brackets).

‡ An American estimate.

This total is exclusive of some 15,000 telephones in Siberia and Turkestan which are included in the European total under Russia.

The population of Asia is about 1,013,000,000 and the number of inhabitants per telephone 840.

III.—AFRICA.

Countries.	*No. of Telephones.*
Algeria (28,305)	31,021
Belgian Congo (886)	900*
Dar es Salaam	615
Egypt (39,051)	44,000*
Kenya and Uganda (2,131) ...	2,358
Mauritius	784
Madagascar (4,548)	4,600*
Morocco (8,729)	8,700*
Mozambique	660
Nigeria and Cameroons	2,041
S. Rhodesia (2,741)	3,275
South Africa, Union of (88,880)	95,452
S.W. Africa	1,395
Tunis (10,680)	11,500*
Other places (estimated)	3,500
	205,000

* Estimated from last year's official statistics.

The figures in brackets show the number of telephones in 1927. Population 143,000,000. Inhabitants per telephone 704.

IV.—NORTH AMERICA.

	Population (thousands).	*Telephones* 1927.	*Telephones* 1928.	*Inhabs. per telephone.*
United States	117,200	18,523,560	19,341,035	6.6
Canada	9,738	1,265,869	1,341,219	7.2
Mexico	15,500	64,946	70,000	221
West Indies—				
Cuba	3,500	68,838	71,000	49
Porto Rico	1,300	13,222	13,500	96
Jamaica			2,900	
Haiti			1,400	
Dominican Republic ...			1,600	
Trinidad			2,700	
Other places			9,200	
Central America	6,500	22,511	24,000	270
Other N. America places ...			8,000	
	158,000	19,979,000	20,885,500	7.5

The figures in brackets show the number of telephones in 1927. Those for Mexico, the West Indies, and Central America are obtained from an American source.

The total of the United States is made up as follows:—

American Telephone and Telegraph Co. and associated companies	14,524,648
Independent Companies having connexion with above	4,672,387
Entirely Independent (estimated)	144,000
	19,341,035

An increase on 1927 of 817,500 or 4.4%.

Canada.—Telephones are thus distributed amongst the provinces of the Dominion :—

	Telephones.
Ontario	592,071
Quebec	281,266
British Columbia	116,508
Saskatchewan	112,178
Alberta	78,805
Manitoba	77,619
Nova Scotia	43,368
New Brunswick	32,605

The increase in stations for the year was over 75,000 or 6% on last year.

V.—South America.

	Population (thousands).	*Telephones.*	*Inhabitants per telephone.*
Argentine (232,041) ...	10,312	250,000	41
Bolivia (2,612)		3,000	
Brazil (108,189) ...	36,871	111,000	332
Chile (38,573)	4,750	40,500	117
Colombia (21,110) ...	8,057	23,000	349
Ecuador (4,407) ...		5,000	
Peru (13,695)	6,000	14,000	427
Venezuela (13,098) ...	3,027	14,000	216
Uruguay (26,934) ...	1,720	28,000	61
Other places		3,000	
	77,791	491,500	158

The statistics for South America are obtained by estimates based on the official figures for 1927 which are shown in brackets.

VI.—Australasia.

	Population (thousands).	*Telephones.*	*Inhabitants per telephone.*
Australia (461,715) ...	6,336	492,666	12.8
New Zealand (144,552)	1,470	152,541	9.6
Hawaii (21,441) ...	256	23,500	11.0
Other places in Oceania	700	3,000	
	8,700	672,000	13

Australia.—The telephones are thus distributed amongst the various States :—

New South Wales	188,320
Victoria	152,205
Queensland	58,865
South Australia	52,890
Western Australia	26,653
Tasmania	13,733

The percentage increase on last year for the Commonwealth was 6.5.

VII.—Telephone Development of Large Cities.

	Telephones.	% 100 *Population.*
1. New York	1,702,889	27
2. Chicago	942,015	29
3. London (Telephone area) ...	614,183	8.3
(*London Administrative County*	459,136	10.2)
4. Berlin	472,018	11.7
5. Boston	424,781	23.3
6. Philadelphia	420,456	20.6
7. Los Angeles	357,504	26.7
8. Paris	340,207	11.9
9. Detroit	321,439	19.1
10. San Francisco	252,225	33.6
11. Cleveland	226,186	19.9
12. St. Louis	213,041	19.5
13. Pittsburg	215,125	22.4
14. Toronto	186,215	27.5
15. Montreal	174,062	18.9
16. Hamburg	163,276	12.9
17. Cincinnati	161,019	23.7
18. Washington	154,041	29.3
19. Milwaukee	146,677	21.7
20. Kansas City	143,846	22.6
21. Vienna	140,759	7.6
22. Tokio	135,619	5.8
23. Copenhagen	131,363	22.4
24. Buenos Aires (1927)	129,503	6.4
25. Baltimore	128,587	15.8
26. Minneapolis	126,888	25.8
27. Buffalo	123,832	19.2
28. Oakland, Cal.	120,921	23.6
29. Stockholm	120,432	29
30. Seattle, Wash.	117,681	28.6
31. Sydney, N.S.W.	110,847	10

Cities with Upwards of 10,000 Telephones.

United States : (The largest of these are included in the foregoing table)	157
Germany : (Berlin 472,018, Hamburg 163,276, Munich 69,725, Leipzig 66,124, Cologne 64,858, Dresden 58,440, Frankfurt (Main) 56,298, Stuttgart 43,878, Düsseldorf 42,379, Breslau 40,501, Hanover 35,288, Nuremberg 34,476, Bremen 31,049, Essen, Mannheim, Chemnitz, Duisburg, Königsberg, Magdeburg, Dortmund, over 20,000 ; Stettin, Elberfield, Halle, over 15,000, Barmen Kassel, M. Gladbach, Karlsruhe, Crefeld, Wiesbaden, Aachen, Kiel, Brunswick, Erfurt, Mainz over 10,000)	34
Great Britain : (London 614,183, Manchester 57,329, Liverpool 53,308, Glasgow 52,249, Birmingham 45,898, Edinburgh 25,187, Leeds 19,729, Newcastle-on-Tyne and Sheffield over 17,000, Bradford, Bristol over 16,000, Hull 15,720, Belfast, Cardiff, Nottingham, Leicester, Brighton, and Bournemouth 13-10,000)	18
Canada : (Toronto 186,215, Montreal 174,002, Vancouver 70,133, Winnipeg 50,068, Ottawa 36,295, Hamilton, Quebec, Windsor (Ont.), and Calgary over 20,000, London (Ontario), Victoria (B.C.) and Edmonton, over 16,000, Halifax (N.S.), St. John (New Brunswick), and Regina over 10,000)	15
France : (Paris 340,207, Lyon 23,928, Marseille 22,579, Bordeaux 14,524, Lille 12,957, Strasbourg 12,406, Nice 11,150)	7
Japan : (Tokio 135,619, Osaka 93,218, Kyoto 32,745, Nagoya 26,975, Kobe 27,303, Yokohama 14,035)	6
Australia : (Sydney 110,847, Melbourne 90,736, Adelaide 31,134, Brisbane 23,225, Perth 15,176)	5
Switzerland : (Zurich 33,892, Basle 18,789, Geneva 18,699, Berne 15,567)	4
Italy : (Milan 30,659, Rome 21,617, Turin 13,649, Genoa 11,812) ...	4
Netherlands : (Amsterdam 44,449, Rotterdam 38,097, The Hague 35,985)	3
Belgium : (Brussels 75,174, Antwerp 31,173, Liége 15,423) ...	3
Sweden : (Stockholm 120,432, Göteborg 33,089, Mälmo 16,658)	3
New Zealand : (Auckland 17,460, Wellington 17,167, Christchurch 11,188)	3
China : (Pekin 29,857, Shanghai 27,217)	2
Egypt (1927) : (Cairo 15,555, Alexandria 11,125)	2
India : (Calcutta 15,557, Bombay 11,722)	2
Norway : (Oslo 43,667, Bergen 10,114)	2
Spain : (Madrid 29,362, Barcelona 25,130)	2
South Africa : (Johannesburg 25,841, Cape Town 15,919) ...	2
Russia : (Moscow 66,542, Leningrad 54,755)	2
	276
Algeria : (Algiers 10,142)	1
Argentine (1927) : (Buenos Aires 199,503)	1
Austria : (Vienna 140,759)	1
Brazil : (Rio de Janeiro 40,000)	1
Chile : (Santiago 11,000)	1
Czecho Slovakia : (Prague 34,171)	1
Cuba (1927) : (Havana 46,998)	1
Danzig : (Danzig 11,184)	1
Denmark : (Copenhagen and suburbs 134,475)	1
Finland : (Helsingfors 29,235)	1
Hungary : (Budapest 39,154)	1
Ireland : (Dublin 15,000)	1
Latvia : (Riga 13,180)	1
Mexico : (Mexico City 36,000)	1
Poland : (Warsaw 38,814)	1
Portugal : (Lisbon 17,893)	1
Roumania : (Bucarest 16,355)	1
Turkey : (Constantinople 11,927)	1
Phillipine Islands : (Manila 13,586)	1
Uruguay : (Monte Video 17,000)	1
	296

Of these 298 cities 174 are in North America, 24 in Europe, 11 in Asia, 8 in Australasia, 3 in Africa, and 4 in South America.

It will be seen that there are 63 cities in the world with upwards of 50,000 telephones—36 in the United States, 7 in Germany, 4 each in Great Britain and Canada, 2 each in Russia, Australia and Japan, and 1 each in France, Belgium, Austria, Sweden, Denmark, and Argentine.

CORRESPONDENCE.

HOW TO IMPROVE THE TELEGRAPH SERVICE.

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

SIR,—The recent articles on "How to Improve the Telegraph Service," and the recommendations of the "Commission of Enquiry into the Organisation and Methods of the American Telegraph Companies," have been read with widespread interest and have formed the subject of many discussions wherever a few individuals of a "telegraph" turn of mind have congregated. There is a large amount of useful information and much food for thought in the articles and the recommendations of the Committee. One writer doubts whether the service can be made to pay, another suggests that a better service at the same cost would satisfy the public, whilst a third infers that any increase in the number of telegrams handled would only result in a heavier annual deficit. Surely the conditions are not so depressing that the *ideal of an excellent service and a smaller adverse balance* can be abandoned without using every legitimate means to attain it? According to the recommendations it is proposed to install teleprinter apparatus on all circuits carrying as many as 200 telegrams per day. Presumably that is the minimum load to justify such apparatus from an economical point of view, but the maximum carrying capacity will be considerably higher, so that there will be an ample margin for future development without any immediate increase in capital outlay so far as equipment is concerned. May we not then assume that the average loss per telegram will tend to fall so soon as an all-round improvement of the service encourages the public to load up the new equipment to the full capacity? With Unity of Purpose, Goodwill, "Professional Pride" and Enthusiasm, I can visualise a future in which the public will use the facilities afforded them to such an extent as to prove conclusively that the telegraph service must still play an important part in the commercial and social life of the community, the staff will see their prospects for advancement brighter than they have ever been before, and the administration will find themselves in the happy position of being able to offer greater facilities without increased charges.

The recommendation to install teleprinter apparatus on routes carrying 200 or more telegrams per day will bring into the scheme a large number of the smaller head offices at which, under the existing arrangements, the telegraph duties are performed in turn by dually qualified officers, and it appears to be the intention to limit the rotation on such duties in the future to a minimum. That is an excellent arrangement, and so long as the training for both operating and testing, maintenance, &c., is thorough and the number of officers so trained is sufficient to provide a margin for normal absences the service on these secondary routes should compare favourably with that on routes between the large centres. I would, however, suggest that consideration be given to the advisability of linking up groups of smaller offices for sick leave and vacancy substitution so far as the "technical" staff is concerned, and that a "district reserve force" be provided at convenient large centres for this purpose on the lines of the arrangements now in force in the Telephone Service. Another item that occurs to me is that if telegraph and postal work is to be performed by separate staffs at offices where the former class of work is not sufficient to justify separate supervising posts there will either be an entire absence of prospects for the telegraph staff or else they must be considered for promotion on the postal side. The latter alternative would necessitate periodic performance of postal duties to ensure proficiency in that class of work. Such an arrangement would neutralise to a certain extent the value of the "specialisation" advocated for telegraph work and would probably involve additional expense for the training of officers who would only be withdrawn from postal duties at infrequent intervals. As an alternative I suggest that the telegraph "technical" staff at such offices should rank for seniority and promotion purposes with the staff at the centres at which the "district leave" reserves would be stationed.

I have often wondered whether the possibilities of transmitting telegrams by telephone have ever been fully explored, or whether the existing low output per operator per hour has acted as a deterrent. The bulk of this class of traffic at the present time is to and from telephone subscribers and sub-post offices at which the standard of operating is not always high. Another factor contributing to the low output is the high percentage of single message transactions. During breakdowns of telegraphic communication I have seen operators dispose of as many as 32 telegrams per hour, which inclines one to the belief that transmission by telephone *between expert operators* can be made to play an important part in the general reorganisation by enabling the administration to suspend those Morse circuits over which less than 200 telegrams per day are transmitted, with a consequent reduction in the number of offices at which it will be necessary to have Morse operators. May I suggest (if data is not already available) that an experiment be made at certain offices in order that the costs of transmission by Morse telegraph and telephone under the above-mentioned conditions may be compared. I do not wish to infer that the speed of working quoted could, or should be maintained for lengthy periods, but the suggested experiment would, no doubt, prove that a much higher standard than the present one could be fixed for this class of traffic.

According to the statement of one of the writers the cost of delivering telegrams is unduly high, and various suggestions are made by different writers with the object of reducing the loss under this heading and also of expediting delivery. Whilst I do not advocate any increase in the cost to the sender of a telegram I do think that the heavy fees paid for delivery in rural areas should be borne by the addressee, and for that reason I suggest that consideration be given to the classification of telegrams under three headings *for delivery purposes only, viz.*:

(1) Free delivery by telephone (the use of the indicator "Phone" or a telephonic address to be used as at present);

(2) Free delivery by hand within a radius of one mile of the normal delivery office, and

(3) Express delivery fees of *6d.* per mile to be charged to the addressee for each mile or part of a mile in excess of one.

It appears to be the general opinion that the delivery of telegrams by telephone to subscribers should be developed to the greatest possible extent, and as this can only be done by publicity I would suggest the following:—

(1) Prominent notices to be displayed in all post offices calling special attention to the facilities. (The notices should take the form of enlarged telegram "A" and "B" or "C" forms, showing model addresses with the subject matter of the notice in the text.)

(2) "Accepting" officers to ask the senders of telegrams if they wish the messages to be delivered by telephone, and then offer to assist them to remodel the addresses. (In the case of fully addressed telegrams it would be possible in many instances to show the senders that, apart from expediting delivery, they would save the cost of one or more words.)

(3) Scrutinise the sub office "C" forms for one week and (*a*) ascertain the number of telegrams delivered by hand which could have been dictated per telephone direct to the addressees; then, if necessary, improve the arrangements for segregation at the responsible head offices; (*b*) Prepare lists showing the names and addresses of non-telephone subscribers who received (say) 2 or more telegrams during the week and pass to the Telephone Contract Managers for them to try and persuade such persons to rent a telephone. The canvassing officer could stress the fact that telegrams would be delivered *direct* to the addressee from the "appointed office" and that any telegrams for onward transmission could be dictated to the same office, with an appreciable saving in time in both cases. If delivery fees were payable by addressees whose premises were more than a mile from the normal delivery office, as suggested in the previous paragraph, the saving of those fees would be a further inducement to them to become telephone subscribers.

There is a recommendation by the Committee that a subscriber should be afforded the facility of summoning a messenger by telephone to collect a telegram, and I would suggest that in those cases where the office from which the messenger would be summoned was also the "appointed office" the subscriber should be allowed to ask for that messenger to deliver to him any confirmatory copies of telegrams on hand. He would then be able to confirm the accuracy of his copy of a particular message before handing the reply to the messenger.

R. TEASDALE.

Sheffield, Dec. 6, 1929.

THE POST OFFICE ENGINEER.

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

SIR,—May I express a word of appreciation for the inspiring article by Mr. T. B. Johnson, M.I.E.E., which appeared in the October issue of the *Journal*.

In one telephone exchange at least it has been read and enjoyed by every member of the Supervising staff, all of whom unite in wishing him a healthful and happy retirement.—U. J. C.

FOR OUR ADVERTISERS.

The following contracts are open until dates stated and all references should be made to the Department of Overseas Trade, London, S.W.1:

Wellington, N.Z.—Post and Telegraph Department. Jan. 16. Plug covers for telephone switchboard plugs (P. and T. 151 1943) (Ref. B.X. 5879). *Wellington, N.Z.*, P. and T. Dept. Jan. 21. Supply of (1) spare parts for automatic telephones and (2) reed-type tension gauges for measuring contact pressure of relay springs (B.X. 5917 and 5918). *Melbourne* P. and T. Dept. Jan. 28. Supply of (1) induction coils and register plates, and (2) telephone cycle signalling equipment (B.X. 5899 and 5906).

J. J. T.

TELEGRAPHIC MEMORABILIA.

I AM writing these new year notes in the declining old year, full of its accounts of record rainfalls and record river risings, and all the cruel aftermath which follows such abnormal happenings in our island, not omitting the placing out of action of some hundred or so of telegraph and telephone circuits. The writer disclaims membership of any society connected with piscatorial pastimes, and it must have been his own subconscious wandering self which led his eyes down the weekly angling column of a very old-established London daily paper.

Hitherto I had consoled myself, during the daily and nightly deluges, with the assurances of the Water Board that there was no danger of further drought and that my garden-hose could again be placed on active service! Yet in an unexpected quarter I was to find yet another consolation, and, for what it may be worth as a compensatory factor, I pass the same on for the consideration of every Post Office engineer specifically attached or related to outdoor telegraph and telephone maintenance. The expert writer and follower of Izaak Walton, angler and philosopher, directed the attention of his readers to the fact that although angling had certainly been interfered with, the floods had very materially enlarged the feeding grounds of the river fish, owing to the number of meadows now under water, and that sport should be much improved when the waters had subsided! As who would say, "what matter telegraph and telephones and other interrupted methods of communication, ground-bait will now be plentiful!"

Multum in parvo.—National Radio Week commences on the 12th of this month, and it is understood that the B.B.C. is spending double the normal amount on special programmes. *Beware of radio wolves in sheep's clothing!*—A band of very plausible swindlers recently concentrated in the villages of North and East France and sold scores of worthless wireless sets to the villagers. The day after the sale an *electrician* chanced (?) to pass through the same villages, and offered to adjust the sets for a small fee. This fee was readily paid. The police are still searching for the electrician and his pioneers! *Radio and Photographs.*—Major R. H. Ranger, Design Engineer of R.C.A. Communications, on returning from an observation tour in Europe, reported "striking progress made there in the transmission of photographs by radio." *Teletype Manufacturing figures in U.S.A.*—Teletype Corporation gives the following figures up to end of 1929 (the last quarter estimated): 1918 to 1927, 15,500 machines made: 1928, 12,700 made: and for year just closed, 25,200: grand total 53,400. *France and Broadcasting.*—The French correspondent of the *Daily Telegraph* in Paris notified London that the French Government proposes to spend £40,000 in utilising radio for the distribution of weather reports and daily prices to farmers. The same authority states that there are loud complaints against the quantity and quality of the programmes. *Coast-to-Coast Wireless.*—A transcontinental wireless circuit was inaugurated between New York and San Francisco by the Mackay interests on Nov. 15. *Rent, one shilling per year!*—This is the rent to be paid for the fixing of an aerial to trees in Enfield Town Park, London.

General Information.—ALGIERS.—The Governor-General of Algeria, North Africa, opened a high-power broadcasting station at Arba, near Algiers, on Nov. 19. AUSTRIA: *High-frequency and broadcasting.*—The police of Klagenfurt have issued an order, says *World Radio*, forbidding the use of H.F. massage apparatus, X-ray apparatus, and anything similar which may impede wireless broadcasting between 7 p.m. and midnight, unless urgently necessary for the sick, and then only upon the doctor's responsibility. BRAZIL.—Rio de Janeiro states that the work on the installation of radio-telegraph stations is commencing at Fernando-de-Noronha (destined to become the most important air-port in Brazil), Natal, Recifé (Pernambuco), Maceao, Bahia, Caracellas, Victoria, Rio de Janeiro, Santos, Florianopolis, Pelotas, and Puerto Alegre. CANADA.—A programme of 25 national broadcasts, to be given this winter over the new Atlantic to Pacific wireless "chain," has been arranged by the Canadian National Railways. Stretching from Halifax, N.S., to Vancouver, approximately 15,000 miles of land wire will be used and 16 actual stations. No less than five different time-zones are covered! DENMARK.—Listeners' licences taken out during the period from Dec. 15, 1929, to Mar. 31, 1930, will be reduced to 5 kroner for the remainder of the year. HOLLAND.—The Catholic Radio Society and the Netherlands Christian Radio Society have applied for permission to erect a number of local stations for relaying the Huizen programmes. The Gleichwellen system will be used. GERMANY.—At the beginning of October last there were 2,843,569 radio receiving licences in Germany, approximating to the figures for Great Britain recently announced by the P.M.G., viz., 2,869,000.

Financial.—According to the financial editor of the *Electrical Review*, upon the completion of the purchase of the Indo-European Telegraph Company's system by Imperial & International Communications, Ltd., £27,000 is to be divided between the following four directors upon their retirement from the board, as compensation, viz.: Mr. H. L. M. Tritton, Sir Rayner C. Barker, Mr. F. J. Brown, and Mr. C. H. Tritton. In the case of the managing director (Mr. Axel W. Berg), the sum of £30,000 is to be placed in trust for payment to him upon loss of office, unless he is offered or accepts other employment with the company or the Communication Company. Compensation will also be paid to any others of the British and foreign staffs who are displaced as a result of the purchase.

The deceased Mr. J. C. D. Jones, formerly E.-in-C. to the Eastern Telegraph Co., Ltd. at Singapore, left £47,307 net and £47,587 gross personalty.

The P.O. T. and T. Society of London.—Two especially interesting lectures were given on Nov. 18 and Dec. 16 respectively by Mr. F. Addey, B.Sc., F.R.A.S., M.I.E.E., on "Wireless Aids to Navigation," and by Mr. S. A. Pollock, O.B.E., on the "Work of the Research Section of the E.-in-C.'s Office." Both were well attended and both were illustrated by excellent slides. One cannot but envy the ease and self-possession with which Mr. Addey lectures on whatever subject he may choose to select, and no matter the *venue* or the status of his audience.

Mr. Pollock's lecture was illustrated by a couple of films, being, we were given to understand, the first effort of the Research Section to make and install the same, a by no means easy task, but one which this Section will undoubtedly make an unimpeachable success before long, one may confidently prophesy. Mr. Pollock received the unanimous congratulations for what to most of his listeners must have been a revelation of hitherto unknown Post Office activities, and sincerest expressions of thanks for the special personal obstacles surmounted in order to keep his engagement.

Cost-Accounting and a late C.T.O. Chief.—Looking through the most recent list of text-books recommended by the Institute of Costs and Works Accountants for students preparing for the Institute's examinations, it was sadly interesting to note that under the heading of "General Commercial Knowledge and Office Organisation" two out of the three publications mentioned were the work of the lamented Mr. John Lee—viz., his "Management" and the "Dictionary of Industrial Administration," the latter probably his *magnum opus*.

Diaries and Christmas Cards.—Many thanks for the personal seasonal greetings the writer has received from well-wishers of the *T. and T. Journal*. Prominent among these may be mentioned the very handy diary from Messrs. Creed & Co., finished in that perfect style inseparable from their high standard: also the "AMERICARISTMAS and a HAPPY NEW YORK" from the Supervising Officers and Telegraphers of the F. Division, C.T.O., which with its jazz cover and its ebullition of high spirits belie some at least of its artistically expressed pen and ink drawings. H. H. J. has again to be congratulated. The truth of the text: "A FORD CAR is no better than a ROLLS-ROYCE in a blocked thoroughfare" cannot of course be gainsaid!

Conscience.—"Conscience is harder than our enemies,
Knows more: accuses with more nicety."
—"The Spanish Gypsy."—*George Eliot.*

J. J. T.

THE "LAG": ITS CAUSE AND ITS CURE.

THERE is one desire which is shared by all who are engaged in the telephone industry and that is to see such an expansion of the service in this country as will put it on a footing closely comparable with that of the U.S.A. and one or two other densely telephoned countries. In face of this desire the question naturally arises as to the causes which contribute to keep back telephone development, and in considering this question it has occurred to me that a very useful purpose might be served if I be allowed to set out what appears to me to be necessary for the consummation of this common desire.

It is, I suppose, impossible to have absolutely ideal conditions in any sphere and one has to be satisfied with those which are reasonably good, and in the consideration of the question already referred to, I would suggest that certain reasonably good conditions should obtain. These conditions fall under three headings :— (1) publicity, (2) plant, (3) prosperity : and a consideration of the last two named need not take up much time or space. As regards plant, the Department has, with credit to itself, remedied the shortage brought about by the terrible war period, and it remains for those who are responsible for forecasting the probable growth of the system in the different Exchange areas to have sufficient vision to prevent a shortage of plant in any locality, but at the same time not to have such magnified vision as will result in too much plant being laid down.

As to the third condition, it is, I suggest, evident that the state of trade or the general prosperity of the country has a very material effect upon the growth of the system. For example, the Hatry collapse, followed by the Wall Street debacle, most obviously resulted in a falling off in the number of new orders. As this condition is entirely outside the control of the telephone administration, no advantage will accrue from a further consideration of it.

Before passing to a consideration of the principal condition it would perhaps be advantageous to make some general remarks as to the position in London as regards development, and in the first instance to point out that in no less than 40 out of the 125 Exchange areas comprised in the London Telephone area, we are either in advance of the forecasted figures for the present date, or less than six months behind them. It seems to be a matter of impossibility to ascertain why in these areas there should be in such considerable measure a realisation of our forecasted figures, whereas in other areas where the class of property is almost identical, where the amenities are as good, and where the forecast has been made on the same lines, yet our achievement at the present time is below our anticipation, in other words there is what is known as a 'lag.' It would appear to indicate that in some districts there is a fuller appreciation of the advantages of the telephone service than in others. Another feature calling for comment is the fact that in some residential areas, development is coming more rapidly from houses of a medium value rather than from the higher priced ones. It would almost seem from this, that in these days, when practically all house-buying is done with the help of a mortgage, many people who have bought more expensive houses find that to keep up the necessary payments is as a millstone round the neck, and they allege they cannot afford the telephone. So many luxuries can now be obtained on the hire payment system that people are tempted to acquire that which they cannot really afford, and having to keep up the periodical payments in respect of what they are so purchasing, are very reluctant to increase their expenses even if it be for such a necessity as the telephone.

It is interesting, too, that experience shows that, other things being equal, the occupant of a post-war house is more likely to become a subscriber to the telephone system than one who lives in a residence built before the war. Another point to be noted is that people living in neighbourhoods where travelling facilities are comparatively inadequate, are less anxious to rent telephones than they are in places where the means of transit are ample. It might also be mentioned that it has recently been computed and stated in the public press that upwards of 600,000 families of the two million families in Greater London are able to enjoy a moderate degree of luxury. On the other hand, there are scarcely more than 160,000 residential lines rented in this area. This comparison indicates one vast field that exists for the expansion of the service.

Passing now to the specific consideration of the publicity problem it should, in the first place, be pointed out that efforts are being made by an association of manufacturers to bring before the public the advantages of the telephone system, but something more than this is necessary. It is one thing to be cognizant of advantages to be derived from the possession of something, but what is really necessary is to create in the public mind a very real sense that the telephone system is not merely something which brings certain advantages, but that it is something that cannot be done without and which brings its own economy in the saving of time and temper, money, and worry. We cannot create the need. It is there : but we should create the sense of that need. Considerations of policy, which cannot well be discussed in a paper of this sort, are involved, but there are certain aspects of the matter over which we may well ponder. In the first place, is each member of the telephone staff of the Department doing his or her share ? Each one of us, however humble our official position, must know someone to whom the telephone service is a vital necessity but who is not connected. If each member of our London staff influenced one new subscriber a quarter for one year, our growth would be more than doubled.

What relatively small numbers of suburban shopkeepers are alive to the advantages of having the telephone connected to their places of business, and what a field there is here for education. It is an astonishing fact, however, that what is true of the man of the small business in the suburban areas, is also true, although not to the same extent, of shop-keepers in the well-known shopping thoroughfares of the great Metropolis. Even in the principal streets, most are inadequately equipped with Exchange service, and there are actually some entirely without it, the reason being that they are very imperfectly educated as to the advantages available to both themselves and their customers : they must be instructed as to its vital necessity in their own interests. In this connexion it can be pointed out with significance that the two great countries which are effectively challenging and overtaking the eminence in trade of this country, show a greater density of telephones in their commercial centres than we do. The question may well be asked as to whether we lag behind because of the all too prevalent lethargic idea that business will roll into our laps without effort, without publicity.

As regards the residential areas, whilst it is true that in certain districts a reasonable proportion of the houses is connected, yet in the majority of the suburbs, even in the case of those inhabited by what are known as the upper middle classes, it is astounding to walk down road after road and find that so many of the houses are still without telephone service. The owners thereof need to be educated, but their instruction should not be on the same lines as that of the business man. It is the housewife who rules in suburbia, and to teach her, the lesson must be on different lines to that given in business quarters. The good angler varies his bait to catch the different sorts of fish.

As already indicated, it is evident that the public, generally speaking, need educating as to the service, its cost, the facilities it affords, and what is of great importance as an offset to the gibes of certain pressmen, as to its reliability.

There are various ways in which this education or publicity can be carried on, by propaganda, by advertising, by circularising, or by canvassing.

By propaganda I mean the publication in the press of informative articles concerning the service, and to enable this branch of the publicity work to be effective, it is highly desirable

that the articles should be of such sort as will grip the reader and be of fair frequency, and not published at rare and irregular intervals.

If advertising be employed as a means of reaching the public, it seems desirable that the advertisements whilst retaining dignity should be telling and should not follow stereotyped lines. Circulars, too, should be such as will catch the eye, impress the mind, and so influence the recipient that he will be convinced of the necessity of his becoming a subscriber to the telephone system.

Whether or not publicity is carried on by any, or all, of the means just indicated, it will still be necessary to have a sufficient number of contract officers—as the Post Office calls its telephone canvassing staff—to push home the effect produced on the mind by such publicity (or alternatively produce that effect) to gather in the resultant orders, and to get in touch with the large numbers of people who by lack of observation or otherwise failed to observe, or to be influenced, by the article, advertisement, or circular as the case may be. It may be assumed, I think, that if circumstances compel a person to rent a telephone circuit he will take the initiative and write to the Department, but to get at the man who has not as yet realised how vital it is in his own interests to become a subscriber to the system, persistent and intelligent canvassing is highly necessary. Spasmodic effort in the way of canvassing quickly loses its effect and is not therefore profitable: what is necessary to ensure the proper growth of the system is prolonged, persistent, and systematic effort. For example, the great emporia whose names are household words instead of, as formerly, having annual or half-yearly sales, seem to be having sale times practically all the year round, thus keeping themselves constantly in the public eye.

To reach the heads of all the business concerns in this great Metropolis who are still without the benefits of the service, those of the 600,000 families already referred to who are not connected, and the vast number of householders outside this number to whom telephone service is a necessity but who do not realize it, would mean the employment of a very much greater effort in the way of publicity in one or all of the forms indicated. Such effort will, of course, cost money, and the return produced might not at once be commensurate with the expenditure involved but would, I am sure, be more than justified by future results.

There is a considerable volume of development, too, to be expected from existing subscribers, and it is highly essential that some means be found for finding busy subscribers on automatic exchanges and persuading them to rent the additional circuits required to carry their traffic, and so obviate loss of business to themselves, inconvenience to their clients, and loss of revenue to the Department.

Other suggestions could be made as to reaching the public, for example, the utilisation of each of the Exchange premises in London as an Information Bureau, for it is to my mind abundantly clear that if the service is to grow as it should grow the public must be reached.

W. G.

RETIREMENT OF MR. COWIE.

ON Nov. 20 a large assembly gathered to say farewell to Mr. J. Cowie, Executive Engineer of the West Internal Section, on the occasion of his retirement.

Mr. Gomersall made the presentation on behalf of the staff and other friends, and spoke of the high esteem in which Mr. Cowie was held both on account of his work as an engineer and his personal character.

Tributes were also paid by representatives of various grades to Mr. Cowie's unfailing courtesy, kindness, and good humour. Mr. Cowie set a high standard of service for himself and possessed in a remarkable degree the power of infusing others with his own ideals. He did not drive but he let men see what he expected from them and what he believed they could do. He made them believe it also and as a result he obtained what he desired.

Mr. Cowie lives at Brighton and it is hoped that he will have many happy and useful years to devote to the social work which he has now taken up.

A C.T.O. PENSIONER AND THE COCOS ISLANDS.

POSSIBLY not half of the present C.T.O. staff have any recollection of Mr. S. F. Pace, formerly Asst. Superintendent in the Inland department, and who last autumn made a round-the-world health tour via New Zealand. Mr. Pace has still the comrade spirit of the craft within him despite his advancing years, and in response to a notice on board the outgoing vessel, he sent a letter of greetings to the Eastern Telegraph Extension Company's staff on Direction Island, one of the Cocos group.

This message was thrown overboard in a barrel, with other articles, including fresh meat, newspapers, &c., for the officials and others stationed there, as the liner passed the Cocos Islands.

Mr. Pace thought no more of the matter, but since his return to England—much improved in health, one is glad to say—he has received a most interesting acknowledgment from one of the resident staff, giving a short account of life on this isolated cable repeater station.

"There are eighteen of us at present," writes Mr. Pace's informant, "for the staff has been gradually reduced from a maximum of 31 since the introduction of the Regenerator method of working the cables. Prior to this innovation the maximum number of cables that could be relay-linked was two, and that only with reduced speed and doubtful signals. Nowadays London is in absolutely direct telegraphic communication with Singapore, Capetown, Bombay, &c.

"Our little island is about ¾-mile long and 200 yards at its widest part and is crescent shaped. Its highest point is only about 6 feet above high-water mark, so if there was anything like a tidal wave we should be washed away!

"A fair amount of tennis is played on our two hard courts. Sailing boat races are held every month, but, naturally, the number of boats has decreased with the dwindled staff.

"A library of 2,500 books, which is continually being supplemented, and a billiard room, further enables us to pass away our leisure hours, but at the present moment most of the operators are studying hard in their endeavours to satisfy the examiners in a rather stiff exam. which is now in force.

"The chief drawback is the lack of fresh meat and vegetables, and we think ourselves fortunate when a cask floats in from a ship and we can taste good beef and or mutton.

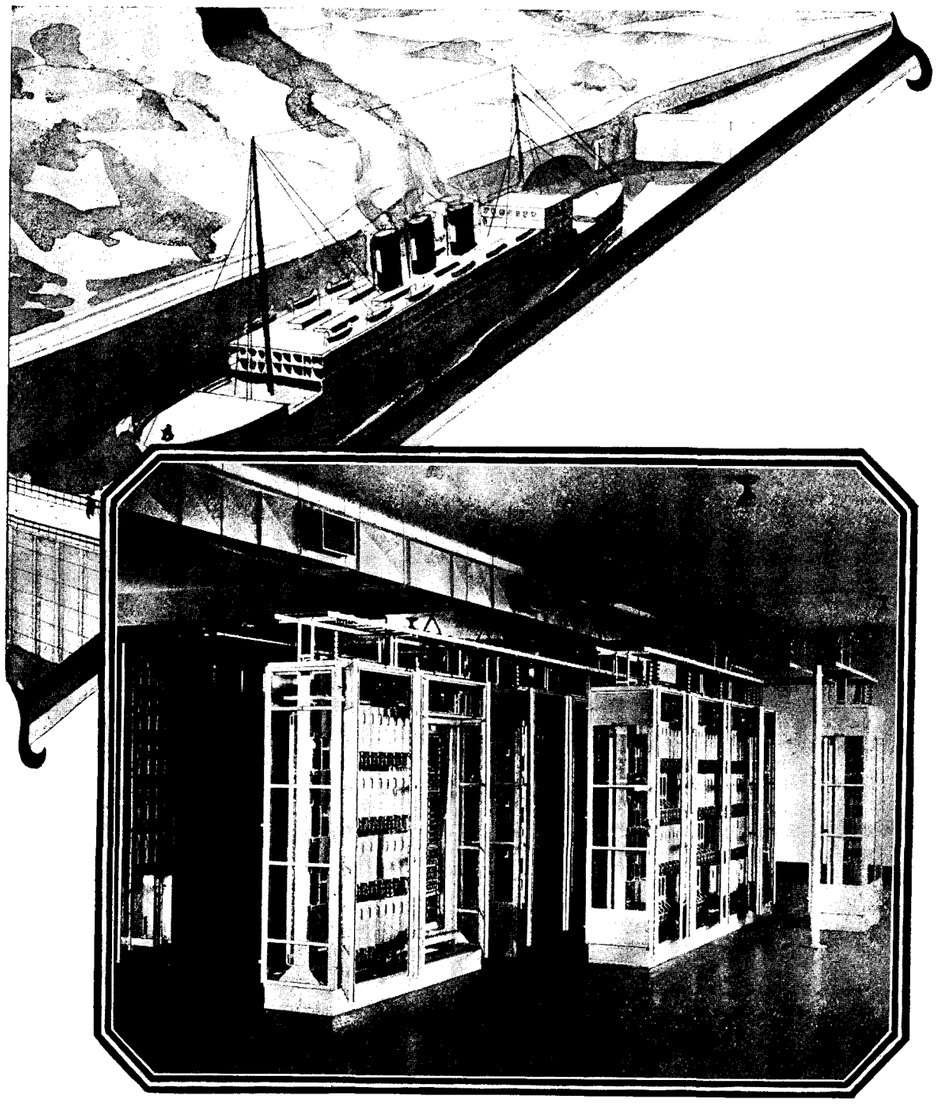
"We grow tomatoes, lettuces, and beans with a great deal of trouble owing to the very poor quality of the soil, mostly coral sand, while the rats and vermin are always a nuisance. We have to get fresh earth from Singapore frequently, as the earth is washed into the sand by the rains. We raise pigs and fowls, so get other fresh meat occasionally. The only natives here are our servants, mostly Chinese.

"We don't know how the amalgamation of the cables and wireless is going to affect the staffs in the future, but I suppose no drastic changes will take place in the conditions for a long while. We all hope that the retiring age (55 years) will be reduced to 50, as at present very few of the men live very long after retirement, probably due to the change of climate.

"There are no married ladies here, which I think is a blessing in a small community! I remember when I called in at Christmas Island, near Java, on my way down here last time, there were three women and none would speak to another!"

These latter were neither telegraphists or telephonists, it is interesting to note!

J. J. T.

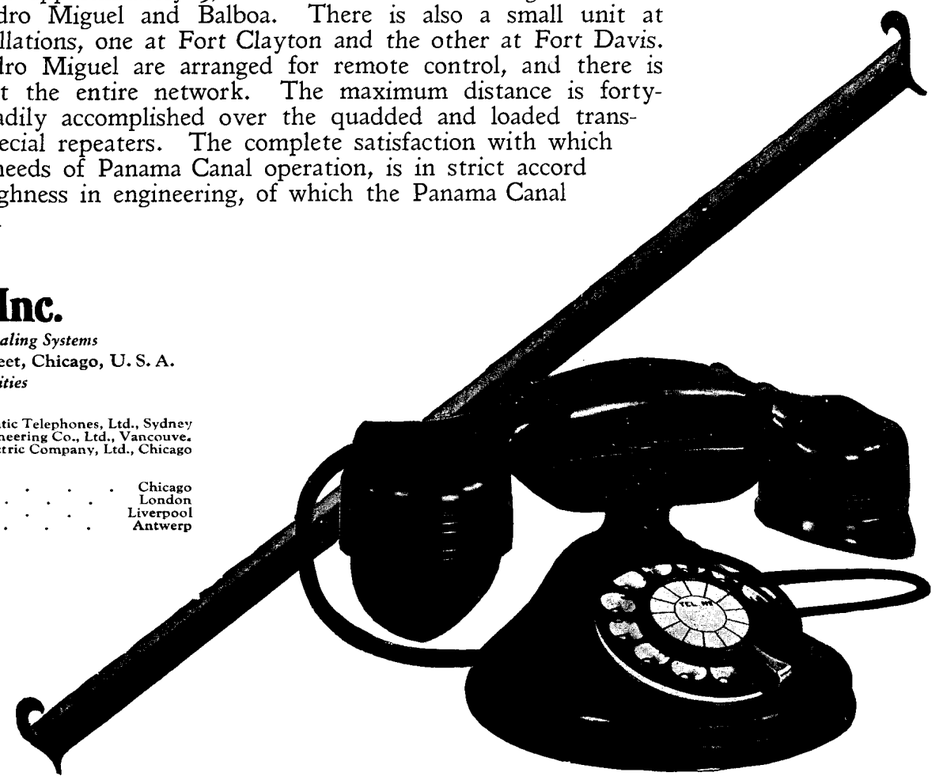


Strowger Automatic equipment in the Cristobal Office, Panama Canal Zone. To prevent the destructive operations of tropical insects, all wooden parts such as bases, piers, cabinets, etc., are made of either mahogany or rosewood, both of which are virtually insect-proof.

ama Canal Telephone
em Is Strowger Automatic

ry, 1926, the entire telephone system of the Panama Canal Zone was cut to Strowger Automatic operation. The system was selected after thorough on by officials and engineers of the Panama Canal Commission, as being the nt of efficiency and trouble-proof dependability, and as exemplifying the ndards in its design, construction and operation.

ity of the network is approximately 3,000 lines distributed among four main ristobal, Gatun, Pedro Miguel and Balboa. There is also a small unit at nd two P-A-X installations, one at Fort Clayton and the other at Fort Davis. of Gatun and Pedro Miguel are arranged for remote control, and there is l dialing throughout the entire network. The maximum distance is forty-s, and dialing is readily accomplished over the quadded and loaded trans-able by means of special repeaters. The complete satisfaction with which n meets the severe needs of Panama Canal operation, is in strict accord rican ideas of thoroughness in engineering, of which the Panama Canal e highest expression.



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STROWGER AUTOMATIC

The
Telegraph and Telephone Journal.

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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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A RETROSPECT OF 1929.

THE year which has just closed was one of considerable all-round progress in the telephone system of the British Post Office. There were approximately 1,850,000 telephones connected with that system at Dec. 31, 1929, making, with the telephones not belonging to the Post Office system, a total of about 1,886,500 in Great Britain and Northern Ireland. This represents an increase of 127,000 over the total for 1928. During the same year there was an increase of over 340 in the number of Post Office telephone exchanges and of about 4,500 in the number of call offices.

Steady progress was made in the conversion of the system to automatic working, 40 exchanges (excluding rural) being opened during the year, 16 of which were in London serving a total of 26,290 lines, and 24 in the provinces, serving 15,168 lines. Amongst the latter were Bath, Middlesbrough, Stockton-on-Tees, Colchester, Southend-on-Sea, Walsall and Crewe. The total number of automatic exchanges now working in London is 24, serving about 70,500 lines. A satisfactory feature is the development of the rural automatic exchange, no less than 85 such exchanges, with a total of about 750 working lines, having been opened.

As in the previous year, several important developments have to be recorded in the overseas telephone services. The hours of the transatlantic service were extended in September, and now include the whole 24 hours of the day. During the year Luxemburg, Gibraltar, Ceuta, Milan and some of the other chief cities in Italy, as well as Dublin, Belfast and the Isle of Man were placed in communication with America. A service between London and a special call office in Buenos Aires was opened in July. Telephone service was opened between this country and Poland and Finland, and the existing services to Czechoslovakia and Italy were extended to additional towns in those countries. So rapidly is the Anglo-Continental telephone traffic increasing that it has become necessary to arrange, in the coming financial year, for the provision of additional submarine cables both to France and to Belgium, which will carry additional circuits not only to those countries but to Germany, Switzerland, Italy, and other lands.

Another important event of the past year was the introduction of the "personal" call system in the Inland and Anglo-Continental trunk services. As this procedure becomes ever more widely known and appreciated its use bids fair to be extensive. On Oct. 1 new trunk rates came into force for calls over distances exceeding 200 miles, the reductions in the cost of communication between the South of England and Scotland being as much as two and three shillings for a 3-minutes' call in the morning hours.

To turn from the telephone to the telegraph service is to go from sunshine to shadow. The decline of inland telegraph traffic continues, though some small satisfaction may be gained from the fact that the rate of decline shows signs of slowing up. In September the Empiradio services and the Imperial Cables were transferred to a private company. The growth of the Anglo-Continental telephone service, while a matter for rejoicing in national and in telephone interests, may be at the expense in some degree of the Anglo-Continental telegraph service, but there are no certain indications of this. On the other hand, the rationalisation of the telegraph service, if that term may be borrowed from industry, is bearing fruit. The past year has seen a remarkable cut in the deficit on the telegraph service, and a reduction in the weight of that millstone will be hailed with joy by all interested in the service. The body of the telegraph service may have shrunk, but it will be a healthier body.

EUROPEAN TELEPHONE DEVELOPMENTS.

IN accordance with our custom at the beginning of the year, we offer our readers elsewhere a review of the telephone development of the world at the latest date for which comparatively complete figures are available. It will be seen that something less than a million and three-quarter telephones have been added to the world's total, which is now over 32,640,000. It is satisfactory to note that in Europe the total increased during 1928 by 644,000, the largest number yet recorded, the last time more than 600,000 telephones were added being in 1925. North America has increased by 906,000, which is a greater increase than took place in 1927; it was, however, exceeded in 1923 and 1925. The rate of increase in Europe in 1928 was 7.5%: in America 4.5%.

The largest additions to the European sum total are, as heretofore, in Germany, with 135,434 telephones, and in Great Britain, with 125,884. The largest percentage increases are Austria, with 27%, and Belgium and Russia, with 15%. France, it will be seen, is rapidly approaching the million mark, and has nearly doubled

her total since 1921. In the same period Great Britain, with a much higher telephone density, has increased hers by 80%. Japan accounts for three-quarters of the telephones in Asia, whilst the Union of South Africa contains nearly half of those in Africa. The United States telephone system, of course, predominates in North America (nearly 19 20ths of the total), and the Argentine Republic possesses more than half the telephones in South America.

Without wishing to appear unduly optimistic, we may discern in the present position in Europe some satisfactory indications of an improving development. Many of the more backward countries are beginning to show undoubted signs of steadily progressing movement, and the larger countries, such as Great Britain, France and Germany, show higher increases each succeeding year. There is every promise that the increase in Europe during 1928 will be exceeded by that achieved during 1929.

SEA BREEZES.

THOSE who go down to the sea in ships judge and are judged more harshly than we others who remain ashore. Rough and ready in his speech and biting in his sarcasm, the seafarer faces nature in all its moods, tense or otherwise, and he is the last person in the world to bend to a torrent of abuse or to refrain from retaliation in kind.

The master mariner must be a superman. On his competency and judgment the lives of all depend; and always hanging over him is the threat of disparagement if things "gang agley." To misquote Goldsmith it may be said of him, "Do what you will, The critic will show the world you could have done better." The captain of the ill-fated *Vestris*, which was lost on the coast of America, was blamed on all sides for not having broadcast a wireless S.O.S. signal before it was too late; but no doubt he balanced all the circumstances and adopted what he considered the wisest course. The adverse criticism of his action may, however, have far-reaching effects on the policy of present and future master mariners and on the work at wireless stations. It may or may not have influenced those concerned in a more recent case. But the reader can judge for himself from the facts which are related below:—

During a gale last November, the skipper of a foreign ship in the English Channel sent out an S.O.S. signal at about 10.30 p.m. He gave his position and stated he was not under control and drifting ashore. Other wireless traffic was stopped. S.O.S. signalling filled the ether for nearly six hours. Within 30 minutes a British ship was found within helping distance and her course was diverted. The position was found to be wrong and some delay occurred in rectifying it. The ship in distress sent repeated messages of her danger and then five hours after the original call admitted, but only after enquiry, that she was then out of danger. The British ship's comment was blunt and to the point. "Yes, thank you. Glad the temperature of this gentleman's feet is now normal." Unfortunately there is no record of the retort courteous; but we have no doubt whatever that there was one.

HIC ET UBIQUE.

Here is still another claimant for the first telephone exchange in Europe.

The completion of the first 50 years of telephony in France was recently celebrated, we read in the *Electrical Review*. The first exchange in the country was set up in Paris in June, 1879, and started with seven subscribers! By 1899 there were nine exchanges in Paris with 6,255 subscribers, and 22 with 4,800 subscribers in provincial towns. About that time the service was taken over by the Government. To-day there are about 150,000 subscribers in Paris and 400,000 in the provinces.

Nevertheless, we still hold to our opinion that Coleman Street, London, was the first. Holcombe, in his "Public Ownership of Telephones on the Continent of Europe," says that three separate telephone undertakings were *authorised* in France (the Gower, the Bell-Blake, and the Edison systems) in the summer of 1879. The concessions were transferred from one promoter to another until, on Dec. 10, 1880, all found their way into the hands of a single company, the *Société Générale des Téléphones*. The first exchanges in Paris, he continues, were opened in the early part of 1881. In support of this statement he quotes the work of a French author, M. Roger Lacombrade, "*La Construction et Exploitation des Lignes Téléphoniques en France*," p. 42. The solution of this vexed question probably turns on the definition of the term "public exchange." Does an arrangement set up by a promoter to demonstrate that telephones can be interconnected constitute an exchange?

Father Ronald Knox, writing in the *Sunday Dispatch*, says he is not on the telephone for the following reasons:—

In telephoning, as in certain other sports, the challenging party always has the advantage; the ringer-up, if he knows his business, always gets he better of the rung-up.

The ringer-up has his story concocted beforehand; he invites you suddenly to a meal before you have time to make up an excuse for refusing; cries off a meal at the last moment before you can think of any names to call him; knows whom he is addressing; while the rung-up is desperately trying to decode the message, "This is John speaking"; asks you whether a story is true before you can make up your mind whether it ought to be public property.

The instrument, then, may be all very well for people who are prepared to take the offensive, and are fond of doing so; but we who dislike it, and dislike it all the more since it began to emulate the aluminium-name-plate machine, are at a disadvantage: we lose more than we gain by its presence.

Besides, I am a person who mostly stays at home; the people I try to telephone to are always out; there is no equality of opportunity about the thing.

I often find complaints in the papers about the telephone not working accurately enough; my trouble is that it is so relentlessly efficient; it would worry me like a second conscience if people were capable of ringing me up, and I them, at all hours.

We do not reproduce these paragraphs for the encouragement of budding Contract Officers, though Father Knox's testimony to the telephone's efficiency is quite handsome. But consider what incontrovertible claims could be made for the telephone as a school of ready-wittedness, preparedness, alertness of mind, inventiveness, prompt decision and all the virtues of hustling world; or alternatively, for those who cannot attain these qualities, what a force making for half-involuntary truthfulness.

The Postmaster of Altrincham has received the following letter from a Cheshire subscriber:—

I desire to place on record the courtesy of your telephone operator on the evening of Thursday the 14th inst., at approximately midnight.

My sister-in-law was overnight taken seriously ill, and being unable to reach her staff (her trained nurse having just left her), endeavoured to telephone

for the doctor herself. The pain developed to a serious extent, however, and she found it impossible to wait on the telephone any longer. The operator just mentioned, realising the circumstances of the case, asked her not to worry any more than she could possibly help, for he would get the doctor and if necessary secure a nurse or any other help she required. He also attempted to reach friends as well as ourselves. In addition to this, before leaving duty at somewhere round 8 a.m. he was good enough to ring up and enquire whether he could assist in any further manner.

There are so many instances in which operators suffer discourtesy at the hands of subscribers and where many even reasonable complaints are needlessly exaggerated, that it is a pleasure to bring to your notice such conduct as the foregoing, which in the view of all of us concerned was beyond all praise.

According to *Telephony*, the Federal Statutory Court of New York City has given its decision as to the rates to be charged by the New York Telephone Co. The court has decided that the company is entitled to a 7% return on its property, and until the Public Service Commission has fixed a rate consistent with this decision, the company may increase its rates so as to ensure this return. The company are thus entitled to levy an additional $7,933,866 annual increase on telephone subscribers, but it is estimated that the net increase to subscribers would not amount to more than 4 or 5% at most. It is expected, says *Telephony*, that the bulk of it will be placed on telephone users in the State outside New York City.

Telephony also reports that new rates will come into force in San Francisco and Los Angeles on Jan. 1 of this year. In San Francisco the new rates represent an increase. The flat rate is to be abolished for business premises, and a rate of $5.25 a month (£1 1*s.* 10*d.*), including 85 calls, is to be introduced. This is equivalent to £13 2*s.* 0*d.* a year for 1,020 calls. The residence rate is to be $4.25 (17*s.* 9*d.*), equivalent to £10 13*s.* a year, including unlimited calls.

In Los Angeles the rates are being reduced. The business rate is $5.50 a month (£1 2*s.* 11*d.*) with 85 outward calls, or £13 15*s.* 0*d.* a year with 1,020 calls. The residence rate is $4.50 a month, equal to £11 5*s.* 0*d.* a year.

It is interesting to note that in each case you can have service with a wall set instead of a desk set for 25 cents less a month. On the other hand, a hand set costs 25 cents a month more in San Francisco, and 50 cents more in Los Angeles. Additional calls cost 3½ cents each.

We learn that a new schedule of trunk telephone rates comes into force in the United States on Jan. 1, representing an annual saving to the public of more than $5,000,000.

Approximately 45,000,000 calls a year, the majority inter-State, will be affected by the reductions. On most station-to-station daytime calls to points approximately 60 to 300 miles distant there will be a reduction of 10 cents. The new schedule also reduces the over-time charge on person-to-person messages of more than 10 chargeable minutes on nearly all distances. In addition there will be reductions in report charges ranging from 5 cents to 40 cents and affecting the schedule at distances generally from 100 to 2,200 miles.

This is the fourth decrease in toll and long-distance rates that the American Telephone and Telegraph Company and its associate companies in the Bell System have made in less than three and a half years.

Mr. Bernard C. Holding, for the past three years editor of *The Electrician*, with which journal he has been associated since 1923, has resigned the editorship to take up an appointment with the International Standard Electric Corporation, London, on Jan. 1.

WIRELESS AIDS TO NAVIGATION.*

BY F. ADDEY.

IN the April, 1928, number of the *Journal* a description was given of the way in which wireless comes to the aid of the navigator by providing him with accurate time signals. By these his chronometers can be checked and so the determinations of his position by astronomical observations made more accurate.

The accuracy of such determinations of position, however, although good enough when a ship is far from land, is not sufficient when she approaches the shore and finds herself in the neighbourhood of shoals and other dangers.

In order to determine the ship's position in these circumstances, recourse is had to various geometrical methods, which are based on observations made on prominent objects on the land. By optical or other methods the angle is measured which a line drawn from, say, a lighthouse, to the ship makes with the north-south line. This angle is called the "bearing" of the ship from the lighthouse. If a line be now drawn through the position of the lighthouse on the chart, making this angle with the north-south line, it is obvious that the position of the ship must be somewhere on this line.

If another determination of position be now made, as, for example, by a similar observation on another lighthouse, a second line on which the ship is also situated is obtained. The actual position of the ship is obviously the point where the two lines cross.

In foggy weather, when the prominent objects on the land cannot be seen, optical determinations of position are not possible, and until recent years ships were reduced to groping their way by means of soundings, the depth of water and the nature of the bottom being used as indications of position, or by audible fog signals.

Nowadays, however, all this is changed. The bearings can be observed by wireless means, and as these are independent of the visibility, ships can now approach the coast in fog with almost as much ease as they can in clear weather.

The following paper deals with the various methods which have been devised, and the organisation which has been built up, by which this very important advance in navigational methods has been brought about.

If a loop of wire is used for the aerial of a wireless receiving set the strength of signals will depend on the position of the loop with reference to the direction of the transmitting station. If the plane of the loop is pointing towards the transmitting station the strength of the signals will be the maximum. If the loop is turned from this position to a position in which its plane is at right angles to the direction of the transmitting station the signal strength will fall to zero. If the rotation of the loop is continued the signals will again come in, and will rise in strength until, when the plane of the loop is again pointing towards the transmitting station, they reach the maximum strength from which they started. Thus, by observing the strength of the signals received by such a loop the direction of the transmitting station can be determined.

It is found easier in practice to determine the position of the loop where the signals fall to zero, that is, the position in which the plane of the loop is at right angles to the direction of the transmitting station, rather than to determine the position of the loop which gives the maximum signal strength. When the position of the coil at which the signals fall to zero has been determined, the transmitting station is in the direction at right angles to the plane of the loop.

The arrangement just described, however, only tells the line on which the transmitting station lies, it does not tell on which side of the receiving station the transmitting station is situated. However, by combining the signals received on an ordinary aerial with those picked up by the loop this ambiguity can be removed, and the direction towards the transmitting station from the receiving station definitely determined.

When these directional methods of reception, as they are called, were first introduced the receiving apparatus available was much less sensitive than it is to-day, and as a consequence large loops were required in order to give sufficient strength to the signals. The larger the loop the greater the signal strength which is obtained. Such large loops, perhaps 30 or 40 feet square, could not, however, be rotated with any facility in order to find the position of the transmitting station. In order to overcome this difficulty the system of large fixed crossed loop aerials was devised by Bellini and Tosti. Two loops whose planes are at right angles to one another are erected. Each one is joined to a small coil of wire in the receiving apparatus in the station. The planes of these coils are also arranged at right angles to one another. The waves from the transmitting station affect each of the large loops to a greater or less extent according to the position of the loops with reference to the direction of the transmitting station, and so the effects produced in each of the coils joined to the loops also depend on the position of the transmitting station. The resulting currents in the small coils set up magnetic fields which combine to produce a resultant field the direction of which depends on that of the transmitting station. A small rotating coil placed in the space between the small coils mentioned above is then used to determine the direction of this resultant magnetic field, and thus

* Paper read before the Telephone and Telegraph Society of London.

the direction of the transmitting station is found. Arrangements are made by which, when a bearing is not being taken, the connexions can be modified so that the installation will receive uniformly in all directions.

The Bellini-Tosi system has been considerably improved in recent years, due largely to the introduction of the thermionic valve, and has now been installed at the Post Office coast wireless stations at Wick, Cullercoats, Humber, Niton, Lizard, Portpatrick and Malin Head. Up to the middle of October last the Lizard station was operated by the Admiralty. By means

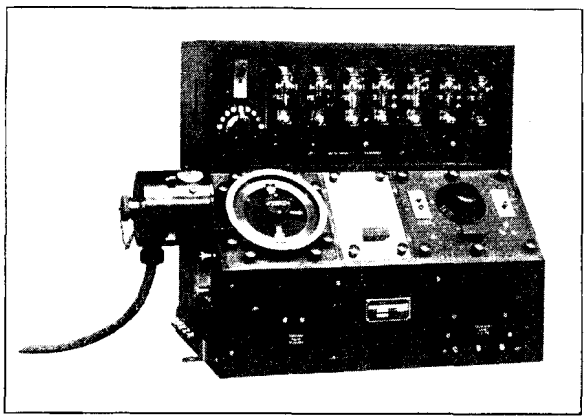


FIG. 1. MARCONI DIRECTIONAL RECEIVER FITTED WITH GYRO COMPASS REPEATER SCALE.

of these direction-finding stations ships approaching the coast can have their bearings from the station observed and communicated to them by wireless. They can then plot these bearings on the chart and so ascertain their position.

The original direction-finding stations, on account of the very large aerial loops which were necessary, were only suitable for erection on land. The greater sensitivity of reception which followed the introduction of the three-electrode valve enabled the size of the loops to be reduced, so that direction-finding installations could be placed on ships. The direction-finding installation on a ship has a great advantage from the point of view of the navigator in that he is at liberty to take as many bearings as he wishes on any shore wireless station which he may hear working, or, if necessary, as in going to the assistance of a ship in distress, on any ship station.

The zero on the scale of the direction finder on a ship corresponds with the dead ahead direction, so that the bearings actually observed give the position of a transmitting station with reference to the centre line of the ship. From a knowledge of the direction in which the ship is steering when the observation is taken the bearing of the transmitting station from the ship with reference to true north can be determined.

The improvement in reception brought about by the introduction of the valve has not only enabled the crossed loops to be diminished in size, but has enabled aerial loops to be used which are sufficiently small to be rotated, and many of the installations on board ships are now of this type. The rotating loop is mounted in such a way that it can be turned by means of a wheel resembling the steering wheel of a motor-car, and the bearings are read by means of a scale graduated in degrees, which is attached to the wheel.

A rotating loop system, devised originally by Dr. Robinson for aeroplanes, but now installed on a number of ships, utilises the maximum and not the minimum of the signals. It consists of two loops, known respectively as the main and auxiliary coils, which are fixed together at right angles to one another and joined electrically in series. By means of a switch the auxiliary coil can be placed in series with the main coil in either one direction or the other. The combination of the two coils is joined to the receiver. To take a bearing, one of the loops, known as the main coil, is set so as to receive signals as far as can be judged at maximum strength. The other, the auxiliary coil, being at right angles to the main coil, should therefore be in the position to receive zero signals. If the coils are correctly placed, so that the auxiliary coil does actually not pick up any signals whatever, no change in the strength of signals will be caused by moving the switch and so reversing the direction in which the auxiliary coil is joined to the main coil. If, however, the coils are not correctly placed the auxiliary coil will be picking up some signals and these, in one position of the switch, will add their effect to the signals picked up by the main coil, while in the other position of the switch the auxiliary coil signals will oppose those received in the main coil. In these circumstances moving the switch will vary the strength of the signals and so indicate that the adjustment is not correct. The coils are rotated until moving the switch produces no effect on the signals. The main loop is then pointing at the transmitting station.

For the use of trawlers and smaller vessels the Marconi Company have introduced a simplified form of direction-finding apparatus known as the Direction Indicator. It consists of a loop aerial sufficiently small to be rotated by hand. A pointer attached to the loop moves over a compass card. The position of this card can be adjusted before an observation is taken to allow for the direction in which the ship is steering. The rotating loop is permanently associated with a small open aerial so that the actual direction of a transmitting station is given without the ambiguity mentioned above.

It has been already mentioned that when a bearing has been taken by the direction-finding apparatus on a ship it is necessary for allowance to be made for the direction in which the ship is steering in order that the true bearing of the transmitting station from the ship can be obtained. Various devices have been invented to enable this correction to be performed more or less automatically. Sometimes a second scale is fitted to the direction-finding apparatus. This scale is rotatable, like the compass card on the direction indicator just mentioned, and before a bearing is taken it is turned so as to show true bearings, the information to enable this to be done being obtained from the navigating officer on the bridge.

If the ship is fitted with a gyro compass a repeater from the compass installation may be placed by the side of the direction finding apparatus, so that the wireless operator can see the course which the ship is steering and make the necessary allowance at the time when he is taking a bearing. A further development of this idea is to cause the movable scale mentioned above to be controlled by the gyro compass installation so that the readings of the direction-finding instrument are automatically the true bearings of the transmitting station concerned.

At a direction finding station, whether on land or on a ship, the presence of metallic masses, wires, &c., will cause the paths of the wireless waves reaching the station to be distorted, with consequent errors in the bearings. At a land station this difficulty is overcome by the station being calibrated. Simultaneous wireless and visual observations are made on a ship which sails round the direction-finding station and transmits signals at suitable intervals. In this way the difference between the true bearings observed visually and the wireless bearings are ascertained and a correction table can be drawn up.

In the case of a ship the metal hull causes the wireless waves to be distorted in such a way that all the bearings are shifted towards the fore and aft line. With the crossed loop system this has the effect of making it appear that the fore and aft loop is more effective as a receiver than the thwartships loop. It can be compensated for by reducing the size of the fore and aft loop, or by diminishing the strength of the signals received on this loop in other ways. In this way calibration errors mentioned above can be eliminated. In the case of a rotating loop installation, however, such an adjustment cannot be made. It has, however, been found that with nearly every ship the errors produced in the way described are associated

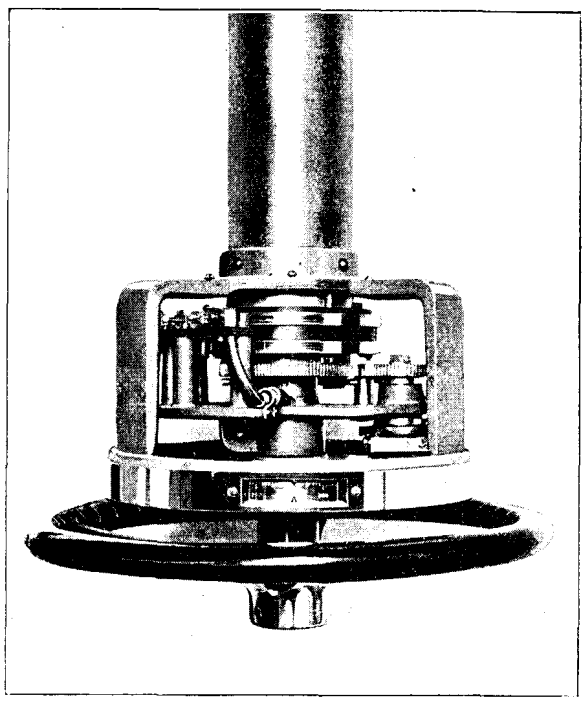


FIG. 2. HANDWHEEL AND SCALE OF RADIO COMMUNICATION COMPANY'S DIRECTIONAL RECEIVER, SHOWING GEARING FOR CORRECTING CALIBRATION ERROR.

with the true bearings according to a definite mathematical law. By suitable gearing, designed in accordance with this law, the scale from which the bearings are read can be caused to move in one direction or the other so as to compensate for the errors introduced by the distortion of the waves. The Radio Communication Company use an installation embodying this arrangement which was designed by Mr. Best, of that Company.

The crossed loop system has been adapted by the Radio Research Board for the purpose of observing the directions of the sources of atmospherics. Instead of receiving the signals by telephone a cathode ray oscillograph tube is used. Two pairs of metal plates are placed in the tube, these pairs being at right angles to one another. The stream of electrons from the filament of the tube is projected between the plates of each pair and then impinges on a fluorescent screen at the end of the tube, where it produces a bright spot of light. Each pair of plates is connected to a separate receiving apparatus

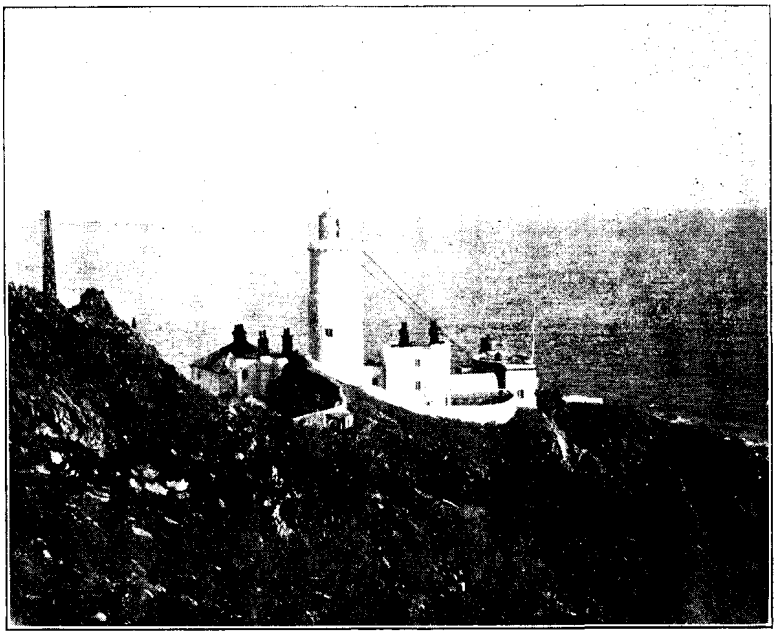


FIG. 3.—START POINT WIRELESS BEACON.

joined to a loop aerial, one of these loops being in the north-south direction and the other one in the east-west direction. When the oscillating potentials due to a signal are impressed on either pair of plates the electron stream is diverted, and the spot of light drawn out into a line. The two pairs of plates divert the stream in directions at right angles to one another, the deviation produced by either pair of plates being proportional to the strength of the signals received on the corresponding loop. The final result is that the direction of the line of light on the fluorescent screen indicates the direction of the transmitting station from which the signals are being received.

Up till comparatively recently ships fitted with direction-finding installations took bearings on the ordinary shore wireless stations, either as opportunity offered or by arranging for the shore station to transmit specially. The need of some more convenient arrangement was, however, early felt and to this end a number of wireless beacons have been erected round the coast. These transmit signals at regular intervals. At present such beacons are in operation round the British coasts at Kinnaird Head in Scotland, the *Spurn* light-vessel on the Humber, Cromer, Dungeness, Start Point near Plymouth, The Casquets in the Channel Islands, Round Island in the Scillies, Lundy Island, the South Bishop off Pembrokeshire, the *Coningbeg* light-vessel off the south-east of Ireland, the Skerries off Anglesey, the *Bar* light-vessel in Liverpool Bay and Sule Skerry off the north-east coast of Scotland. The emission of the signals from these beacon stations is controlled automatically. A clock is arranged to join up a motor-driven transmitting key for one minute every four minutes, and during this minute the series of signals proper to each beacon is automatically transmitted. During clear weather the clock is arranged only to set the transmitter in operation for three such periods during each alternate quarter of an hour. In foggy weather, however, by switching over by hand, the beacon is arranged to run continuously, sending out its signals for one minute every four minutes. With a large number of beacons working together it is essential, in order that the signals from one beacon shall not clash with those from another, that the transmissions should take place exactly at the proper times. A semi-automatic arrangement is, therefore, provided by which the control clocks at the beacon stations can be set to correct time on receipt of a wireless time signal.

It is very desirable that a ship should be able to find her distance from a light vessel as well as her bearing. Arrangements for enabling this to be done have been made on the *Spurn*, *Coningbeg* and *Bar* light-vessels. In addition to the wireless beacon these vessels are fitted with submarine signalling gear by which a sound signal is passed out into the sea and can be picked up by suitable receiving apparatus on ships. The velocity of wireless signals is so great that the time taken for them to reach the ship is negligible. The time taken by sound to travel one nautical mile in sea water is, however, about 1¼ second. Consequently the wireless signals are heard on the ship immediately they are transmitted, but the sound signals are not heard until after an interval of time which is longer the further away from the beacon the ship is situated. A sound signal and a wireless signal are simultaneously transmitted, and on the ship the interval which elapses between the receipt of the two signals is observed. Knowing how long it takes sound to travel one mile in sea water the distance of the beacon can thus be calculated.

In order, however, to avoid this calculation arrangements are made by which the distance can be indicated automatically. After the transmission of the simultaneous wireless and sound signal already mentioned a series of dots is sent by the wireless transmitter, these dots being spaced at 1¼ second intervals. If, therefore, the navigator counts the number of dots which he hears between the receipt of the wireless signal and the receipt of the simultaneously emitted sound signal he obtains the number of nautical miles by which he is distant from the beacon.

A further advance has been made by which the observation of the distance can be made with even less trouble. A clock is installed on the ship which is started immediately the wireless signal is heard and is stopped immediately the sound signal is heard. The dial is graduated in nautical miles, one division on the face of the clock corresponding to the space through which the hand moves in 1¼ seconds. In this way the distance of the beacon is automatically indicated.

The signal apparatus on the light vessels is operated by pneumatic keys similar to the mechanism of a pianola, which are controlled by a perforated leather belt.

The arrangements to enable ships to obtain their bearings described so far have all assumed the operation of a directional receiving apparatus, either on the shore or on the ship. Another solution of the problem is to provide on the shore a directional transmitting installation, the ship being fitted with an ordinary non-directional receiving apparatus and ascertaining her bearings from the transmitting installation by the nature of the signal which she picks up. The Marconi Company has installed at the South

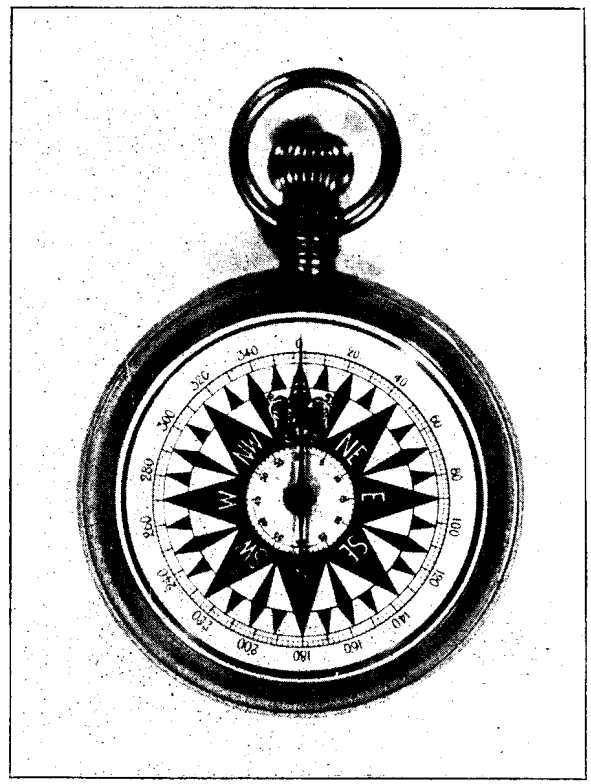


FIG. 4.—STOP-WATCH WITH COMPASS DIAL FOR USE WITH ROYAL AIR FORCE ROTATING LOOP BEACON.

Foreland station an experimental beacon of this nature in which a small beam aerial, radiating a wavelength of about six metres, is mounted on a turn-table which can be continuously rotated. The signals from this aerial are restricted to an arc of about 20 degrees. As the beacon rotates a distinguishing letter is sent out for each 64th part of a complete rotation, and by observing the letter which is heard most loudly as the beam sweeps across the ship the position of the ship relatively to the beacon can be ascertained.

Another directional transmitting system has been designed by the Royal Air Force and is at present being tested experimentally at Orfordness, near

Felixstowe. It consists of a large loop aerial which is continuously rotated while signals are being transmitted. With such an aerial the strength of the transmitted signals varies from the maximum in the plane of the loop to a minimum or zero on the line at right angles to the plane of the loop in exactly the same way as the strength of the received signals varies on a loop aerial. As the loop rotates, therefore, a beam of silence along the line at right angles to the plane of the loop is swept round. As this beam of silence passes through the north-south line a definite signal is transmitted, which is heard by all ships within range which are not on the north-south line. When the beam of silence reaches the ship the strength of signals falls and then immediately rises again. The beacon makes one complete rotation in one minute, so that it turns through six degrees in one second. By observing the interval in seconds between the "North" signal and the instant at which the signals reach their minimum strength and multiplying this number of seconds by six, the bearing of the ship from the beacon is obtained. For the benefit of ships which are on the north-south line when the "North" signal is given, another signal is transmitted when the beam of silence sweeps through the east-west line. The interval in seconds between this signal and the minimum multiplied by six gives the bearing of the ship from the beacon reckoned from east, and by adding 90° to this the bearing from north is obtained.

During the experimental trial of this beacon it has been shown that ships can obtain bearings from it of the same order of accuracy as can be obtained by the ordinary direction-finding apparatus. The observations are actually made by a stop watch which is started when the "North" or "East" signal is received and the reading of which is noted when the signals fall to minimum. In order to avoid the necessity of any calculation the ordinary watch dial may be replaced by a dial on which a compass card and scale of degrees are printed so that the bearing of the ship from the beacon can be read at once.

An ingenious development of the directional loop transmitter has been made for the purpose of guiding aeroplanes or ships along a definite line. Two transmitting loops are used with their planes making an angle of 70° with one another. Transmission is continuous, the letter A (· —)being sent from one loop and the letter N (— ·) from the other loop. The keys by which these signals are sent are interlocked so that the dots and dashes of one series of letters occupy exactly the spaces between the signals in the other series of letters. If now a receiving station be situated on or near to the line which bisects the angle between the transmitting loops the signals from each loop are heard at approximately equal strength, and consequently they blend together to form a continuous dash. If, however, the receiving station should deviate from this line the strength of the signals from one or the other loop will predominate and the corresponding letter will be heard. In this way the ship or aeroplane can keep herself on the correct line.

The Direction-Finding Service of the Post Office commenced in 1925. Since the inauguration of the service to the middle of the present year a total of 33,961 bearings has been given to ships from all the British direction-finding stations. Of these 21,142 have been given from Post Office stations. It will be remembered that up till October last the *Lizard* station was worked by the Admiralty. Only 14 complaints of inaccurate bearings have been received regarding those given by Post Office stations. Each complaint has been thoroughly investigated by comparing the information in the navigation log of the ship concerned with that available at the direction-finding station and as a result of these investigations only three complaints have been substantiated. As the direction-finding stations of the Post Office, except that at Lizard, are also engaged in dealing with ordinary ship and shore traffic such a satisfactory result is highly creditable to the staffs concerned.

The number of British ships on which direction-finding gear was fitted was 225 in the middle of 1925. The number has now risen to over 800, which is 22% of the total number of ships fitted with wireless, and is still increasing rapidly.

In addition to the greater facilities for obtaining bearings which wireless has conferred on the navigator there are also other applications of wireless technique which are useful to him.

The recent advances in the methods of sending pictures by wireless enables weather charts to be transmitted to a ship, and so gives the navigator detailed information as to the weather he is likely to experience.

Another application of wireless to navigational problems has been made on the Clyde. There two fog guns, one situated on an isolated sand-bank in the middle of the estuary, are controlled by wireless signals from the shore, being started up and stopped as the conditions of visibility demand.

Lastly, wireless technique in connexion with the thermionic valve has been utilised in automatic sounding apparatus. A sound signal sent down from the ship is reflected from the bottom and reaches the ship again. The time taken for the signal to travel down and back again is obviously a measure of the depth of the water. By means of a microphone and a valve amplifier the sound, when it returns to the ship, is caused to actuate an indicating device which records the interval of time which has elapsed since the sound was sent down. The indicator is graduated to show directly the depth of the water in fathoms.

PROGRESS OF THE TELEPHONE SYSTEM.

THE total number of telephone stations in the Post Office system at Oct. 31, 1929, was 1,822,990, representing an increase of 8,727 on the total at the end of the previous month.

The growth for the month of October is summarised below :—

	London.	*Provinces.*
Telephone Stations—		
Total at Oct. 31	651,832	1,171,158
Net increase for month	3,865	4,862
Residence Rate Subscribers—		
Total	158,614	249,490
Net increase	1,531	1,845
Call Office Stations (including Kiosks)—		
Total	5,746	23,358
Net increase	29	406
Kiosks—		
Total	1,515	5,784
Net increase	36	122
Rural Party Line Stations—		
Total	—	10,405
Net increase	—	—
Rural Railway Stations connected with Exchange System—		
Total	17	1,298
Net increase	—	68

The total number of inland trunk calls dealt with in August, 1929 (the latest statistics available) was 9,845,272, representing an increase of 627,783, or 6.81%, over the total for the corresponding month of the previous year.

The outgoing international calls in August, 1929, numbered 40,620 and incoming calls 46,007, representing increases of 7,648 (23.2%) and 8,806 (23.7%) respectively over August, 1928.

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

LONDON—Hendon (automatic), Ilford (automatic).

PROVINCES—Cleethorpes, Egham, Farnborough (Hants), Davidsons Mains (automatic); Auchengray, Bainbridge, Banknock, Fenny Compton, Fundenhall, Kinlochleven, Kinnersley, Laxton, Longville, Lothersdale, Toward, Tysoe (all rural automatic),

and among the more important exchanges extended were :—

LONDON—Barnet, Hounslow, New Cross, Wanstead, Wimbledon.

PROVINCES—Burton-on-Trent, Beaconsfield, Chelmsford, Chichester, Derby, Eastbourne, Kettering, Leamington Spa, Selly Oak, Stratford-on-Avon, Taunton.

76 new overhead trunk circuits were completed, and 83 additional circuits were provided by means of spare wires in underground cables.

LIVERPOOL TELEPHONE SERVICE NOTES.

WE regret to record the death of Mr. J. M. Mayes (Daddy), late Assistant Traffic Superintendent, Liverpool, at his residence, Blackpool, on Nov. 23 last. His retirement, which took place in September, 1928, was due to ill-health, borne with fortitude over a long period. Daddy had much in his character that was lovable, and it was hoped that, relieved of the responsibilities of official duty, a few years of quiet leisure would be his; but such was not to be. To his widow we extend our sincerest sympathy.

Staff changes have been frequent of late, and we take this opportunity to welcome Mr. Aickin from Canterbury, and Messrs. McBride and Henthorne from the Liverpool Engineers (External). C. H.

REVIEWS.

"Elements of Radio Communication." By John H. Morecroft. Published by Chapman & Hall, Ltd., London. 269 pages. Price 15s. net.

This book has been written as an introduction to the well-known treatise on wireless telegraphy by the same author entitled "Principles of Radio Communication." It is intended for that type of reader who is really interested in the subject, and who wishes to have something better than the popular books and periodicals, but who has neither the time nor the necessary preliminary training to work through a book such as the "Principles."

As the greater proportion of students of wireless are now-a-days interested in the subject from the point of view of the reception of broadcast programmes, special attention has been paid to that aspect of the matter.

In the first chapter an account is given of the fundamental general laws of the electric circuit, and the second chapter is devoted to those laws which are specially met with in connexion with high-frequency work.

The next chapter gives a general view of communication by wireless.

Then follow three chapters dealing respectively with valves, radio telegraphy, and radio telephony. The final chapter is devoted to a full description of the various circuit arrangements used for receiving sets.

The book is well got up, the paper and printing are good, and the diagrams, with which it is very fully illustrated, are clearly drawn and well reproduced.

At the end of the book a set of problems for each chapter is given. These problems should prove very useful to a student working through the book without the aid of a teacher, but their usefulness for such a student would be greatly increased if the answers to the numerical problems had been given.

We can recommend the book to any reader who wishes to obtain a sound elementary knowledge of the fundamentals of radio-telegraphy and radio-telephony

"Loaded Submarine Telephone and Telegraph Cables." Published by Siemens Brothers & Co., Ltd., Woolwich. 62 pp.

This volume gives an account of the "loaded" submarine telephone and telegraph cables manufactured, and in most cases also laid, by Siemens Brothers & Co., Ltd., of Woolwich, one of the pioneers in this branch of the electrical industry.

The opening chapter gives a short history of the progress and development of cable "loading," while successive chapters contain illustrated descriptions, supplemented by copious tabular matter, of coil-loaded and continuously-loaded telephone cables insulated with gutta-percha and paper respectively, and continuously-loaded gutta-percha insulated telegraph cables.

A useful mathematical treatise on telephonic and telegraphic transmission with conversion tables is given in an Appendix.

The book is admirably got up and well illustrated with plates, showing the various kinds of cable, and with excellent maps. It should prove a very useful work of reference.

PARLIAMENTARY QUESTIONS.

TELEPHONE DEVELOPMENTS.

ON NOV. 12 Mr. D. G. Somerville asked the Postmaster-General if he could state at what date he expected that all exchanges in the London area would be converted to the dial system; what was the estimated aggregate cost and duration of the original conversion scheme; and what would be the additional cost as a result of its acceleration.

Mr. Lees-Smith said that, normally, the conversion of a manual to an automatic exchange did not take place until its capacity was exhausted or until the economic life of the plant had expired. The date of complete conversion of the London area to automatic working depended, therefore, to some extent on the rate of growth of the demand for telephones. About 130 exchanges were expected to be working on an automatic basis by 1940, when about 20 exchanges would remain for conversion. The programme was necessarily tentative, and while progress up to the present had been rather more rapid than was anticipated, there had been no departure from the principles on which it was regulated. Any deliberate acceleration beyond the needs of the service would involve heavy wastage of capital. On the basis of present prices the expenditure on buildings and equipment for automatic exchanges up to 1940 would be of the order of £25,000,000, of which (for the reasons stated) a large part represented ordinary replacement and development liabilities which would be necessary under manual conditions.

Mr. Lees-Smith informed Mr. Ross that schemes were in hand for improving telephonic communication between Belfast and Glasgow, and the Northern Ireland portion of the work would begin next year. The total cost was estimated at £233,600, of which the Northern Ireland portion amounted to about £40,000, divided nearly evenly between duct work and cabling.

Mr. Bowen asked whether the telephone construction works announced by the Lord Privy Seal were additional to the normal programme for the year.

Mr. Lees Smith said that they were an acceleration. The authorised construction programme for the current year amounted to £10,500,000. Works estimated to cost £750,000 in addition to this authorised programme had now been sanctioned and would be put in hand forthwith.

NORTH MIDLAND DISTRICT: NOTTINGHAM.

THE first of a series of winter social events took place at Castle Gate Lecture Hall, Nottingham, on Nov. 4, when a lecture on "Old Nottingham" was given by Mr. J. Holland Walker, F.S.A.

Mr. Holland Walker, in the course of a most interesting lecture, referred to the mediaeval days when Nottingham was for a time the Windsor, the Westminster, and the Aldershot of England centred in old Nottingham Castle.

The lecture, which was splendidly illustrated, was much enjoyed and hearty thanks were accorded to the lecturer and to Mr. D. J. Barnes, District Manager, who kindly occupied the chair.

A.G.D. SPORTS ASSOCIATION DANCES.

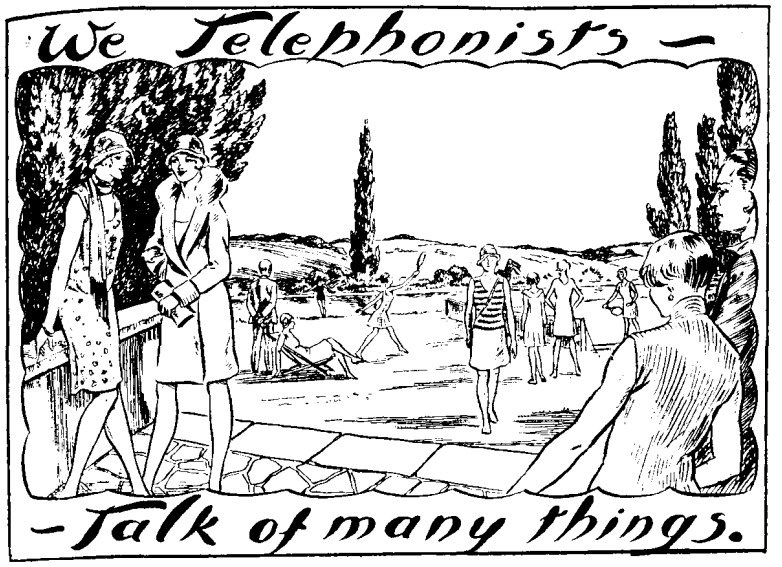
THE twentieth of the series of dances run under the auspices of this association was held at Lever House on Dec. 2 last and was both enjoyable and successful, as these dances usually are.

London readers should make a note of the date of the next dance, which is fixed for Wednesday, Feb. 5, at Lever House. Tickets, 2*s.* 6*d.* each, may be obtained of officers of the Association.

"DAILY MAIL" SCHOOLBOYS' EXHIBITION.

THIS Exhibition, of wonderful interest to every boy, was opened by the Hon. Esmond Harmsworth on Tuesday, Dec. 31, at 10.30 a.m. and will remain open each day from 10 a.m. to 9 p.m. until Jan. 8. Amongst the principal features will be Seaplane and Motor Speed Craft, Railway Expresses, and 'Secrets of the Telephone.'

Boys will have an opportunity of getting "behind the scenes" of the telephone system and will be able to find out just how the automatic works and how and why the bell rings. There will also be long-distance calls from the Exhibition to America, Germany, Scandinavia, and elsewhere.



A New Year Bleating.

BEST wishes to you all for the New Year. I hope you've all come safely through Christmas without any gastronomic catastrophe, and that the jolly old mistletoe didn't blush itself into a holly berry, and that the hope that springs eternal in the suspended stocking was realised to the full, and that the pudding contained nothing less edible than bells and rings and threepenny-pieces. Most of all I hope you'll keep on hoping throughout the year, because if you stop hoping or lose the hope you had, you might just as well have stopped short on Dec. 31 last and never bothered to greet the happy morn. If it be true to say that while there's life there's hope, it is, I think, even truer to say that while there's hope there's life. Perhaps you feel you can't believe me—if so ask the robin, he told me all this. I met him on a grey, cold and cheerless day. The wet mist hung low and still, the grass was dull and spiritless, the trees were bare and dripped sadly, the sky scowled and wept fitfully, the face of Nature was mournful and it seemed as though she had ceased to care! I felt that life had stopped—and then the robin spoke. He was perched upon a bare bough just above my head. The glow of his breast was the only colour in life, the soft trill of his note was the only music in the world, and all animation was centred in his quick tricks and turns. I stopped short and raised my head, and as he fluted again I said, "Hi, why on earth are you singing!" He bent a bright thoughtful glance upon me and after a pause he said, "Because the earth is so heavenly." I told him plainly what I thought of things in general but he only laughed and said, "This is not death, this is only sleep and I sing because life that is now dormant will shortly burst forth gloriously." As he called softly there came an answer, faint with distance, which said "Robin my man, who's your friend?" "Just a human who's blue," Robin replied. "Oh, the old fool" said his mate, "He's missed his morning worm. Come away my Robin." And he went. The breeze stirred softly, the mist swirled, the rain-drops pattered suddenly, the grass waved gently, a gleam from a watery sun lighted the earth momentarily with a touch of gold, and the sound of an organ welled out from the nearby church. I knew that the robin was right. Wherefore I say again, best wishes for the New Year and I hope that my introduction of it has not produced a hopeless yawn.

PERCY FLAGE.

Regent: An Unusual Present.

It is not every Telephonist who, on leaving the Service, is presented with a picture of which she, herself, is the subject. Such, however, was the experience of Miss Henderson who has recently departed from our midst to be married. Among the numerous and beautiful presents displayed, one, a large picture, caught the eye immediately. A study in black and white, it represents a switchroom. In the centre of the room stands a Supervisor, and facing her, with her back to the "Audience," is a Telephonist. Issuing from the lips of the Supervisor is the legend "What! Another casual, Miss Henderson!!"

Our artist, Miss Nicholls, has perpetrated a dreadful female for the Supervisor. Tall, thin, angular, her hair piled high upon her head as if in protest against the prevailing fashion, she frowns upon the offender standing meekly before her. Her face is drawn up in a most disapproving manner and seems to be held in place by her high collar. The papers in her hand might well be P.M.18s for excessive casuals to judge by the satisfaction with which she flourishes them. Meanwhile, the culprit stands with head slightly bent, one ear plait well below the other, disarranged I suppose by her instrument. The Supervisor's eyebrows would mount a trifle higher could she but see the back view of this audacious suppliant for, dangling from the Telephonist's finger is a small packet, about the size of a sandwich . . .

With horror depicted on their countenances the other Telephonists have turned from the switchboard to regard this modern Oliver Twist arisen among them.

Our artist could not even leave it at that! No; rounded off in one corner of the picture is a lightning impression of a train just moving out of the station, of a girl fleeing down the platform after it, and of a small packet about the size of a sandwich dangling from her fingers!

All our good wishes go with Miss Henderson, and we are sure that this picture will remind her of many happy hours spent at Regent, despite the dread Supervisor portrayed therein.

W. M. G.

Contrition.

Ah, woe is me! Alackaday!
That I should seemingly betray
A hint of boredom with the Boy
Who makes our Ladies' Page a joy!

Alas! That such a crime could be!
What treason to impute to me!
(I had no motive at the time,
But merely put it in to rhyme!)

A thousand pardons, dear P. F.!
You know we all give *you* the "pref"—
Your airy persiflage is such,
We simply *cannot* have too much!

What I intended to convey,
Was, my enjoyment of the way
Our "Bonnie Jean" doth nip your "dud"
But naive, disclosures in the bud!

My full confession here inditing,
I've let you have it all *in writing*—
But if my plea for pardon's vain,
Well—I shall never smile again!

C. A. S.

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.1.

LONDON TELEPHONE SERVICE NOTES.

Contract Branch Notes. The business done by the Contract Branch during the month of November resulted in a net gain of 5,210 stations as compared with 6,064 last year. Trade conditions were very dull during the month and new orders very difficult to obtain, especially in the city area.

* * * *

The tone of the following extract from a letter is familiar to most telephone people who come into contact with the public.

"With colossal difficulty I rang up the schools to get a last word of the children and was answered by congenital idiots who said they thought the kids were all right. I was so exhausted by wrong numbers and saying my name wasn't Campbell that I just left it at that."

This letter did not refer to the London service, but to Canada, and it is interesting to know that the wrong number trouble does cause flurried tempers across the Atlantic.

* * * *

An interesting function took place at the North West District Contract Office on Dec. 6, when Mr. Weaire was the recipient of a clock, cutlery, and cheque, as a mark of the esteem of his colleagues on the occasion of his retirement.

Mr. Weaire joined the Telephone Service as a Contract Officer under Mr. Walker on Nov. 25, 1901, and had been at the North-West District Office as a First Class Contract Officer since Mar. 26, 1923.

Mr. Weaire is a prominent bowler, being the hon. sec. of the Alexandra Palace Bowling Club, and he was one of the team which won the "Bunbury Cup" for the L.T.S. last season.

The best wishes of the staff will go with Mr. Weaire on his retirement.

* * * *

Football L.T.S. An unusual amount of interest has been manifested in the recent performances of the team, and the best win of the season of 7 goals to nil was recorded in the match played against the Board of Education on Nov. 30. Watching this game one was impressed by the forceful work of the forwards and the sound display of the full backs.

The goalkeeper had a quiet day; as for the half-backs, they seemed to get the ball somehow but displayed little constructive football, and one looked and hoped for the sharp ground pass to the forwards which makes such a wonderful difference to the display of a team, nevertheless, they certainly made a hack of the opposing forwards' efforts to score goals, and in that respect they may be regarded as being completely successful.

The full backs provided a complete contrast in styles; Thomson with his neat touches and imperturbable manner, and Webdale full of dash and thrust, and a real terror to timid forwards.

The forwards were a virile line with Gordon and Buckley outstanding. Gordon has lost none of his craftiness and his goals were cleverly obtained. Buckley at inside left is a player of distinct promise, and the power behind some of his drives is astonishing for a player of his size. Casey, introduced for the first time at outside left, was a distinct success, and one shot of his, in the second half, which hit the far post, was as meritorious as some of the more successful scoring efforts. This team will continue to do well if they can be kept together, but one would like to see them more fully extended before finally passing judgment.

The match played on Dec. 7 against Hicomind resulted in a win by 2 goals to nothing.

* * * *

Dance. The dance organised by the L.T.S. Football Club Social Committee and held in the Luncheon Club, Cornwall House, on Thursday, Dec. 12, 1929, developed into a very enjoyable evening for the 130 people present. It was pleasing to note the generous support forthcoming from our colleagues in the various Exchanges and in the London Engineering District, and as a consequence the Club funds should benefit substantially.

Many enquiries have already been made as to when the next dance will take place, and it is hoped that it will be possible to fix on a date early in January next.

* * * *

L.T.S. Sports Association: Tennis Section.—The Annual General Meeting of the Tennis Section will be held at Cornwall House, on Monday, Feb. 17, at 6 p.m.

* * * *

Post Office Ambulance Centre: Annual Competitions. The annual competitions for the London Postal Challenge Shield and for the Women's Trophy were held on Wednesday, Nov. 20, at King George Hall, Y.M.C.A., Tottenham Court Road.

There was a large and encouraging audience, which appeared to appreciate the difficulties of the "First Aiders," especially when those too enthusiastic floundered through the hole in the imaginary ice; but which also applauded well when the materials which were at hand were correctly used—for it must be remembered that a frozen pond on a snowy day does not seem, at first sight, to offer much assistance in rescuing a drowning man with arterial bleeding, a lad with a fractured leg and another with a broken wrist.

The "calamity" was, however, a test of leadership, and the Controller's Office, L.T.S. were fortunate in having Mr. R. V. Poor as leader, for his team was the winning one, scoring 230 points out of 300.

The highest score of the Ladies Team was 223, gained by the L.T.S. womens' team under the leadership of Miss B. L. Webb.

The London Telephone Service was thus doubly honoured by winning both shields.

In his address, Mr. Viant, M.P., the Assistant P.M.G., spoke of the sense of duty and good citizenship which "First Aiders" have and, having in mind the increasing number of daily accidents, visualised the day when those who die from accidents would out-number those who die naturally in their beds.

Classes are being arranged in the Women's Section as under: Clerkenwell Exchange: First Aid, commencing Jan. 21, 1930, lectures 6 p.m.; Lecturer Dr. Good. Central Telegraph Office: Home Nursing, commencing Jan. 16, 1930, practices 4.30 p.m., lectures 5 p.m.; Lecturer Dr. Hellier. Money Order Department: First Aid, commencing Jan. 13, 1930, lectures 5 p.m.; Lecturer Dr. Barnes.

Further information can be obtained from the following Branch Secretaries, Post Office Ambulance Centre: Miss B. L. Webb, Trunk Exchange, G.P.O. South, E.C.4; Miss A. L. Yetton, "K" Division, C.T.O., E.C.1; or from the General Secretary, Women's Section, Miss E. K. M. Meeser, Controller's Office, L.T.S., Cornwall House, S.E.1.

* * * *

The London Telephonists' Society. "The Telephonist and the Press" was the title of a paper read by Mr. W. H. Gunston at the meeting of the London Telephonists' Society, held on Dec. 6, 1929. Despite the strong weather prevailing, there was a satisfactory attendance, including visitors from the Secretary's Office.

Although the letters published from time to time in the contemporary press state in no uncertain terms the opinion held by members of the public, it was quite evident that an insatiable curiosity gripped the members of this Society with regard to the light shed by the newspapers upon the telephonists of earlier days.

Mr. Gunston materialised, no longer the remote being, mysteriously directing the *Telegraph and Telephone Journal* gave a paper amply designed to satisfy the most persistent enquirer, and drew, out of the apparently inexhaustible storehouse of his knowledge, a fund of anecdote and commentary.

A debate followed, the speakers all expressing their appreciation of Mr. Gunston's paper, and, in conclusion, a general vote of thanks was warmly accorded.

We are hopeful that the paper will be published in the *Journal*, and we anticipate it will there give as much pleasure as it gave to those who had the good fortune to be present at the meeting.

* * * *

Telephone Broadcast. The B.B.C. surprise item of Oct. 18, 1929, was in part relayed from Gerrard Exchange. Several rehearsals were held and those who actually took part quite enjoyed the novelty of broadcasting for the first time.

The Regent Dance which was in progress on the floor below added to the local interest so far as the B.B.C. staff was concerned, it also provided a pleasant entertainment for the Gerrard staff who were awaiting their turn at the microphone. An excellent loud speaker was kindly lent by the B.B.C. for the occasion and boxes of chocolates were presented to the "Gerrard broadcasting team" after the performance.

On the evening of Dec. 5 some members of the Gerrard staff were invited to visit the B.B.C. studio in order to see how everything was done at headquarters. The programme, which included the "Houston Sisters," was greatly enjoyed and appreciated by the party.

* * * *

Film Production at an Exchange: Gerrard, Dec. 5. On arriving at the Exchange to-day we were dazzled by a row of brilliant lamps which were focussed on the switchboard for the purpose of a moving picture. It is understood that the film is for educational purposes, showing how the manual exchange is worked by human agency and shortly to be entirely replaced by automatic plant. The operating was, of course, carried on as usual for the purpose of this picture.

* * * *

Obituary. By the death of Mr. Charles Diamond, which took place on Nov. 8 last, the London Telephone Service loses another link with the late National Telephone Company. Mr. Diamond entered the service of the Company in 1907, having previously served for 27 years in H.M. Army, and was a familiar figure at the public enquiry counter for a period of over 20 years. His unfailing courtesy to the public had often received commendation in high quarters, and the unruffled serenity of his manner in his dealings with the staff, under, at times, trying circumstances, made him a most likeable colleague. His death on the eve of his retirement has come as a sad blow to all who knew him. He leaves a widow and one son to mourn him in England, and two other sons in South America holding responsible positions in the San Paulo Telephone Company.

LEEDS DISTRICT NOTES.

IT is not often that a modern telephone exchange is found housed in a building of historical interest. The photograph inset shows the Otley

OTLEY OLD VICARAGE, BUILT 1673 (WITH CHURCHYARD IN FOREGROUND). NOW A TELEPHONE EXCHANGE.

(Yorks) Telephone Exchange. The building originally was the Otley Vicarage and was built in 1673. A tablet in Latin over the back door sets forth this interesting fact.

An interesting communication has been received from Mr. Hancock, the late Postmaster-Surveyor, who celebrated his retirement in April last by going round the world. His journey has now brought him to California, after visiting *South Africa, Australia and New Zealand.*

Leeds Telegraphs.—Teleprinter Installations.—The installation of teleprinters proceeds apace at Leeds. The routes now equipped include London, Manchester, Newcastle, York, Lincoln, Preston, Hull Fish Market and Halifax.

Other circuits to be converted in the near future include Edinburgh, Sheffield, Grimsby, Bradford, Cardiff, Birmingham and Stock Exchange.

The London-Leeds Baudot circuit is the latest to give place to the teleprinter. The TS-LS 2 loop, which provided the conductor for the Baudot circuit, has been taken to provide one teleprinter circuit, while TS-LS 8 loop provides a second. The Stock Exchange TS-LS 3 loop has been taken to make up the third, whilst a fourth circuit until 4 p.m. daily is provided by means of an aerial line (TS-LS 9).

Identical conditions obtain on the three loop circuits, and after some preliminary difficulties in adjusting the local conditions these circuits appear to be stabilised. The margin of stability, however, is very fine, and occasionally difficulties have arisen with senders and keyboards on the long loop circuits which are not usually apparent on the shorter teleprinter circuits or on the London aerial circuit.

It is hoped that the success, which we have experienced with the teleprinters previously installed, will be continued over the London route.

By a strange and unwelcome coincidence Mr. J. O. Walker, the Exchange Superintendent, Bradford, and Mr. J. R. Sutcliffe, the Exchange Superintendent, Leeds, had to be operated on for appendicitis on the same night. They are both progressing favourably, but now hold the opinion that Christmas as a festive season is considerably over-rated. As Exchange Superintendents they have much in common in their official duties, but to develop appendicitis simultaneously appears to be carrying unanimity of action too far. Rumour has it that one of their colleagues who had been much in contact with them was observed to be scanning the catalogue of infectious diseases on his copy of form P. 777.

For Engineering and Traffic Officers the recurring gales made the nightly weather report the principal item in the B.B.C.'s programmes during December. The effects of the gales, though bad enough, were nothing like so severe in West Yorks as in the southern counties. A notable casualty was, however, the newly opened rural automatic exchange at Lothersdale, which was cut off telephonically from the outside world for a couple of days.

A new use for supervising officers is apparently contemplated by one of the night operating staff who, when asked to say why disciplinary action should not be taken against him in connexion with an operating misdemeanour, wrote in reply: "I do not see why action should be taken against me when there is an officer-in-charge for the purpose."

Television is not yet an established accessory to the telephone system, but an effect as powerful as that of television was obtained recently by the Managing Director of an old-established brewery in Yorkshire. Their new P.B.X., with extensions to all departments, had just commenced to function when he called up the storehouse. The storekeeper who answered the call was an employee of long and faithful service, and, recognising the voice of authority, he immediately took off his hat and said, "Good morning, Sir."

The telephonists of the Bradford Exchange held a very successful party at the Lidget Green Conservative Club on Friday, Dec. 6. Invitations were extended to all those who had left the service, and it was very gratifying to find that so many old members responded. Fancy dress was optional, and there were many pretty and original costumes. No prizes were offered for identifying "Mr. and Mrs. Buggins and Family," whose arrival caused quite a sensation, especially as it was found that "Grandma" had been mislaid on the way.

Time flew very quickly after supper was served, and it was soon 11 o'clock and time to depart. Everyone enjoyed themselves so much that we are hoping the "powers that be" will arrange to "repeat" the affair before long.

An Englishman has the reputation of being shy and reserved. We think it must be so. So many good folk who really should know better when answering their telephone calls manage successfully to conceal their identity under such uninspiring names as "Hullo" and "Yes."

An echo of the Christmas rush:—

Enquiry Office, Leeds G.P.O.—

"Is that the Post Office?"
"Yes, Sir."
"How long does it take a letter to get to South Africa?"
"What part of South Africa, Sir?"
"Winnipeg!"

Promotion.—It is pleasing to record that Mr. J. T. Hutchison, Contract Officer, Class 1, has been promoted to Contract Manager, 2nd Class, Belfast.

Mr. Hutchison served his country in the great war. He was gazetted 2nd Lt., 5th Batt. Highland Light Infantry, January, 1916, seconded to the 2nd Batt. H.L.I. in France, September, 1916, and then placed on the Staff of the First Army, and promoted to Lieut. He was later promoted to Captain and served until January, 1921.

Mr. Hutchison will proceed to Belfast early in the New Year.

GLASGOW TELEPHONE NOTES.

"There can be no perfection anywhere, or in anything, where ladies are not."—(*Lecer.*)

Our "*picture-in-little*" this month is of Miss Louisa Mortimer, Supervisor of the Douglas Exchange.

Miss Mortimer has had a long and varied service on telephone work. Commencing in July, 1893, as an operator, she has passed through all the various stages up to her present rank, which she attained in September, 1927. Her experience of operating methods includes magneto, call wire, call key lamp signalling and central battery working.

MISS L. MORTIMER.

Miss Mortimer belongs to that class whose activities are not limited to their main profession, and, in consequence, her services in many phases of life are frequently requisitioned, as they are cheerfully given. During the war she was an active member of the Red Cross Society and engaged in a good deal of hospital work. Her activities include mission and reclamation work among the poor children and the outcast, both in and out of prison. Miss Mortimer's principal recreation is the pianoforte, and even this she uses as a means of bringing some light and cheer into the lives of the sick and unfortunate in the infirmaries. We wonder how, in addition, she finds time to be a Committee member of the Civil Service Sports Council, and to have

secured certificates for, among other subjects, examinations in physiology, anatomy, applied anatomy and sick nursing.

It is generally the busiest person who can find the time, and who is also willing to go "the second mile."

"*My Day's Work.*"—A very successful broadcast from all Scottish stations, entitled "My Day's Work," was made by Miss M. M. Ruxton, a Central Exchange telephonist, on Friday, Nov. 15. The broadcast lasted for about 20 minutes and gave a fairly comprehensive description of a telephone exchange and a telephone operator's daily work.

On the afternoon that Miss Ruxton was broadcasting Mr. Coombs was holding a telephone demonstration at Thornwood School, Partick, and the broadcast was heard by the scholars from a portable loudspeaker. The various parts of the switchboard were pointed out on the demonstration set as they were mentioned in the broadcast—surely a unique arrangement in the history of the telephone.

The broadcasting fee given by the B.B.C. has been handed by Miss Ruxton to charities.

The Western Exchange staff held their popular and annual Whist Drive in Dowanhill House on Nov. 14. The large company of 126 was representative of all sections of the Glasgow service, and included Mr. A. E. Coombs, District Manager, and Mrs. Coombs; Mr. E. J. Johnson, Traffic Supt., and Mrs. Johnson; Mr. J. Law, Chief Clerk, and Mrs. Law; and Mr. F. Lucas, Contract Manager. Thanks to Miss Isaacs and her band of willing helpers.

It is whispered that the Dee Emm revoked, that the See See played hearts for trumps instead of diamonds, that the See Emm secured his tricks by exercising upon his opponents his well-known powers of non-terminal facilities of speech, and that the Tee Ess broke all records for length of stay at one table.

On Thursday, Nov. 21, the Central Exchange staff entertained the patients of Bellahouston Hospital to tea and a whist drive. The party consisted of about 120, and a thoroughly enjoyable evening was spent.

Mr. Gallaghan, on behalf of the men, expressed appreciation for the entertainment and said the patients would eagerly await "Central's" next visit.

On Resolutions.

"I am resolved to take up some rules and obligations upon myself to walk by . . ." "To my office, perfecting my vows for the next year, which I have now done and sworn to observe upon the respective penalties thereto annexed; but I fear I have a little too severely bound myself in some things. However, I know the worst, and shall perform or pay my forfeits punctually. . . ." "Thence to the pewterers, to buy a poore's box to put my forfeits in, upon breach of my vowe. . . ." "This day breaking of my vowe against my will, I am much troubled for it, but I hope to be forgiven. . . ." "My Lord Rutherford would needs carry me and another to a play. And here I must confess breach of a vowe in appearance, but I not desiring it, but against my will, and my oathe being to go neither at my own charge nor at another's, as I had done by becoming liable to give them another; but I neither know which of them paid for me, nor, if I did, am I obliged ever to return the like, or did it by desire or any willingness. So with a safe conscience, I do think that my oathe is not broke. . . ." "Wine was offered and they drank, I only drinking some hypocras which do not break my vow, it being, to the best of my present judgment, only a mixed compound drink, and not any wine. I do hope and do think I am not mistaken. . . ." (Sir Walter Scott said this was a piece of bacchanalian casuistry, matched only by Fielding's chaplain, who preferred punch to wine because the former was nowhere spoken against in Scripture.) "I end the month with some sorrow that I have not exactly performed all my vowes, though my doing is not my fault, and I hope to be forgiven for not forfeiting the £10 I promised. . . ." "This day my vows have expired, and so I do resolve to take a liberty to-day, and then to fall to them again."—(Pepys.)

Why make good resolutions at the New Year more than at any other time?

For the reason that it is a good sound habit to put oneself through a little examination now and then like merchants who take stock of their goods at certain periods. Surely we must stop at intervals to see how our life-pattern shapes, to mark where we can improve it, and to start again with renewed courage and hope. As an occasion for considering quietly whether we have enlarged our minds, strengthened our characters, raised our ideals and striven after them, the New Year is more suitable than any other. . . . Do not be discouraged by the thought that it is useless to make good resolutions because you are not likely to keep them. The lives of the best men are a continual record of failure; but they were the best men because they continually renewed their resolves. If you read the prayers which Dr. Johnson composed for the successive New Year's days of his long life, you will find that in nearly all of them he registers the same failures and the same resolutions. He never conquered his failures entirely, but he made himself the foremost man of letters of his time. . . . In the hands of every one of us lies the possibility of doing something to make the lives of others more contented, brighter, less of a dull grind. Let us resolve, then, for 1930, even if we fail, to be cheerful at home; to be kindly, thoughtful for others; considerate of those who work with us and for us and over us; courteous and pleasant in manners; just and temperate in rebuke when things go wrong; radiating cheerfulness and humour."—(A. B. Mann.)

"The true value of resolving, the indispensableness of it, is visible in its subjective efficaciousness. If resolutions made for an objective reward, such as the increase of our worldly prosperity, be acts of doubtful efficacy, it cannot be questioned that there is saving virtue in the expression of an aspiration towards the higher and nobler development of one's nature and in the humble contemplation of one's own littleness in the unthinkably vast scheme of the universe. In such resolving as this, and in the reverential attitude of mind which such contemplation induces, there is assured gain. We should never abandon the habit of resolving and of the contemplative attitude of mind. There are many ways of resolving which are futile, even to absurdity; but there is one way which makes it a gradual superimposing on our spirits of something higher and sweeter than was there before, which is not to be neglected or abandoned without the paying of a very heavy price. We shall not only stand still on the ladder of spiritual progress, but we shall also fall back from such steps as we have already made if we abandon the act and put away from us the attitude of this kind of resolving."—(Darley.)

"A generous vow is never made in vain; a resolution (for a particular gain) may fail, but the individual is always, I believe, rewarded by some gracious visitation."—(R. L. S.)

"I vowed to be of use on the earth, and to rise above my own wants and interests."—(Doyle.)

"Just resolve without desiring anything just resolve—that's all."—(Gorky.)

C.T.O. NOTES.

Promotions.—Messrs. W. A. Lock, Superintendent Lower Grade to Superintendent Higher Grade; W. G. Godden, Assistant Superintendent to Superintendent Lower Grade; C. Buxton, F. W. Dare, Overseers to Assistant Superintendents; T. P. Willmot, R. Hain, S. J. Oliver, V. T. Jackson, Telegraphists to Overseers.

Retirements.—Messrs. A. J. Cherry, Superintendent Lower Grade, L. C. M. Rowan, Assistant Superintendent, E. Stobbart, Overseer (Cable Room), W. Beavey, A. Foster, E. J. Izard and A. T. Jay (Cable Room), Telegraphists.

Ambrose Applejohn's Adventure.—This play, presented by the Dramatic Section of the C.O.D.O.C. at King George Hall on Dec. 3 and 4, 1929, was highly successful from every point of view. According to the author, it is "An Arabian Nights Entertainment." It is colourful, full of lavish wit and complications, but on the whole it is difficult to look upon the play as anything but a farce.

In the name part Percy Loeber gave an outstanding performance. His acting as the "Pirate Captain" was polished in every degree. As Anna Valeska, Miss Maud Cadman gave a very creditable portrayal of an extremely difficult part. Bert Eagland, as Ivan Borolsky, was at first a trifle stiff, but improved as the play progressed. The Cabin Boy, or, rather, the quiet admirer of Ambrose, as played by Miss Ivy Turtle, was a delightful person—one could not understand the "blindness" in this respect of Ambrose Applejohn. The remainder of the cast were excellent, and although it is invidious to make comparisons, one cannot refrain from remarking that as Ambrose Applejohn Mr. Loeber excelled.

The next production of the Dramatic Section takes place at the Cripplegate Institute on Mar. 18 and 19, 1930, and the play chosen is "The Last of Mrs. Cheyney," by Frederick Lonsdale.

Our patrons should perhaps be reminded that in future all applications for tickets should be made to Mr. J. Henry, Pay Office, C.T.O., E.C.1.

Sport.—The cross-country season has opened well, 20 runners having taken part in the training spins weekly from "Jack Straw's Castle," Hampstead. The C.T.O. team obtained 4th place in the Civil Service Cross-Country Championship, which was run at Surbiton on Dec. 14.

Chess.—The first team have so far done very well, having beaten the Board of Trade II; N.A.L.G.O., L.N.E.R.; Stationery Office and Metropolitan in the Civil Service League and London League C.

Bowls.—At the Annual General Meeting of the Central Telegraph Office Bowling Club, J. Stuart Jones, Esq., M.B.E., in the chair, it was reported that the club had won seven out of eight matches played during the 1929 season. The only loss was to the Admiralty Club by two shots, 60-58, but this was sufficient to put the club out of the running for the "Bunbury" Cup, which was won by the Admiralty Club. The "Bunbury" Cup is competed for by clubs affiliated to the Civil Service B.A.

The officers for the 1930 season were elected as follows:—

President—Mr. J. Stuart Jones, M.B.E. *Vice-Presidents*—Messrs. A. W. Edwards, O.B.E., D. M. Ford, A. Faull, Commander E. L. C. Grattan, D.S.O., R.N., E. Cooper and G. T. Archibald. *Honorary Secretary*—Mr. T. G. Donno. *Honorary Treasurer*—Mr. G. J. Defoe. *Honorary Auditor*—Mr. A. Faull. *Captain*—Mr. T. H. Wright. *Vice-Captain*—Mr. W. A. Lock. *Committee*—Messrs. C. A. Butt, H. A. Songhurst, J. Wesley and C. T. Drywood.

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CONTENTS.

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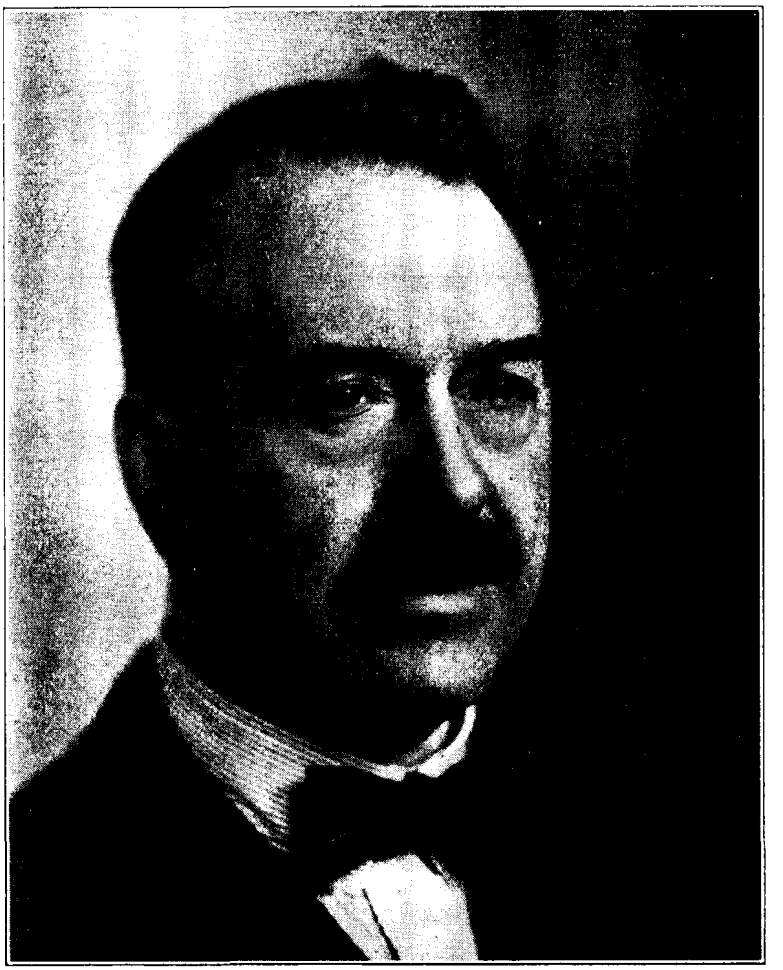
TELEGRAPH AND TELEPHONE MEN AND WOMEN.

LXXII. CAPTAIN E. C. LLOYD.



CAPTAIN EDWIN CORBETT LLOYD, Chief Superintendent of Telegraphs, Birmingham, the subject of our portrait, was born on Jan. 17, 1872. He entered the Post Office service at Birmingham as a Telegraphist, Class II, on July 23, 1886, and reached his present position of Chief Superintendent on Feb. 9, 1928.

To the older generation of telegraphists Captain Lloyd needs no introduction. He served on the Special Racing Staff from 1890 to 1910—a striking testimony to his ability both as counter-clerk and operator, when one recalls the high standards set for and demanded from members of the Racing Staff in those years. From 1910 to 1912 he was employed in the Trunk Telephones and in 1913-14 his activities were transferred to the Survey Branch. Among the earliest of the Controlling Force at Birmingham to volunteer for service in the Great War, he enlisted on Jan. 24, 1915, returning to civil life on April 12, 1919, having attained the rank of Captain in the Signal Service, Royal Engineers. He saw three and a half years' active service in France, was mentioned in despatches, and among the Post Office servants of all ranks with whom he was brought into contact during the war years he was a popular figure.

Captain Lloyd's post-war duties included a further spell of Survey Branch work, as Assistant Superintendent, an experience which later stood him in good stead when acting as Assistant Postmaster. He is interested in all outdoor sports, particularly cricket, and, in his younger days, was a safe and keen wicket-keeper for the Telegraphs Cricket Team. To-day, he seeks his recreation in motoring, of which Mrs. Lloyd (herself an old telegraphist) is also a keen devotee.

Thorough in everything that he undertakes, Captain Lloyd looks for the same standard of efficiency in his subordinates. Those who work conscientiously for him are assured of appreciation and encouragement; he gives short shrift to the slacker; and any case of distress among his staff is assured of prompt, practical and sympathetic treatment at his hand, once it is brought to his notice.

THE TELEPRINTER.

A. P. OGILVIE (*Headquarters Traffic Section*).

(*Continued from page* 63.)

(III.)

Mechanical Features.—The essential parts of all tape Teleprinters are very similar. Referring to Fig. 4, it will be noted that a small motor, provided to drive both transmitter and receiver, is prominent. The transmitter itself consists of a type-keyboard with appropriate mechanism for selecting and signalling the

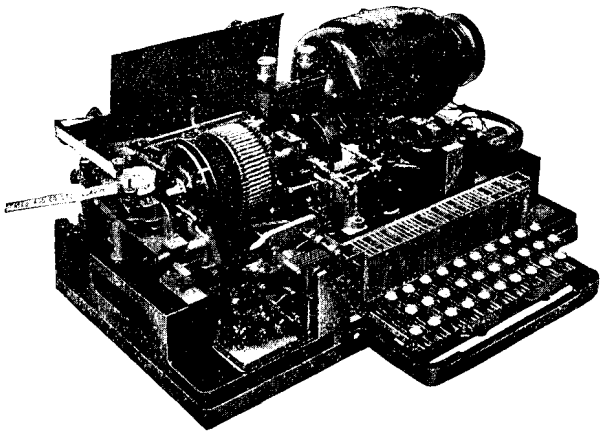


FIG. 4.

required character, while the receiver comprises a relay and associated mechanism for translating and passing on received signals to the printer which in turn records them in readable form on tape. The different parts are combined on a single base forming a compact portable unit, measuring in the case of the Teleprinter No. 3A, 20 inches in length, 18 inches in width and 10 inches in height.

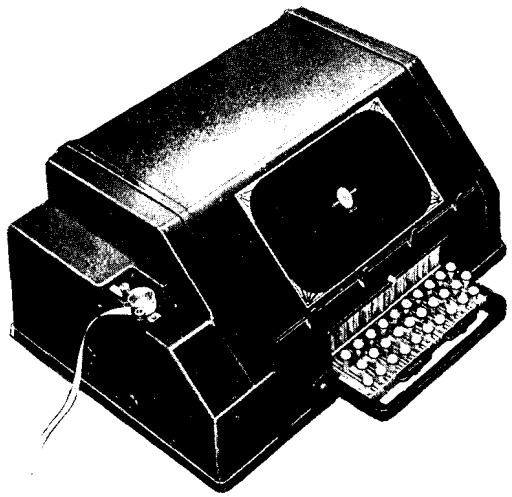


FIG. 5.

A solid cover, partially padded inside with felt, encloses the unit and aids in reducing working noises to a minimum. The machine is comparatively noiseless in action, and, while in a small Instrument Room the subdued hum of the motor is audible, it is, to most ears, much less distracting than the clatter of morse sounders. At the larger offices the extended use of these machines is contributing materially towards a desirable reduction in Instrument Room noise, an improvement generally appreciated. The cover is hinged and opens backwards to facilitate tape renewals and for examination of the apparatus; it may also be completely removed vertically when necessary. The sloping front provides a convenient lectern.

Battery and power supply connexions are made by means of plugs and flexible cords attached to the machine, the plugs being inserted in corresponding sockets or jacks fitted on the instrument tables. A certain amount of movement is thus permissible when the position of the machine has to be altered for operating purposes, as, for instance, in simplex working. The replacement of a faulty machine is also facilitated.

Although three models of tape Teleprinters are still in use in the British telegraph service, development within recent years has been almost entirely confined to the equipping of public circuits with the Teleprinter No. 3A, which is now accepted as the standard machine. The details in the following paragraphs should therefore be taken as applying to the Teleprinter No. 3A, except where other models are specifically referred to.

Drive, Speed, and Coupling.—A motor of $\frac{1}{12}$-th horse power, usually driven from the electric light supply, forms the driving unit for transmitter, receiver, and printer. In Post Office practice this motor is kept running continuously and consumes over a period of from 12 to 14 hours about one unit of current. The speed is geared down to permit of the keyboard being worked up to a maximum of 60 words a minute. Actually, signals are always transmitted at a speed of 66 words a minute irrespective of the

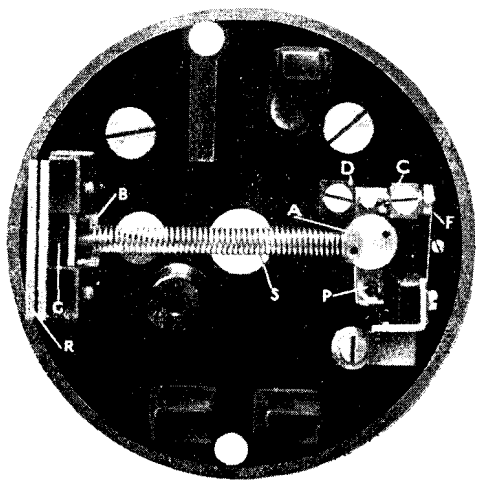


FIG. 6.

speed of operating, but even when the keyboard is worked at a maximum capacity, small losses occur between the keyboard and the transmitting point. Teleprinters may, of course, be geared to transmit at a higher speed, but 60 words a minute has been standardised as the speed most suitable for direct keyboard operating consistent with a minimum of mechanical wear and interruption.

To maintain a steady drive it is necessary to control speed variations by some device, and a governor, enclosed in a circular casing, is attached to the driving spindle on the right of the motor for this purpose.

The governor (Fig. 6) consists essentially of a spiral spring (S) fixed at one end (B) and attached at the other end to a moveable arm (A) carrying a weight arm pivotted at (P). When the motor is at rest the weight-arm is held against a stop (D) by reason of the pull of the spiral spring. Immediately the motor revolves and a

certain speed is reached, centrifugal force acting on the weight-arm overcomes the pull of the spring allowing the arm to move outwards and strike a contact (C). This action short-circuits a resistance in the motor field circuit and causes the speed to drop. When this happens and the centrifugal force acting on the spring weakens, the weight-arm is pulled back, thus breaking the contact; the resistance is re-inserted and the speed again increases. These movements take place very rapidly and maintain an average speed corresponding to the setting of the spring and weight arm. Experience has shown that this speed control on the Teleprinter No. 3 A is not critical and that, provided the governor is correctly adjusted and the contacts are kept clean, it gives little trouble over lengthy periods.

An arrangement for verifying the motor speed is provided by painting a white spot on the inside of one of the gear wheels. A stroboscope, or vibrating reed, is supplied. The reed is made to vibrate by a flick of the finger and, as it moves from side to side across a slit in the stroboscope barrel, the spot on the revolving gear wheel is watched through the slit. If the speed is correct the spot will appear to remain stationary. If the speed is too fast the spot will appear to move in a clockwise direction, while if it is slow an opposite effect will be noticed. To obtain the best effect the stroboscope should be held near the top of the tube.

It is essential that the motor drive should be applied to the transmitter or the printer only when the operation of either or both is required; provision is therefore made for one spindle and clutch to operate the transmitter and another spindle and clutch to operate the printer, each acting independently. When no signals are being transmitted or received both clutches are disengaged and the mechanism is uncoupled from the drive.

Type-keyboard Transmitter.—Positioned transversely beneath the key levers are five combination bars with projections along their upper edge at infrequent intervals. These projections take up a position at rest between the key levers, so that when a key-lever is depressed it enters a slot between the projections and prevents those combination bars which have projections adjoining the depressed lever from moving to the right in response to the pull

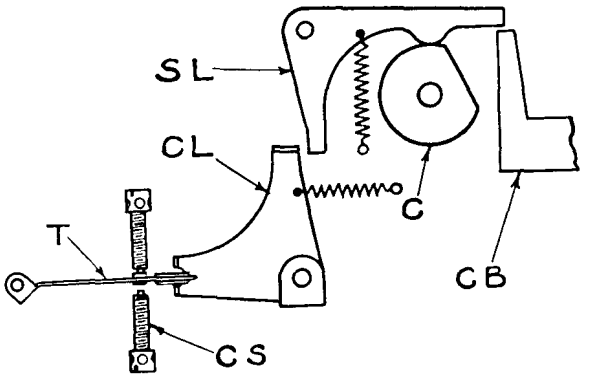


FIG. 7.

of spiral springs. One of the effects of putting a key down is therefore to permit some combination bars to move to the right while the others are held stationary. The permutation thus set up controls the movement of the transmitter tongue. Referring to Fig. 7 it will be seen that the left end of a combination bar (CB) takes a vertical form with the end under the top of a selecting lever (SL). When the cam sleeve (C) revolves the selecting lever tends to follow the contour of the cam by the action of the spring, but is prevented from doing so when the combination bar is in the position illustrated. In such circumstances the contact lever (CL) is not affected and the tongue (T) remains on the upper contact. Should, however, the combination bar (CB) be withdrawn to the right, the selecting lever will move, and its lower end will press on the contact lever (CL), which in turn will push the tongue (T) against the lower contact stud (CS). As the contact studs are connected to the positive and negative sides of a battery, signals of positive or negative polarity are transmitted via the tongue to the line and distant office. Five selecting levers rest in tracks along the cam sleeve in which the slotted cams are staggered. As the cam sleeve makes one revolution each selecting lever *in succession* follows, or is prevented from following, the contour of its associated cam according to the position of the relative combination bar. By this means the depression of a key first sets the combination bars for the appropriate character; then the combination bars control the movement of the selecting levers in the cam tracks; these movements are conveyed to the contact lever which ultimately determines the position of the tongue and the signalling of positive or negative impulses to line. It should

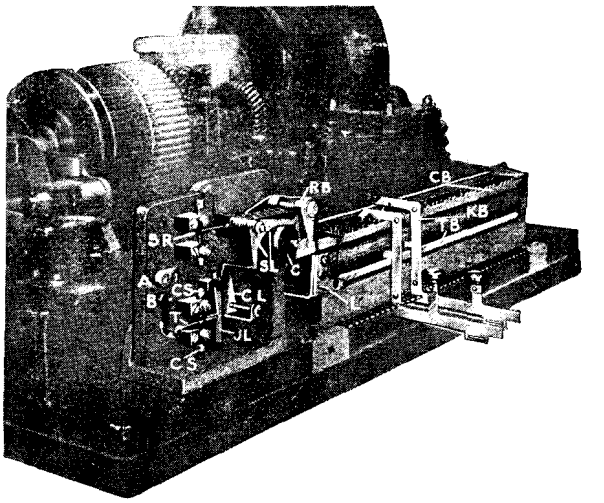


FIG. 8.

be added that a sixth selecting lever is provided for the transmission of the start signal. This lever has no combination bar to control it, and the start signal is transmitted automatically when the cam sleeve commences to revolve.

Concurrently with the setting of the signal combination, the depression of a key-lever actuates a trip bar. The movement of this trip-bar has the effect of coupling the transmitter cam sleeve to the driving spindle for one revolution when it is again disengaged. As may be seen from Fig. 8, the trip-bar (TB) is common to all key levers.

It will now be apparent that, during the rotation of the transmitter cam sleeve, the combination in process of transmission should not be disturbed by the premature depression of another key. To prevent this happening two locking bars are provided. One of these, set behind the combination bars, moves to the right when a key is depressed and a projection, entering a hole in the key lever, effectively holds the key lever down until the signal combination has been transmitted. At the same time the other locking bar positioned behind the key levers comes forward under the end of all key levers at rest and prevents their being operated until the key in action is released.

Operators who have not acquired a rhythmic style of manipulation may encounter the action of these locking devices if spasmodic fingering is attempted at a speed in excess of 60 words a minute. "Touch" operators, however, are taught to cultivate a steady rapid style of working just within the maximum capacity of the keyboard, which makes the provision of locking devices almost superfluous. From an operating point of view, the action of the keyboard is favourably commented upon generally.

(*To be continued.*)

THE DISTANT CONTROL OF WIRELESS BROADCAST RECEIVERS.

B. S. T. WALLACE, C.T.O.

THERE must be many telegraph and telephone men who look upon a wireless receiver as something more than an electrical music box "which can be assembled in half an hour with the aid of a screwdriver and bring in 30 stations on the loudspeaker," as the alluring advertisements tell us, and who would be interested in the application to wireless reception of principles and instruments familiar to their own branch of the science of communication.

Wireless should be regarded as a public utility service to be made available in the home at every point it is likely to be required; in the same way as gas, water, and electric light, with facilities for switching the valves on and off at all positions distant from the receiver. However simple and efficient the self-contained portable set may eventually become, there will always be a very large number of homes in which it will be desirable or necessary to receive the broadcasts simultaneously in more than one part of the house.

Before the days of general broadcasting the writer always made it a practice to place a wireless receiver in the best position available electrically, and take the output leads for the phones or loudspeaker where required. This can be done without any loss of efficiency, even in the simple crystal set; whereas the extension of aerial and earth leads invariably causes reduction of signal strength. It is proposed in this article to detail principally:—

(1) The method of extending loudspeaker leads.

(2) The control of filament switching from the loudspeaker extensions.

(3) Wave change switching from loudspeaker positions.

After many years' residence in an old house full of cupboards and corners a sudden move had to be made to a smaller modern so-called labour-saving house, so perhaps a progressive description of the problems which arose and the methods adopted to meet them will best cover the points enumerated above.

Problem number one was a very firm refusal from the female members of the family to allow any wireless apparatus inside the house other than the loudspeakers and a switch to turn them on and off. They knew too well what those cupboards and corners contained, and that there was simply no room for it in the new abode.

This meant placing apparatus and batteries in a garden shed, and the situation was such that a wire or wires 120 feet in length would be required for loud speakers and filament control extension.

Experiments had previously been carried out successfully in practice whereby the output from the set and switching of the valves could be done on a single wire with earth return over a considerable length of line, but as it was not at first decided what methods of control would be adopted, a spare length of old bell cable containing three good wires was earmarked for connecting the shed with the house.

Inside the house, five loudspeaker points were required. Specially laid, concealed wiring would have necessitated the lifting of tongued and grooved floorboards—a rather unwelcome undertaking—and as an alternative it was decided to use the electric bell system which led to four of the points required. It is a great pity that present-day builders have not the common sense to wire rooms for loudspeaker extensions as a matter of course, as the cost is so small and the utility correspondingly great.

At this point the connecting of the loudspeaker to the output of a receiver, and the method of utilising the bell system for extensions, will be considered.

The one method better than all others of connecting a loudspeaker to the set, is the choke filter shown in Fig. 1.

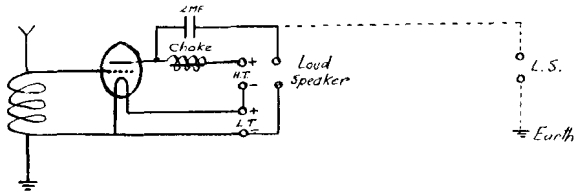


Fig 1. Choke filter output for loud speaker

The speech frequencies only pass from the plate through the 2 MF condenser to the loudspeaker and thence back to the filament. As the filament is invariably earthed directly or through a large condenser, it is evident that a single line can be taken from the condenser and the loudspeaker earthed at a distant point, as indicated by the dotted line in Fig. 1. This line can be of considerable resistance without materially reducing the volume at the distant end; it can be extended for miles on a good air line without loss of volume or quality.

The method usually employed when working close to a receiver—of connecting the speaker direct to the plate and H.T. positive—should never be employed for extension work of any length. It simply invites trouble in all directions. For better reproduction, protection of instruments, and isolation of H.T. voltage, it is an advantage to use a choke filter at all times.

In most small houses the bell system from rooms to kitchen is either out of action or not required. There are many who would be glad to make use of it for wireless extension.

Fig. 2 is a diagram of the usual arrangement of indicator and house bell system. Fig. 3 shows the alterations necessary to operate a loudspeaker at either or all of four bell-push positions, leaving the front door circuit intact for ringing the bell.

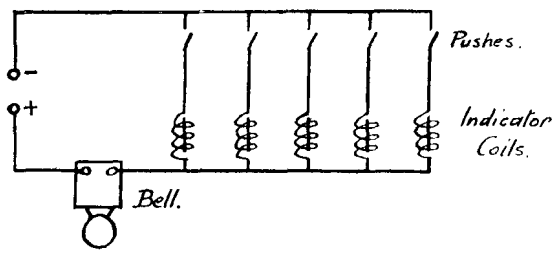


Fig 2. Diagram of common electric bell system.

The lead from each indicator must be disconnected on the push side where marked by a cross, and all the push leads bunched and connected to the wire from the output condenser of the set. This is a simple alteration, as the disconnexion and bunching can fortunately be done on the terminal plates inside the indicator. The opposite side of all the pushes are on a common line back to the battery, and it only remains to earth this line, or where necessary connect the return wire to it, at any convenient point.

An earth can usually be found near the battery and the appropriate connexion made to one of its terminals.

Care must be taken not to pass the speech currents through the electric bell or any of the indicator coils. These would act

as chokes and seriously reduce volume. Alternatively: if any such electro-magnetic device is in the way, bridge it with a 2 MF condenser.

There may be a slight, almost imperceptible, reduction in volume at the loudspeakers connected to an extensive bell system,

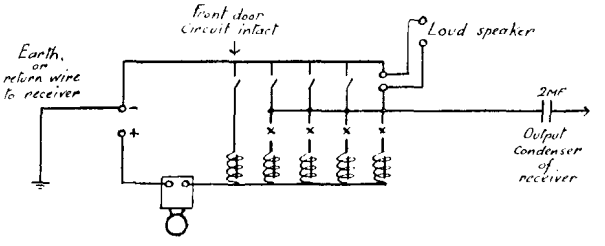


Fig 3. Bell system converted for loud speaker extensions

due to the capacity between the wires themselves, or the wiring and earth. The wiring is sometimes very badly done and may be useless. If twin bell wire has been employed it would be worth while trying to make some sort of insulation test between the wires before wasting time on it. Do not be surprised if you find it only measures hundreds of ohms instead of megohms!

The bell pushes can be dismantled and terminal plates, or better still, telephone jacks of the ceiling rose pattern specially made for the purpose, mounted in their place. The first arrangement used for distant filament control was to place the two remaining wires in the cable directly in the filament circuit and bring them to a tumbler switch in the house at one point only. (Fig. 4. The radio part of the diagram is a simplified theoretical circuit sufficient to indicate connexions.)

This method is quite satisfactory up to 150 feet or so, of wire, providing 4 or 6 volt valves are in use. There is, with these valves, sufficient margin for the slight voltage drop incurred by long leads, providing a good quality bell or heavier type of wire is used.

With 2-volt valves, direct filament extensions are not advisable. In fact: these valves are not a good electrical proposition at all. The resistance that occasionally develops at the valve pins or at dirty accumulator terminals is sufficient to reduce their efficiency considerably, and is a constant source of unsuspected trouble to the uninitiated. They were primarily designed to appeal to popular desire by making a second 2-volt accumulator unnecessary, but the economy is a very doubtful one.

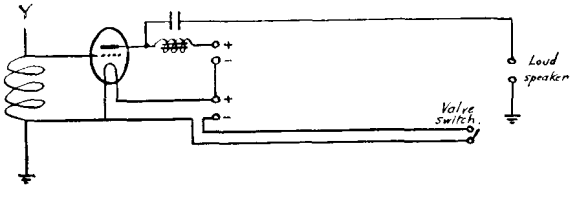


Fig 4. Distant control of valves by direct switching.

Direct switching leads could be paralleled off to all loudspeaker points and connected to switch jacks, together with the loudspeaker leads, so that the valves would only be alight while a loudspeaker plug was inserted. This method is satisfactory in a small way if well done, and there is no risk of varying conductivity at the jacks. Resistance loss *could* be compensated for by an increase of L.T. voltage and careful adjustment of it with a rheostat, but care must be exercised in case of unexpected variations of resistance in different branches of the extension.

The only trouble with this direct switching by an independent switch was the occasional omission to turn off the valves when retiring, and so leave them alight till the following evening or longer, to the detriment, principally, of the H.T. battery. This fact, coupled with the desirability of valve switching at each loudspeaker point, led to the installation of a system of automatic relay switching. (As only one wire with earth return was available, a simple method of direct switching by means of switch jacks, could not be employed.)

Fig. 5 is the method adopted, but it should be pointed out that two relays are not ordinarily necessary, as will be seen later. They were used in this instance—for reasons that will not be gone into here—because it was desired to operate the control from the speakers on a small fraction of a milliampere. Points that arise in the use of the two different types of relay are likely to be of interest, so the full arrangement will be described.

Choke C 2 is a low frequency isolating choke which effectively confines the output speech frequencies to the loudspeaker lead, though it will allow a steady direct current to pass. R 1 is a Weston moving coil relay operating on a current of a few hundred micro-amperes. The contacts of this instrument are too light to permit the closing of the filament circuit direct, so it is arranged to actuate relay R 2, a Siemens pattern of P.O. Standard A relay.

The current for both relays is taken from the filament battery and can be regulated to about 6 milliamperes—a negligible amount.

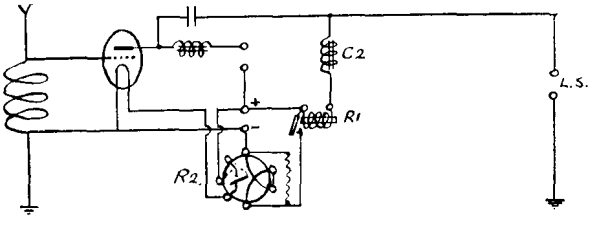


Fig 5. Automatic valve switching from a distant loud speaker

The provision of the shunt resistance of approximately 400 ohms across the windings of R 2, was necessary to prevent the cohering of the light contacts of the Weston relay, due to the back E.M.F. of the former when the circuit was opened.

The relays work with precision and certainty and give no trouble.

When all the loudspeakers, or phones (some say that with a single earpiece on the bed pillow the B.B.C. programmes are an aid to slumber!) are disconnected, the local circuits of both relays remain open and the valves and all batteries are cut off.

On connecting a speaker the path of the direct current is from positive L.T., through R 1, choke C 2, along the line to loudspeaker and earth, back through the apparatus earth to negative L.T. This actuates R 1, which in turn energises R 2, the local circuit of the latter closing the filament circuit.

As a current of up to about 10 milliamperes can safely be passed through the modern loudspeaker, it is evident that R 2 could do the operation direct if desired.

There is one point that will no doubt raise a query: the question of the grid bias battery sometimes necessary for the first valve of a receiver. In the conventional position this would be in the path of the relay circuit. It can, if desired, be removed from this path by the simple expedient of connecting the earth lead direct to L.T. negative, instead of the low potential end of the tuning coil. This may necessitate the use of a small by-pass condenser across the battery for the passage of H.F. currents.

In the writer's own circuit a grid bias battery is used in the normal position. As the relay current through it does not exceed .25 of a milliampere, no difficulty arises. If a heavier current of, say, 10 milliamperes, was used, a heavy type of bias battery would be advisable or the connexions altered as stated above.

It might also be noted that in using two relays, a grid bias battery in the normal position would tend to send an opposing current through R 2, when the relays are in operation, but it is too small to cause any difficulty.

If necessary, the L.T. voltage can be increased for operating a relay, but, of course, care must be exercised not to include this extra voltage in the leads to the filament. The only limiting factor is the amount of current that can be permitted to pass through the loudspeaker.

Now that alternate wavelengths are in operation a demand has arisen for changing from one to the other, again by "simply turning a switch in the house."

Although hitherto everyone was quite content with the local station at its best, this new demand was necessitated by the requirements of an invalid who can never bear to miss either the news items or the church services, and apparently this type of transmission will be confined to one wavelength, and the purely entertainment matter to the other.

The two wires left spare in the connecting cable were utilised for wavelength switching. With an A.T.M. pattern of P.O. Standard relay, this proved to be a simple problem.

Fig. 6 is a diagram of the wave change arrangement only. The relay tongue is connected to earth and the two contacts each to the low potential side respectively of two tuning condensers; one tuned to the Regional wavelength, and the other to the National wavelength. The relay is set neutral with the contacts fairly wide open. A connexion from the split of the relay is taken to L.T. positive and so to earth. Two wires from the other ends of the relay coils are terminated in the house, each to one side respectively of two ordinary bell pushes, the other sides of the pushes being earthed.

The depression of a push completes the circuit via earth through one coil of the relay, throwing the armature to the spacing contact; the operation of the second brings it over to the marking contact and so connecting in the wireless circuit either the long or short wave condenser. Only a momentary impulse of current is utilised to make the change which is instantaneous and without complications beyond the provision of a second tuning condenser.

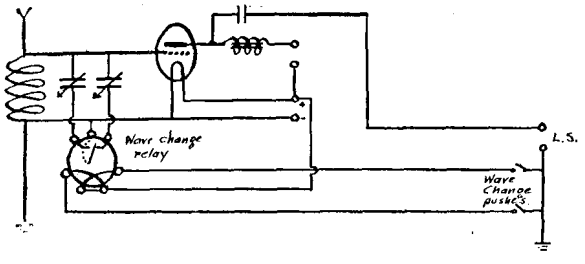


Fig 6. Wave length changing from distant position.

Multiple tuned circuits can be controlled in this way, the appropriate condensers being bunched on their low potential sides.

It is interesting to observe that the complete arrangements can be modified and the loudspeakers, valve control, and wavelength changing conducted over three wires or on two wires utilising an earth return.

Fig. 7 illustrates the three-wire arrangement, while the removal of the dotted return wire and earthing of the point E converts it to a two-wire system with earth return.

With these modifications it is necessary to have a split battery at the distant end to provide the momentary impulse for the wave change relay. This is conveniently supplied by two 4½-volt flash lamp units.

The wave change pushes can easily be repeated at a number of positions if one wishes to indulge in the luxury.

No haphazard earth will do when working over a distance with low voltage direct current, and even for a good wireless receiver it is well worth while to make sure of a really sound earth connexion. The less amplification required by means of the valves, the better the quality will be. One has only to listen to a five-valve portable set to realise this.

The earth used for the apparatus in the shed consists of about six square feet of zinc plates buried three feet deep, one side rammed against the clay subsoil, the other packed with fine ash. They

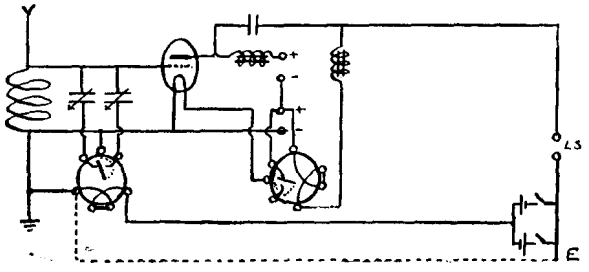


Fig 7. Loud speaker operation, valve switching, and wavelength changing over three wires.

are practically always in water as the overflow from a rainwater tub drains down to them. The resistance between this earth and the water main earth in the house is a small fraction of an ohm, and for wireless purposes the plate earth is the better.

The copper tubes usually sold for earthing purposes are not always satisfactory. Their contact area is too small, and in some clay soils they will corrode and rot away in a short time. Zinc plates should be used and care taken that any copper wire connected to them is well protected from direct contact with the soil, or local and electrolytic action will soon make a disconnexion.

The relays were obtained from war disposal stores, and there are still probably many more about. To purchase new they are expensive items, but it should not be beyond the wit of the manufacturers to turn out cheaply a simple and compact two-coil polarised relay with a figure of merit of 2 or 3 milliamperes suitable for switching operations.

Finally: it is hoped that this article will not convey the impression that the writer lives in a scene and noise like a battery of Creed printers.

The actual receiving apparatus consists of 2 valves, is designed for quality reproduction of the local station and employs no reaction. Together with the relays it is packed away on small six-inch shelves and forgotten. The loudspeakers are toned down so as not to interfere with those who do not wish to hear. To reduce volume at a speaker fixed resistances up to 20,000 ohms are placed in series with it. This method is simple and effective and does not interfere with the other speakers which may be in use.

MASS SUGGESTION.

BY F. G. LANE (*Reading*).

THE diurnal struggle for existence brought me, some time ago, to the house of a lady who had posted a card ("filled up a form" the *Daily Express* describes this) in order to make arrangements for a telephone installation—at under tariff rates, as I quickly learned. I was soon treated to a description of the business methods of the philanthropic institution which conducts the telephone service of Vancouver. (It was quite a refreshing change, by the way, to hear some other place than New York quoted.)

Experience prevented me from being surprised at the information that the tariff rate was $1.50 per month: but I confess that I was a little staggered when I was told that on the lady's return to the city after three years' absence, the clerk of the telephone company greeted her with "Good morning, Mrs. ..... I presume you would like the same telephone number as before!"

"Did he ask you to sign an agreement?" I foolishly asked.

"Oh, no, he just put my name in a book."

My tongue being by now well under control I did not ask why he did this!

We know well that it is convention which prevents a public servant *from calling a well-bred lady a liar, or even from humming* the air of "Tell me the old, old story": but the reason why a well-bred lady claims the protection of convention and tells such palpable falsehoods is a little *more mysterious. The reason is not*, however, very abstruse: there exists a force which incites people to describe public men they've never heard and never seen as rascals, *or newspapers they've never read as "rags."* I *am calling* this force (not very originally) "mass suggestion."

The propagation of suggestion to the mass is daily craft of the journalist in concert with the circulation-pusher, and it is becoming so much a habit to use the telephone service for practice that the thing is growing on us like some unpleasant fungus.

The ball is set rolling by an article containing, perhaps, the truth, the half-truth, or anything but the truth, but couched in terms vaguely suggestive of something wrong. The "head-line mentality" then comes into play and there follow letters to the Editor, neither truthful or useful, contributed usually by modest *persons employing "noms-de-plume."* More articles and letters (even ordinary relevance is by now losing its importance) and, as the suggestion gathers way, contributions come in from quite well-known (but sadly misinformed) people, and so on *ad infinitum*. It matters very little once things are going well whether these letters are actually accusative or not: the newspaper knows that *properly managed the effect is just the same.*

The Editor of the *Journal* recently expressed surprise at a letter which read "I am giving up my telephone because I can no longer stand the persecution of its bell." What value had this rubbish to the criticising newspaper? What connexion had the curiously egotistical outpouring of some neurotic with a condemnation of the Post Office Telephone Service? Precisely the same connexion that the incident of some unhappy being putting his head into a gas-oven has with the "iniquitous" procedure adopted by gas companies of enriching coal gas with carbon monoxide. Nevertheless, in a recent newspaper attack on the gas industry, the gas-oven suicides always found prominent place with powerful denunciations of the use of water-gas. And the journalist knows his job as well as anyone.

This water-gas stunt, it may be mentioned, gave us some of the best examples of the newspaperman's craft and the propensity for growing and diffusing characteristic of suggestion.

Apropos of a minor disaster caused by a faulty gas main, we were enlightened as to the employment of water-gas. This gas (*practically carbon monoxide*), we were *told*, was a *deadly* poison and *odourless*. Perfectly true: but what was omitted were the essential facts that the smell of coal-gas when enriched *with water-gas* was almost *unimpaired*, and that even if the process were entirely dispensed with, free coal-gas would hardly be less dangerous.

Letters followed asking what dire effects (the writers would like to know) this water-gas had on food cooked in the gas oven. The *Encyclopaedia Britannica* informs me (as it would have informed them) that carbon monoxide burns readily and in doing so becomes carbon dioxide. Thus their Sunday joints were made no more poisonous than soda water.

Then apropos of nothing followed the inevitable: "Lover of Justice" wanted to know how the company could honestly accuse him of having consumed 20,000 cubic feet of gas, when it was patent to the world that his consumption was only 15,000 cubic feet. "Fairplay," it appeared, was to all intents and purposes in the same plight, and demanded to know what "Therms" had got to do with plain people like himself. And so it went on in the way we all know so well, and very effective it was, too from the newspaper's point of view.

The gas industry is better off than we are. Though the suggestion assumed such proportions that large masses accepted as a self-evident proposition, the implied "fact" that the companies, as a matter of course, falsified their meters (such is the power of suggestion), the industry troubled hardly at all. It erected more eyesores in the shape of gas-holders, because we had to have gas, though the meter went like a merry-go-round.

It is obvious that with us it is different, and it is dangerous merely to treat the matter with the contempt it admittedly deserves. The only excuse for doing this is to imagine that mass suggestion is ultimately ineffective. I say "imagine" because such an attitude is worse than that of an ostrich, for an ostrich does not bury its head in the sand!

If anyone really does doubt, witness an advocate for handing us over to a public utility company, who says that the essential difference between the Post Office and such companies is that the former waits for customers whilst the latter goes out to look for and serve them. Then note that it is doubtful if the Communications Company will continue the canvassing practice of the Post Office. And when, gentle reader, did you last receive a visit from the railway company begging to serve you, or the representative of the gas company, seductively asking you to install a gas fire in your bedroom? In this case we see suggestion able to affect one in such a way as to cause him to violently assert something which he should well know is the reverse of actual fact.

If we are going to admit (as indeed we must) the effect of suggestion on the minds of well-known public men, we should automatically see that something must be done to stem the flow of this pernicious propaganda.

At once the most fascinating method of doing this comes to one's mind—that of setting in motion the law of libel. This is indeed most attractive: we see an annual revenue of close on twenty million sterling being seriously affected by gross misrepresentation, and dream of the crushing damages falling with fearful force on the slanderer. There may be something in this: but it is feared that expert opinion would say that such action *is* only a dream. In such a matter a public service is unfortunately placed, its position being in no way comparable to an injured private individual. It is a curious fact that whilst any number of falsehoods may be spread abroad anent a public body, the achievements of

public research or the like, it is dangerous to tell even the truth about, say, a patent medicine.

It seems clear that the only means to handle them is by way of advertisement—advertisement in the broadest sense of the word. Something must be done to cut right across the evil suggestion: to make it clear that the telephone service in New York is not free of rental (I can state positively that the idea that it is is not uncommon) and that the Post Office has no substantial objection to London having as many telephones as Chicago. Admit that details of accounts are entered in the District Manager's books (a recent article in the *Daily Express* told everyone this "curious" fact) but show at the same time that, appearances notwithstanding, even Mr. Drage does it. Confess, too, that engineers have to erect poles and lay ducts (the *Daily Express* gave this secret away in the same article)—they are not *wireless* telephones and even Beecham's Pills are packed in boxes!

To carry on further than this, it is necessary to have in mind what is behind these perennial defamatory articles. It is, of course, a suggestion thrown to the public mind that the service is conducted ultimately by a host of irresponsible officials (the "mandarins of the Post Office" they are called), who look on the public with haughty disdain over vast entanglements of red tape. Once freed from such blundering incompetence (they do it on purpose!) and placed in the hands of a private monopoly all would be well. With regard to the first suggestion, it is, of course, rubbish, and what follows isn't much better, containing as it does a proposition unproved and unprovable. It may be observed here that the newspapers find it necessary to adopt Mons. Coué's repetitive methods—the suggestion is not well-founded enough to be self sustaining. But it is useless to discuss and argue: against the suggestion must be aimed the counter-suggestion—straight at the roots of the libels.

Some years ago, in a street in Auckland, N.Z., I observed attached to a waste receptacle the following notice: "This city belongs to you. Keep it clean." What a spirit to apply to the telephone service! Take an interest in the service: it is yours! The "officials" only own it to the same degree as you! The only difference being that they are bound to take a professional interest in it on your behalf and (don't forget) for the man next door!

We shall never effectively counter mass suggestion by concentrating on perfecting the service, however essential endeavours in that direction are. Perfection is a comparative attainment, and even if we approached some limit of *human* perfection, the libels would not cease. Any newspaper leader-writer could rake any industry fore and aft with criticism if there were any *motive* for doing so. Couldn't anyone rave at the apparently amazing stupidities of the railways or fill a book with his hopeless endeavours to transform the local grocer into an ordinarily rational individual. Surely, already we can say, with all modesty, that we are not so far from the general level of perfection as to invite such a fearful torrent of abuse.

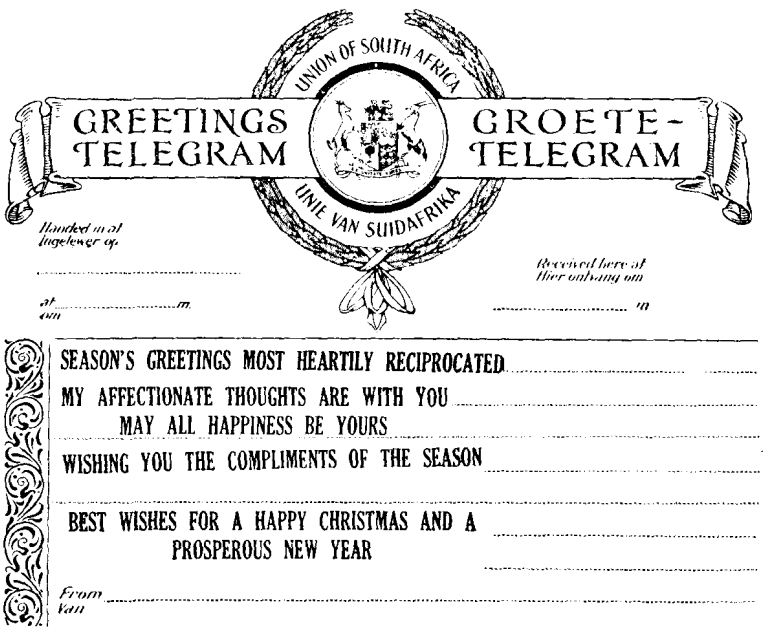
Let us start our counter suggestion—in our letters, our speech, our offices and kiosks—everywhere—and emulate the spirit of the citizens of Auckland.

An idea has been expressed that monopolistic enterprises have no need to advertise. Nothing could be further from the truth—we have to be taught to appreciate things and feel the lack of them. Few of us were born with a taste for pictures or music, or for grape-fruit—these things were "advertised." True, as a monopoly, we have enormous advantages and can effect considerable economies in advertising; but, apart from the necessity of maintaining counter-suggestion, we have new suggestions to make ourselves. It is well to remember that we are sometimes in competition. The telephone in the home is a labour-saving device—there are others. I have known a man in a rural district who hesitated between having a telephone installation and electric light!

CHRISTMAS CARDS BY WIRE.

SEASONAL TELEGRAPH TRAFFIC IN SOUTH AFRICA.

THE Christmas telegraph traffic in South Africa, which we noted last year as being very heavy, continues to grow, and the volume handled this season was greater than ever. This heavy traffic is due to the popular custom of sending seasonal greetings by wire, and was stimulated this year by the introduction of the new "Greetings Messages" service. A "Greetings Service" of a sort had already been in operation for a few years and provided for messages of a "seasonal" character to be sent at a cheaper rate for delivery by post, but it did not "take on" to any extent. This year, following the innovation of the "Greetings Messages" for the Jewish New Year, the service was put on a different footing, with satisfactory results and every prospect of a greater expansion in the future.



(In this illustration the different forms of greeting are pasted on one form.)

The underlying idea is a "Christmas card by wire," and the operation of the service, briefly, is that from Dec. 20 to the 31st, telegrams on special "A" forms, with a variety of greetings in both official languages—English and Afrikaans—under various index letters, were accepted. The charge was 3*d*. for the greeting, plus 1*d*. per word for the address and name from, with a minimum of 9*d*. as against the ordinary minimum of 1*s*. 3*d*. The messages were signalled as traffic permitted under a special prefix "GM," followed by an index letter to denote the greeting, the usual preamble, address and name from. No text was signalled. Special "C" forms of a fancy design on which the appropriate greeting on a printed slip, gummed, were used. This slip harmonised with the tape from the machine-worked circuits and the typewriting from other circuits, but even when the address, &c. was in manuscript, the Christmas card appearance of the received message was preserved. The "C" form, which was folded and required no envelope, was delivered by post. An illustration of the forms with specimens of the greetings is reproduced.

Although in some centres the new messages did not appeal as much as in others, yet, on the whole, the scheme was a success, it being estimated that over 30,000 of this class of message were handed in. And while it may be unduly optimistic to think, as

has been said in at least one quarter, that the day of the Christmas card in South Africa is over, there is no doubt that in coming years the results of the scheme will increase and make the Christmas traffic bigger than ever. It also opens up possibilities for the telegraphs in regard to other festive and special occasions.

The following figures indicate the proportions the traffic reached this year. At Cape Town and Johannesburg, the two largest offices with average daily traffics of about 17,000 messages, no less than 67,000 and 73,000 were handled on Dec. 24, as compared with 63,000 and 59,000 respectively last year. At Durban, the third largest centre, a total of 26,000 was transmitted against 20,000 in 1928. Other centres were, of course, in proportion, and though the pressure is felt for some days before Christmas Eve, that day is the "field day" with almost fourfold the number of normal transactions. Such a state of affairs is cheering to the Telegraph man in these somewhat dismal days.

E. E.

TELEGRAPHIC MEMORABILIA.

Now that the damage to the North Atlantic submarine cables due to the earthquake off Breton Island on Nov. 18 has been more exactly assessed, it is calculated that the cable companies concerned have had to replace no less than 600 miles of cable in order to restore the broken sections. Seven cable ships have been at work in the disturbed area for at least a couple of months, and the total cost to the companies, says *The Times*, is well over £100,000. On the 1st ult. the Commercial Cable Company's London manager received the news that only then had the *first* of its three broken cables been re-established. Seven times this cable was brought to the surface and dropped again before it was possible to make a permanent joint, 40 miles being necessary for the purpose, so badly had the sea-bed been disturbed and the cable dragged, buried and torn from its original position.

The two Imperial cables were also interrupted, and in this connexion it is curious to relate that a cable-ship, the *Cambria*, normally employed in tropical waters, was hurried to the scene, but the severe weather and the low temperature of this region handicapped repairs to such an extent that the ship had to be fitted throughout with steam heating and its West Indian crew repatriated and replaced by men more used to the severity of northern latitudes. Several of the original crew suffered from frost-bites. While the change-over was being made the Cunarder, *Ausonia*, was loaded up with 150 miles of new cable and hurried from Southampton with, to a Cunarder, its novel cargo. It would appear that this portion of the Atlantic will need a new and thorough re-survey, as the seismic disturbance has completely altered the contour of the ocean bed over an area of probably 200 square miles. The differences already noticed in depth have been well over 40 to 50 fathoms.

It is not a little satisfactory to learn from a report of the British Commercial Secretary at Brussels to the Department of Overseas Trade, London, that the Annual Radio Salon which took place in the Belgian capital from Oct. 12 to 21 last was not only a success as a whole, but that the British exhibits stood out well above the heads of both local and foreign productions alike in range and quality.

Considerable concern has been expressed in the U.S.A. recently at the effect of the White Act of 1927, which forbids the purchase of a wireless company by a cable company and *vice versa*. According to *The Electrical Review*, General J. G. Harbord, President of the Radio Corporation of America, stated that the recent successful effort of the British companies to consolidate their cable and wireless interests "is a serious challenge to the wireless supremacy of the United States, which is more important to the United States than oil or the merchant marine." . . . "American trade," he maintained, "cannot but be profoundly affected in every quarter of the globe."

The Senatorial enquiries into this matter of the radio, telegraph and telephone monopolies commenced about a week after the above declaration, when Mr. Owen D. Young, Chairman of the same Corporation, advocated "the unification of the American wireless and cable telegraph communication systems in order to meet foreign competition," before the Senate Inter-State Commerce Committee. He declared that it was impossible for competitive companies in America "to meet those consolidated units in other countries from the standpoint of national interest." This, according to Reuter's Washington Agency, Mr. Young maintained, was because Great Britain and France had already introduced unification, Germany was doing so, while Italy and Japan had unified their services *under Government control*.

Speaking on the same subject a month later, on Jan. 8, General Harbord is reported by the New York Exchange Telegraph as saying that "Government-controlled consolidation was highly desirable from a national safety point of view in the event of hostilities!"

Snapshots all round the World!—ARGENTINA.—There are now 203,502 miles of telegraph wires in operation in the Argentine, equal to 19.1 miles per thousand of the population. There are also 204,500 telephones in use, equal to 19.2 per thousand inhabitants! BOLIVIA.—In Bolivia there are only 6,986 miles of telegraph wire, or only 2.7 miles per 1,000 inhabitants, while the telephone only gives seven-tenths of a telephone to be divided between each thousand of the population! DENMARK.—The new Broadcasting Bill before the Danish Parliament—possibly by this time an Act—extends the period of office of the 15 Broadcasting Council from two to four years. FRANCE.—It is hoped that France will shortly have a wireless police service, providing rapid communication between Paris and the provinces. By direct wire to the Eiffel Tower, says *The Electrical Review*, the French *Sûreté* will be able to transmit descriptions and also photographs and finger prints. Fifty-one provincial receiving stations will be established. GERMANY.—Berlin announces that the Deutsche Bank there was recently saved the loss of £12,500 by means of the wirelessed picture of a bill which was compared with that presented by a forger. From the same city, however, the *broadcasting* of *still* pictures has received but very poor support and has led, it is understood, to the decision to terminate the experimental transmission of this type. GREAT BRITAIN.—The foregoing paragraph on "still pictures" is not to be confused with the photo-telegraphic service between London and Berlin inaugurated on the 7th ult., which had a successful opening and is now upon its trial. The system in use is known as the Karolus system, and was described on its broad principles with illustrations in the *T. and T. Journal* of March, 1927, Vol. XIII, No. 144. An illustrated, clear and concise article on "Picture Telegraphy to Berlin," also appeared as recently as the 10th ult. in *The Electrician* of that date. JAVA.—It is reported that the Dutch wireless station on Long Island, in the Java Sea, has been destroyed by fire. PARAGUAY.—Reuter's Trade Agency states that a local Asunción company has received permission to erect and operate a modern radio-telegraph station at Asunción for international service within 12 months of the date of the permit. RUSSIA.—A large new central laboratory for research work in long-distance telephony and telegraphy has lately been completed in Moscow. SPAIN.—The laying of a new submarine telegraph cable between Emden (Germany) and Vigo has recently been completed by the German-Atlantic Telegraph Company. U.S.A.—The Ford Motor Company is organising a wireless communication company, chiefly to link together the various Ford interests at home and abroad, so says Reuter's Detroit branch. The same agency reports that one of

five new questions which will be put to householders in this year's United States census will be "Do you possess a radio set?" URUGUAY.—This South American republic, if it cannot beat Argentina, at least it comes first as regards Bolivia, with 3.7 miles of telegraph wire per thousand persons and 15.7 telephones! VENEZUELA.—It is stated by a Caracas agency that it has been decided to add a number of new short-wave radio-telegraph stations to amplify the services at Caracas, Maracay and Marquetia. Eventually, further extensions will be made at other points.

A Wireless Anniversary.—It is with regret that the writer of these notes omitted to record the fact that Dec. 12 last was the 28th anniversary of Marconi's reception at St. Johns, Newfoundland, of the first wireless signal to be received across the Atlantic Ocean.

Personal.—Among the recent promotions in the C.T.O., possibly none is likely to prove more unanimously popular than that of Mr. E. Colliver to the position of Asst. Supt., Telegraphs. Despite physical disabilities, which would have daunted many other men, Mr. Colliver has rendered especially valuable service to the Department for years past in connexion with the working of printing telegraphs, and has never spared himself in so doing. Among those who have recently retired from the service upon reaching the age-limit one notes yet another of the late Submarine Telegraph Company's staff in the person of Mr. A. Jay, whose obliging nature and general willingness to help leaves a real gap in the ranks which will be felt for some considerable period. The same remarks in every detail also apply to the retirement of Mr. George Matthews, also formerly of the "Submarine."

Obituaries.—The death is announced on Dec. 30 last of Mr. Henry John Andrews, late of the Indo-European Telegraphs, Persian Gulf Section, at the ripe age of 80 years.

Also that of Mr. L. H. Tinson, formerly of the Inland Telegraphs C.T.O., who retired in 1921, after reaching the rank of Asst. Supt. I and Officer-in-Charge of the Telegraph School. Mr. Tinson was apparently quite well on Boxing Day, but passed away at Deal early on the 28th from heart trouble and was laid to rest at Southgate on the last day of the old year. Quite a number of old colleagues attended the funeral.

Also Mr. Harry Hopwood at the ripe age of 81½ on 16th, who took service with the Magnetic Co. 1861, P.O. 1870, Superintendent 1902. Retired 1906. He was for some years on House of Commons staff.

The close of the year also signalled the passing over of Mr. W. Meyer, of the Cable Room staff, after an illness which commenced as far back as August last. He was buried in the quiet churchyard of Freshwater, Isle of Wight, to which seaside town he had moved upon retirement several years ago. Although time and distance did not permit of personal attendance, it is satisfactory to learn that Mrs. Meyer and her family were not forgotten by "Bill's" old friends and colleagues, by whom his memory will always be a happy reminiscence.

Yet another death is that of the much regretted Tom Boulden, who, despite the services he had rendered to his colleagues in the P.T.C.A. days and on the deferred pay question, and probably because of his retiring and unselfish nature, was little known to the present generation. R.I.P., dear old friend and colleague, who feared only one thing—and that, to do the mean or underhanded thing!

Partings!—"Friend after friend departs.
Who hath not lost a friend?
There is no union here of hearts:
That finds not *here an end.*"
—*J. Montgomery.*

J. J. T.

NON-COMPETITIVE ADVERTISING.

COINCIDENT with the publication of the issue for December the writer had just prepared an item which, strangely enough, opened in very similar strain to the summary of a paper compiled by Mr. H. E. Powell-Jones, who made use of the slogan "Eat more fruit" and its effect on the trade as a whole.

As Mr. Powell-Jones implies, we are not advised as to who supplies the best bananas or brazils; the slogan being the outcome of the tendency for firms to combine in an effort to stimulate trade. Producers, purveyors and manufacturers, in many instances, contribute to the common fund of an association with this end in view. Their courage has been rewarded. A market is created and maintained.

Advertising has always been associated with competition, but the above process has proved to be responsible for a tremendous impetus to the trades concerned. It was found that the proportion of customers for each individual firm greatly increased, whilst their respective advertising expenditure has been reduced by about 20%.

Whenever it is desired to alter or induce a point of view this method of advertising has a startling effect.—We have no less an authority than Sir Charles Higham for those italicised words. He states that firms battle with their rivals far too much to-day; if they win fresh custom mainly from competitors, they are content. But a combine battles solely with the public, thus winning new business for all the firms composing it.

Unfortunately, the department is not at liberty to expend a sum that it would probably desire in promoting publicity. Even if it were, there are no competitive firms with which the Post Office may associate to ease the expenditure in like fashion to groups of firms. But there is this similarity; the latter can very favourably be compared to a monopoly.

Mr. Powell-Jones is not, of course, connected with fruit; but telegraph people, already regarding the telephone as a contributory factor to the demise of their craft, must have felt a tinge of regret at the entire omission, even in a comparative sense, of any reference whatever to what might eventually be an extinct volcano (not the stick of a dead rocket), should the value of publicity be ignored, or the idea toyed with.

The other day a beautiful catalogue came to the writer's house. Much money must have been spent in compiling the brochure. It was a work of art, and a feast for the eye. But the covering envelope! Having spent an enormous sum on the contents, the firm thought to save a few shillings by posting at circular rate and purchasing covers that even those cockney "Tommies" would have been ashamed to use. The psychological effect of this parsimony is really surprising. Generally speaking, the public are dubious of circulars, and when an unsealed halfpenny-stamped flimsy oblong arrives, there is no doubt as to the contents. The whole is immediately consigned to the waste-paper basket or thrown in the fire. An impression of something important (but not an income tax demand!) should be conveyed. Let the recipient imagine he is a very favoured person before he opens the missive.

It has been hinted in previous items that there is still a big field for the future development of the telegraphs, no matter what systems may happen to be in vogue. If ever television takes precedence, the problem will not be how to reduce delay, but how best to utilise the intervening periods of inertia (of which, more anon). The installation, however, will be there, and probably waiting to "eat up" the work at many lengthy intervals, throughout the day. The scope for obtaining more "food" will also be there, but the latter will not come of its own accord. It must be attracted by the persistent pummelling of publicity.

The results obtained from the demand to "Eat more fruit" explode the theory that the word "monopoly" is sufficient to create the desired effect on a particular trade or service.

W. T. L. (C.T.O.).

THE POSTMASTER-GENERAL GIVES SOME INSIDE VIEWS OF THE POST OFFICE.

THE Lecture Hall of the Hampstead Garden Suburb Free Church was crowded on the 16th ult. on the occasion of the Annual Soiree, when Mr. Lees-Smith gave what he modestly called a "chat" on some of the activities of the Post Office as he had experienced and grasped them during the short time he had been in office. His remarks were freely interspersed with lantern slides, and to those who know something of the work of our great organisation, those observations gave evidence of the earnest application of our present chief and at times, even, the evident surprise of the speaker himself at the smoothness with which the huge machine moved, and the unostentatious manner in which each branch performed its duties to the State. Telephonists especially should be grateful to Mr. Lees-Smith for the plea he put in on their behalf to members of the public for a little patience at times of peak-load, when the operators are doing their best to carry out what he termed their "distracting duties." The postman, the sorter—especially the travelling one—the lineman, the men on the cable-ship, the Post Office engineers and their wonderful work at Rugby, with its wireless telephony ramifications, all came into review. The Post Office underground robot railway was also ably explained and illustrated. As Mr. Lees-Smith undertook to deal with but two of the chief activities of the Post Office, the Postal and Telephonic—each one in itself an evening's task, one can confidently affirm that he deservedly received the hearty vote of thanks and congratulations,—ably voiced by the Rev. W. Major Scott, who presided,—and which were unanimously and with acclamation accorded him.

J. J. T.

THE PROGRESS OF ELECTRICAL COMMUNICATION IN INDIA.

QUITE apart from the steady advances made with electrical traction, especially on heavy gauge lines in the Bombay district and over the Ghats, it is deeply interesting to note from time to time how surely yet unostentatiously the telegraph and telephone communications of India especially are marching ahead.

This is specially the case with long-distance telephony. Apart from the statement of a Calcutta newspaper that its representative at Karachi had a conversation on Aug. 2 with a *Daily Mail* reporter in London "by telephone over the Indo-European *telegraph* line," concerning which *The Electrical Review* remarks that, "in the absence of details it is not clear how the communication was effected," there is sufficient evidence that long-distance telephony, for example, is an accomplished fact. If, as is the case, telephone communication between Landi Khana, on the Afghan border, and Bombay is a regularised communication, then one may be confident that once Europe is able to get in telephonic touch with India, extensions to most of the important centres, not excepting Madras, and eventually Burmah will be well on the way to realisation.

At present the United Provinces, the Valley of the Ganges, from Calcutta to the North-Western Frontier, are all telephonically connected with Bombay, and extensions are now being made southwards, though the financial incentives to develop in that direction have not the urge of the more northerly districts mentioned.

One of the most hopeful signs would appear to be found in the report of the Indian Institute of Science, Bangalore, which emphasises the considerable progress made in electrical equipment and electrical research there. A direction-finding house has been built for research in telegraphy and telephony. A Creed keyboard perforator (possibly a footprint of friend Creed during his last visit!), a Wheatstone high-speed automatic transmitter and a Strowger-type automatic telephone set—10,000-line system—have all been added to the engineering section. That the Institute is no mere theoretical college the directorship of Professor Catterson-Smith ensures, and mention of but a few of the investigations carried out will supply full confirmation: thus, power losses in dielectrics at high voltages and normal frequencies have been examined and censured: the behaviour of insulating oil at varying temperatures, with special reference to losses near the breakdown voltages, has been carefully recorded: daily observations of the carrier-wave strength from the Bombay broadcasting station, &c., &c.

The engineers of the near future, thus equipped, should be well able to cope with their day-to-day duties, not to say deal with unforeseen problems.

J. J. T.

PROGRESS OF THE TELEPHONE SYSTEM.

THE total number of telephone stations in the Post Office system at Nov. 30, 1929, was 1,837,045, representing an increase of 14,055 on the total at the end of the previous month.

The growth for the month of November is summarised below:—

	London.	*Provinces.*
Telephone Stations—		
Total at Nov. 30	657,304	1,179,741
Net increase for month	5,472	8,583
Residence Rate Subscribers—		
Total	160,342	252,063
Net increase	1,728	2,573
Call Office Stations (including Kiosks)		
Total	5,780	23,780
Net increase	31	422
Kiosks—		
Total	1,539	5,865
Net increase	24	81
Rural Party Line Stations—		
Total	—	10,353
Net increase		—
Rural Railway Stations connected with Exchange System		
Total	17	1,390
Net increase		92

The total number of inland trunk calls dealt with in September, 1929 (the latest statistics available) was 9,757,670, representing an increase of 897,582, or 10.1% over the total for the corresponding month of the previous year.

The outgoing international calls in September, 1929, numbered 44,011, and the incoming international calls 47,636, representing increases of 9,493 (27.5%) and 10,232 (27.4%) respectively over September, 1928.

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

PROVINCES—Herne Bay, Skegness.

Ancroft, Bassingham, Carradale, East Allington, Elton, Gorthleck, Gt. Alne, Gt. Tew, Huxley, Machrie, Parwich, Wiseton (all rural automatic).

and among the more important exchanges extended were:—

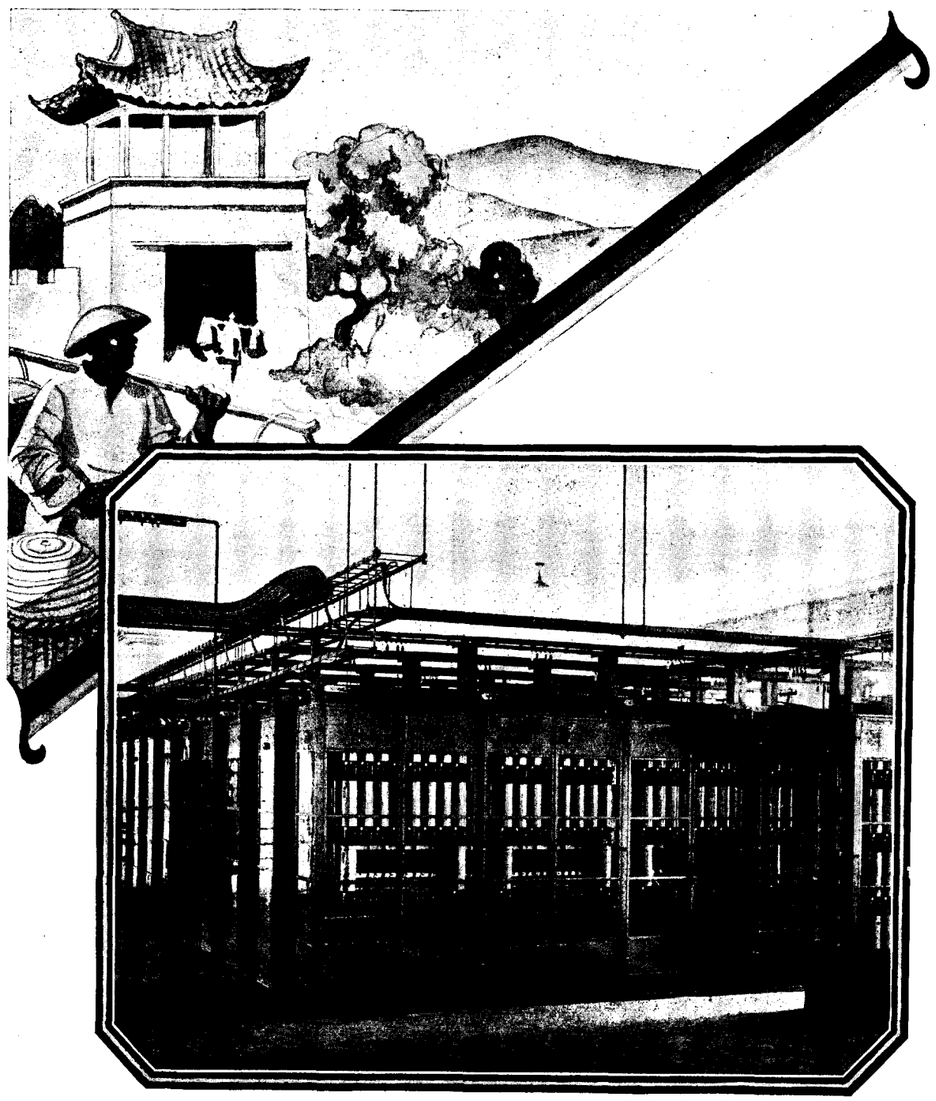
LONDON—Albert Dock, Merstham.

PROVINCES—Birmingham (East), Bury, Carlisle, Chester, Chorlton-cum-Hardy, Glasgow (West), Huyton, Llandaff, Luton, Ormskirk, Penrith, Preston (Lancs), Whitchurch, Wigan.

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

Manchester—Huddersfield cable.

while 76 new overhead trunk circuits were completed, and 87 additional circuits were provided by means of spare wires in underground cables.



General view of Strowger Automatic switchroom at Dairen, Kwantung Peninsula. In this city where Japanese, Chinese, Russian and English are all spoken, the dial has been found to provide a universally satisfactory solution to the problem of providing telephone service to such a cosmopolitan population.

S wger Automatic Operation I he Far East.

DAIREN, situated on the southern side of the Kwantung Peninsular and near Port Arthur, has had Strowger Automatic operation since 1923. At present it has 7,100 lines of Strowger Automatic equipment in operation, with 400 more under process of construction. The important railway and industrial centre of Harbin, in Manchuria, has had Strowger Automatic telephones since 1921, and at present has some 3,000 lines of this equipment in operation, with 1,000 more under construction.

It is highly significant that in these two important centres of population in a region where telephone operation is beset with many difficulties, such as a mixed population speaking various tongues and a severe climate with unusual conditions of humidity, Strowger Automatic operation was not only selected by government engineers for initial installation, but has again been selected for subsequent additions by both of the important cities mentioned.

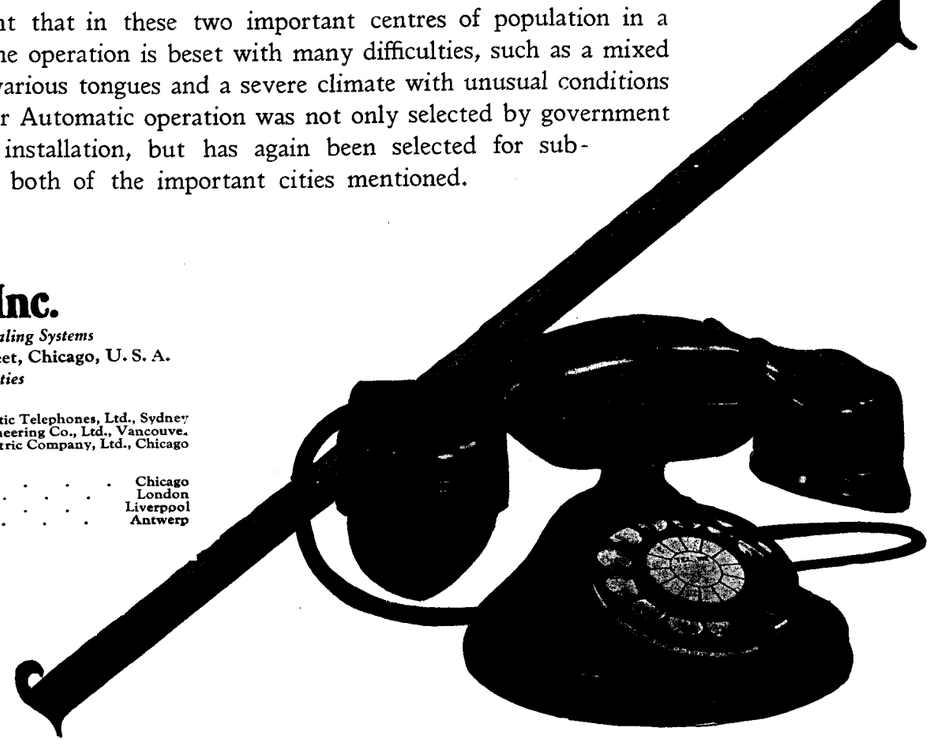
atic Electric Inc.

M
Factory and

wger Dial Telephone and Signaling Systems
1033 West Van Buren Street, Chicago, U. S. A.
rvice Offices in All Principal Cities

For Australasia Automatic Telephones, Ltd., Sydney
For Canada Independent Sales and Engineering Co., Ltd., Vancouve.
Elsewhere The Automatic Electric Company, Ltd., Chicago

American Electric Chicago
International Aut mpany, Ltd. London
Automatic Teleph Company, Ltd. Liverpool
The New Antwer ical Works Antwerp



STROWGER AUTOMATIC

The
Telegraph and Telephone Journal.

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

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.*

VOL. XVI. FEBRUARY, 1930. No. 179.

THE KING'S BROADCAST.

ARRANGEMENTS on an unprecedented scale were made for broadcasting His Majesty's Speech at the opening of the Five Power Naval Armaments Limitation Conference on Jan. 21. Two separate broadcast transmissions were passed over the Transatlantic radio channels for the American broadcasting companies and successfully emitted from 124 broadcasting stations in the United States. In addition to providing these radio circuits to the American broadcasting companies the British Post Office supplied the following Anglo-Continental circuits to the British Broadcasting Corporation: 2 circuits to Paris (for transmission of the speech to French stations), 2 to Brussels (for Belgium and retransmission to Holland), and 2 to Berlin (via Cologne) for retransmission to Stockholm, Oslo, Copenhagen, Prague, Vienna and Budapest, retransmission for German stations being provided from Cologne. Reception was also obtained indirectly as far away as Italy and Poland. In short, nearly every country in Europe which had a broadcasting system took part in it, and in all about 270 transmitting stations were reached.

Furthermore, a trunk circuit was provided between London and the Marconi Company's broadcasting station at Bridgwater for effecting transmission to Canada, whilst in response to requests, the Post Office station at Rugby sent out a broadcast to Australia from which, also, several stations in New Zealand and Japan were successful in picking up the King's speech.

To carry out this comprehensive scheme so successfully required the closest co-operation between the Post Office, the British Broadcasting Company and the many other administrations and companies concerned, both at home and overseas. As was remarked in last Sunday's *Observer*:—

> "Thanks to goodwill and organisation all went smoothly, and a spectator in the control room" (a B.B.C. official is speaking) "would have been thrilled to listen to the various engineers talking to Paris, Berlin and other cities on the service circuits wherever operators were reporting on the quality of the transmissions along the primary lines of the broadcast.
>
> "Thus Vienna telephoned that 'the lines were good as far as Prague and good from Vienna eastward, but at Vienna itself they had changed over to wireless communication.' This message was typical of what was going on throughout the two hours or more."

We are chary of using such a well-worn word as epoch-making to describe this great occasion and the successful broadcasting, literally world-wide, of its opening ceremony. But we think that even the least thoughtful must have been touched by the solemnity of the occasion and its message of hope to the nations, and we should like to believe, now that the forces of wire and radio-telephony, with their unlimited range, combine to further the cause of peace, that a new epoch may truly be said to have been inaugurated.

PICTURE TELEGRAPHY.

LAST month saw the opening of a public service of picture telegraphy between this country and Germany: and the potentialities of picture telegraphy are still so obscure that it may well be that the event will be found in the course of time to mark the beginning of a new epoch in the history of the British Telegraph Service.

Picture telegraphy is no new thing. For many years the possibility of reproducing documentary or pictorial material in facsimile at a distance by electrical means has occupied the attention of many fertile minds, but it is only within recent years that the researches of the experiment-room have been rewarded by the development of systems which are efficient enough to be employed for commercial purposes. As often happens with scientific discoveries, several systems were placed on the market about the same time, and one of the difficulties presented to intending users is that of choice.

As might be expected from the nature of the new facility, the proprietors of newspapers were not slow in recognising its advantages for their purposes, and several newspapers have now the necessary equipment for the transmission of pictures between their London and provincial offices and even in some cases between London and Continental towns. The Marconi Wireless Telegraph Company have had for some considerable time a public service of picture telegraphy between this country and the United States and, until last month, this was the only public service of the kind in this country.

The Post Office necessarily had to hold its hand until there was evidence of a public need and, now that that need has become apparent, it has opened the service to Germany, the system adopted being the Siemens-Karolus of German origin. The early extension of the service to Austria, Denmark, and Sweden is contemplated, and the question of further extensions to Continental countries as well as the establishment of services within the British Isles will no doubt come under consideration as time goes on.

There are not wanting enthusiasts who predict the supersession of existing methods of telegraphy by the picture method, and time alone will tell whether they are true or false prophets. In the meantime we may content ourselves with the thought that the Post Office telegraph service has acquired another instrument of much interest to itself and of benefit to the public at large.

THE GALES.

THE long succession of violent gales which have visited these islands this winter might arouse in the ordinary citizen a mild concern for the stability of his chimney-stack or garden fence, or perhaps a passing commiseration for the victims of those casualties about which he read in his morning newspaper. For the Post Office engineering staff, however—especially for those engaged in outdoor work—the hoarse and blustering voice of the gale is the signal for an immediate mobilisation of forces to do battle with an enemy of widespread destructive violence. No telegraph or telephone route, however solidly constructed, is impregnable against the assaults of falling trees or the flying wreckage from the storm. Main trunk routes may be placed underground in ever-increasing proportions: over five-sixths of local exchange wire mileage may be buried in conduits in the earth (as in fact they are), but thousands of miles of line, must, for various reasons, always be exposed to the fury of the elements at times like these. The first notes, therefore, of the rising gale are a certain prognostic to these men of wintry nights and days spent on the most exposed parts of the countryside, often on wild and lonely moors, at best on roofs and other perilous elevations. The average business man reads with dismay the tale of 200 trunk lines down, and may perchance feel next morning a little of the untoward effects which these tidings connote, but so rapidly are the ravages of the storm repaired that commonly this short-lived inconvenience is forgotten and the other aspects of the gale's work of destruction loom more largely in his mind.

We are glad to see that the skilful labours performed on these occasions, as a matter of course, by telephone engineers, have recently been receiving hearty recognition in the press. Articles descriptive of the expeditious work of the linemen, of the hardships they endure, and of their philosophic cheerfulness have appeared in several newspapers, and will do much to enhance public appreciation of the important public work they perform. It falls to many of us to work additional hours in times of emergency, to apply increased energy and endure increased strain on special occasions—but not with the concomitants of chilling blasts, sleet, or snow on wintry nights or at dark dawns.

HIC ET UBIQUE.

THE total number of telephones in Great Britain and Northern Ireland at Jan. 31 was 1,886,726, made up as follows:—

Post Office stations	1,849,181
Private systems (railways, &c.) with exchange facilities	13,448
Hull Municipal system	16,238
States of Guernsey system	4,353
States of Jersey system	3,506
	1,886,726

This represents an increase of 127,040 stations on last year's total.

The following letter to the *Daily Telegraph*, signed "Peterborough," demonstrates once again the difficulty of getting evidence as to the first exchange in London:—

When was the telephone first in general use in London? Yesterday I was reading a book by Edmund Yates, dated 1874. In the publishers' advertisement pages it was stated, "You may communicate with us by means of the telephone number 313."

The evidence seems conclusive enough: it would appear sufficient to satisfy anyone who wished to prove his point. Yet, as we know the telephone was not invented until 1876 it was impossible for a publisher to be "on the telephone" in 1874. We can only conclude that the book in question was a later reprint, without alteration of date and with fresh advertisement pages.

An American lady recently addressed an enquiry to "The Radio Commission, London, England," for information concerning "thot waves," of which she had read in an American journal. Did they know anyone who had "thot waves," and were there laws in England covering them. Washington had already officially informed her than "thot waves" were not recognised as a means of communication over there.

We know of plenty of people who have "brain waves" in the Post Office (and outside), but "thot waves" (at least as a means of intercommunication) we have no knowledge of. The lady was accordingly informed officially to this effect, and also that there was no British legislation on the subject.

A testimonial to the efficiency of the "Personal call" system in the Anglo-Continental telephone service which was recently received from the proprietor of three Scottish theatres where Continental artistes are often engaged, is reminiscent of those feats of American telephony often trumpeted in the Press.

Urgent communication with two English-speaking artistes in a cabaret in Paris was required. Telegrams sent were advised as "undelivered, address insufficient." The sender then passed a "personal call," giving the artistes' names and the address of the cabaret as far as he knew it. He desired to express his high appreciation of the courtesy and helpfulness of the Glasgow and London exchanges, which resulted in his negotiations being successfully completed within an hour or two.

Recently, says the *Leeds Mercury*, one who was staying at Gibraltar found himself seated near a telephone box in the hotel lounge. Unconsciously he heard a distinctly West Riding accent emanating from inside the glass.

"Yes," declared the voice, "It's warm and fine here. Is it raining in Wibsey?"

Judging by the ensuing remarks, the 'phone user was actually speaking to Wibsey, near Bradford. When the speaker left the box, the unintentional listener made himself known, and the other introduced himself as a well-known Bradford wool merchant engaged in the Moroccan wool trade.

He announced that he spoke from "the Rock" to his home every evening at a cost of 12*s.* for three minutes. "And it's worth it!" declared the Bradfordian.

WE reproduce this effort by a Swedish comic artist, for the benefit of our readers in the switchrooms, not because it is instructive or original, but because it will be seen therefrom that even

in Stockholm, the Mecca of so many telephone prophets, the telephonist does not escape the old, old libel.

WE are printing in another column an article on "Smelling by Ear" from the *Manchester Guardian*. They call this system synesthesia, and give various instances of similar interchanges of the senses.

This possibility of stimulating one sense through another is perplexing to the ordinary man and causes him much misgiving of the future developments of science. He fears snags. Will he be expected to take his "sausage and mashed" by wireless in future, and will it satisfy? And what will be his mental and bodily reactions when sipping a priceless burgundy if he gets a flavour of sauer kraut or vodka by wireless?

Jamming and reaching out (to use an Americanism) for foreign stations would, of course, present novel experiences, if not always pleasant ones. Porridge with the nuts, and pickles with the pastry, would not suit all constitutions.

SMELLING BY EAR.

REPORTED EXPERIENCE OF A RADIO LISTENER.

THAT curious mixture of the senses called by physiologists "synesthesia" is responsible for the fact that certain persons can receive a brain-message corresponding to one sense when another sense is stimulated. The most common case is that of "colour-hearing," where certain sounds produce the sensation of colours; but a writer in the *American Weekly* (New York), quoted by the New York *Literary Digest*, tells us that there are instances where a smell provokes the sensation of sound, where a colour produces a taste, and so on. Several theories are advanced to explain this curious effect, and the author prefers that which accounts for it by supposing some sort of a "short-circuit" between different brain centres, so that the sensation that ought to affect the centre of vision stimulates instead that of sound, for instance. We read:—

"A radio listener in Paris recently presented French radio engineers with a puzzling problem. When he listened to the church service broadcast from the Cathedral of Notre Dame, this listener said he also smelled the smoke of the candles in the church. Was it possible, he asked, that smell sensations might be picked up accidentally by the microphone?

"Radio engineers thought not, but were undecided about the real explanation. Certainly nothing of the character of a smell can possibly be sent out, everybody agreed, over radio waves.

"Fortunately for the candle-smelling Parisian, psychologists came to his rescue. He was the victim of a curious mental abnormality called 'synesthesia,' or the mixing of sensations. These instances are most likely to occur in people above the average in mental powers, education, and culture.

"In the Parisian case the listener got his hearing sensations mixed in his brain as they came in. Some of the nerve impulses leaked across the brain to affect the centre for smells. That the listener seemed to smell burning candles is explained by past association.

"In the records of laboratories of psychology are accounts of individuals whose taste sensations got mixed with sounds or with sensations of colour; of individuals whose smell sensations called up colours or scenes; of still other persons whom sounds made to feel paid or whom pain made to hear imaginary sounds. Apparently nearly every possible mixture of one sense with the other has been detected in at least one abnormal individual.

"Some such mixtures are familiar. Taste sensations, for example, are not infrequently produced by the sight of food. The fact that the body feels the taste impulses unconsciously is indicated by the common observation that sight of food often 'makes one's mouth water.'

"By far the commonest of these abnormalities are colour sensations called into being by ideas of other kinds. 'Colour hearing' is one of the commonest cases, a condition in which the hearing of some sound always calls up in a person's mind the sensation of a definite colour."

There can be no doubt, we are assured, that these colour experiences on hearing sounds are perfectly real to the persons who experience them. Not long ago in Germany a Dr. Anscutz, musician and psychologist, broadcast by radio an appeal for persons possessing these powers to present themselves for psychological study. One hundred and fifty individuals came forward, which must indicate that an immensely larger number of such persons exist. The writer goes on:—

"Dr. Ponder, Dr. D. F. Fraser-Harris, of London, and other experts located many other cases. Something like 12% of the average population possesses, Dr. Ponder believes, traces of this colour-hearing power. It belongs, he suspects, to an actual majority of young children, although it often fades as a child grows up."—*Manchester Guardian*, Jan. 4, 1930.

TRANSFER OF MR. F. E. C. B. ADAMS, BELFAST.

ON Dec. 30, 1929, a large and representative number of his colleagues met at the District Manager's Office to say official farewell to Mr. F. E. C. B. Adams (Contract Manager) on his transfer to York.

The District Manager, Mr. T. Rodger, presided and presented Mr. Adams with a handsome silver tea service as a mark of appreciation and respect from the staff. Messrs. Maskrey (Traffic Superintendent), Peck and McBrien (Engineering Department), Green, Holmes and Gossan (Contract Section) and Stanfield (Accounts Section) also spoke in glowing terms and wished Mr. Adams every success in his new district.

Mr. Adams responded feelingly, and, thanking the District Manager and Staff for their kind wishes and very practical and artistic gift, said he and Mrs. Adams had found many warm friends in Belfast. Their stay in Northern Ireland had been a very happy one and they left with many regrets.

It is interesting to note that during the six years Mr. Adams was in Belfast there was an increase of over 7,000 subscribers, 62 new exchanges were opened, and over 120 street kiosks erected. Those who know the special conditions peculiar to Northern Ireland fully appreciate the amount of energy and enterprise necessary for the production of such splendid results.

THE LONDON-BERLIN PICTURE TRANSMISSION SERVICE.

By E. PHILLIPS.

THE Picture Transmission Service between London and Berlin was opened on Jan. 7 by the exchange of photographs and written greetings between the Postmasters-General of Great Britain and Germany.

The service has since been extended to Frankfort-Main, and steps are being taken to extend it to other places.

A GREETING BY PICTURE TELEGRAPHY.

(Translation.)

VIENNA COPENHAGEN
STOCKHOLM LONDON
FRANKFURT M.

A Happy New Year to all Picture-Colleagues.
PICTURE STATION, BERLIN.

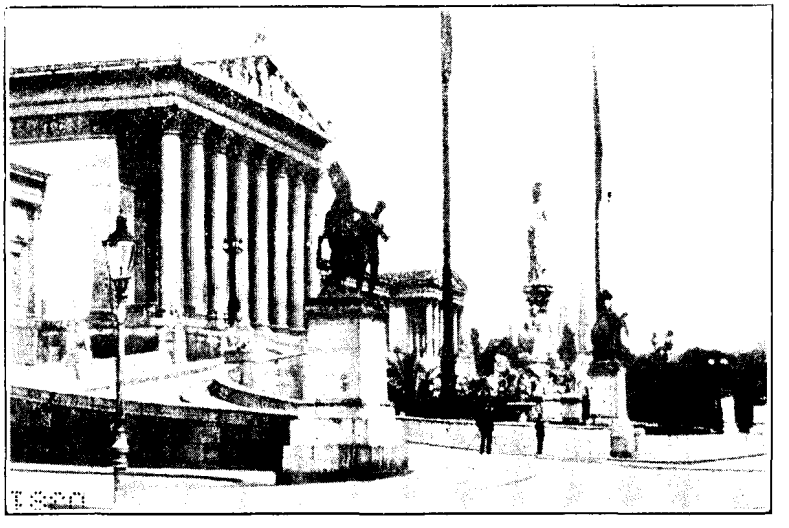
The new service permits transmission and reception of all types of pictured or printed matter in monochrome. The picture is received as a photograph, and sensitiveness to colour corresponds to that of an ordinary photographic plate. For monochromatic matter, such as print, line drawings, block prints, or reproductions of photographs a high degree of faithfulness is obtained.

The system used is the Siemens-Karolus-Telefunken, which has been developed by Dr. Karolus, of Leipzig, in conjunction with the Siemens-Halske Company of Berlin. The sending system consists of a lamp giving a bright spot-light which is directed through a system of lenses and prisms on to the picture to be sent. The light beam is interrupted by a rapidly revolving perforated disc. A carrier-wave of a certain frequency is thus generated. After passing through the holes in the interrupter disc the light beam shines on the picture being transmitted and is reflected from this on to a photo-electric cell. This is an evacuated glass bulb, or tube, which has part of its inner surface coated with potassium or other alkaline metal, which has the property of emitting electrons under the influence of light. The electrons emitted by the light-sensitive surface are caught on a wire mesh placed in front of the surface. The light-sensitive coating is connected to the negative pole of a battery, and the mesh is connected to the input of a valve amplifying system. When light falls upon the light-sensitive surface a tiny current, measured in micro-amperes, is generated, and passed to the amplifying system for transmission.

The picture to be transmitted is clipped to a drum and enclosed in a light-tight cylinder, which has an opening facing the photo-electric cell. The drum revolves at a steady rate. The light from the lamp is concentrated by the last lens into a point of light on the surface of the picture. It is then reflected on the photo-electric cell, the intensity of the reflected ray varying as the surface from which it comes is light or dark. The current from the photo-electric cell varies in sympathy, and the variations are passed through the amplifier to the transmitting medium.

The optical system exploring the picture drum is mounted on a spiral axle, and moves upward or downward as required. The axle is driven by the same motor that drives the drum, with suitable gearing, and the pitch of the spiral is such that the light beam "explores" the whole surface of the drum in lines of 0.20 mm. width in a certain space of time. This take 20 minutes in the London-Berlin transmissions. With overhead lines the time could be considerably reduced.

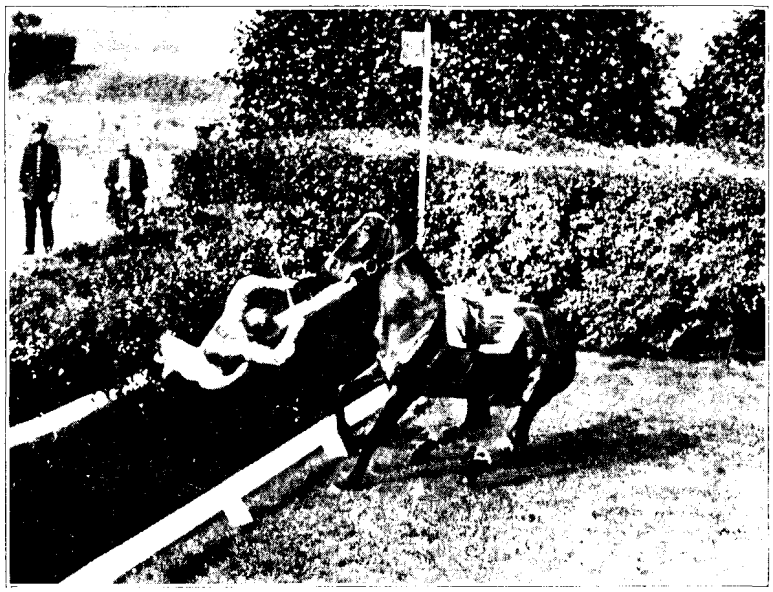
At the receiving end translation of the electrical signals into terms of light is effected by a "Kerr Cell." This consists of two "Nicol Prisms" with a "benzole" cell in between. A Nicol Prism is a crystal of Iceland Spar (calcium carbonate). It has the almost unique property of "double refraction," i.e., when a beam of light is admitted into it, two beams emerge. When cut in a certain manner, and the severed parts cemented together with Canada balsam, the Nicol Prism has the property of "polarising" light. In the Kerr Cell, two "Nicols" are arranged so that the polarisation plane of one opposes that of the other. No light then passes through the system. The "benzole" cell has the property of rotating the plane of polarisation when in a condition of strain. The strain is imposed on the benzole solution by a small condenser immersed in it. The incoming signals are brought to this condenser after suitable amplification. A maximum voltage of 700 R.M.S. volts is used. When a current comes on to the condenser the plane of polarisation of the beam coming through the first "Nicol Prism" from the spot-light lamp is changed to a greater or less degree. Light will then pass in greater or less degree through the second Nicol prism. This is directed by glass prisms and lenses as a spot on to the surface of the photographic



TELEGRAPH PICTURE OF THE PARLIAMENT HOUSE, VIENNA.

film on the receiving drum. The film is thus affected in a corresponding degree to the varying intensities of light reflected from the picture on the sending drum. The film is afterwards developed and prints made from it in the usual way. The result is a picture of "grain" so fine that the lines of which it is composed can only be seen with the aid of a magnifying glass. It is indistinguishable from a photograph taken in a camera direct.

Synchronism between two stations is maintained by "tuning forks" enclosed in thermostatic chambers. The speed is checked by means of stroboscopic discs. Before transmission is commenced the forks at the sending and receiving ends are "tuned" to each other. A high degree of synchronisation is maintained. The variation at the end of a 20-minute transmission is infinitesimal. To ensure that the beginning-point of transmission and reception of a picture shall coincide at both stations, a "phasing" signal, which causes a neon lamp to flash behind a certain spot at the receiving end, is sent before transmission is begun.



RACING EPISODE TELEGRAPHED FROM BERLIN.

The system was first used between Berlin and Vienna in 1928. There are now public stations at Stockholm, Copenhagen and Frankfurt-Main, in addition to London and the two first mentioned. Private installations are also maintained by Press syndicates in Great Britain and on the Continent, and also in Japan. Australia has a service between Sydney and Melbourne. It is evident that this new method of communication will become important in the future.

REVIEWS.

"*Overhead Power Lines: Elementary Designs and Calculations.*" *Capt. W. Morecombe. Chapman & Hall.* 15*s. net.*

THIS book is of interest to Post Office engineers as a complement to the Department's instructions on overhead telephone lines. It deals with most of the points which arise in the design of overhead power lines, taking the Electricity Commissioners Regulations as a basis. The bulk of the text is devoted to mechanical problems, and considerable attention is given to the difficult and frequently neglected question of the strength of pole foundations.

In view of the small use which is made in this country of ferro-concrete poles, it is perhaps not surprising that little detail is given regarding this type of support. It would, however, have been interesting to have had some information regarding workshop produced centrifugal spun poles.

Reprints of the latest safety regulations of the Electricity Commissioners and the Post Office are given as appendices.

"*High Voltage Cables.*" *L. Emanueli. Chapman & Hall.* 8*s.* 6*d. net.*

This book covers the ground included in Mr. Emanueli's course of five London University lectures delivered at the Institution of Electrical Engineers last winter.

The introductory lecture deals very briefly with the manufacturing details of lead covered, paper insulated power cables and with the properties of insulating paper. The subsequent lectures deal in turn with impregnating compounds, the electrostatics field in an A.C. power cable, the dielectric of a cable considered from the point of view of its impregnation and the chemical and electrical qualities of the finished cable. The last two lectures bring out the difficulties encountered in the production of a satisfactory cable for high voltages, and lead up to a description of the oil-filled cables which are now being worked in the U.S.A. and in Italy, up to a maximum pressure of 132 kV.

LONDON ENGINEERING DISTRICT NOTES.

Institution of Post Office Electrical Engineers.

A LARGE and representative gathering assembled on Jan. 14 at the Institution of Electrical Engineers to hear a paper on "Critical Methods of Investigation as applied to the Study of Telephone Areas and Plant Layout," read by Mr. J. N. Hill, of the London Engineering District.

The Chairman of the London Centre, A. B. Hart, Esq., presided.

The speaker gave a clear exposition of the reasons which justify investigations being made into the economics of telephone engineering and explained in detail some of the methods adopted in dealing with the problems which have arisen in connexion with the London Telephone Area.

The paper was illustrated by a large number of lantern slides.

In the discussion which followed Mr. Hedley and Capt. Hines paid a well-earned tribute to the personal work done by Mr. Hill and to the fact that many of the methods described in the paper were devised or suggested by him. Capt. Reid, Messrs. Hay, Morrish, Meek and Ings also spoke, and after Mr. Hill had ably replied to the discussion the meeting closed with a hearty vote of thanks to the author.

New Exchanges.

The following exchanges were opened during the month of January:—

Name.	*Type.*
Hurstway	Hypomatical on Ravensbourne.
Springpark	C.B. nr 10.
Redhill	C.B. nr. 1.
Theydon Bois	C.B. nr. 10.

Exchange Construction.

Automatic equipment is being installed in the following exchanges: Primrose, Amhurst, Fairfield, Addiscombe, Shepherds Bush, Livingstone, Macaulay, Gladstone. Manual apparatus is also being provided at Ingrebourne (Harold Wood), Loughton, Romford, Silverthorn (Chingford)

"RELAY" AND "STERLING" FUSION.

A FUSION of manufacturing interests has been arranged between The Relay Automatic Telephone Company, Limited, and The Sterling Telephone & Electric Company, Limited.

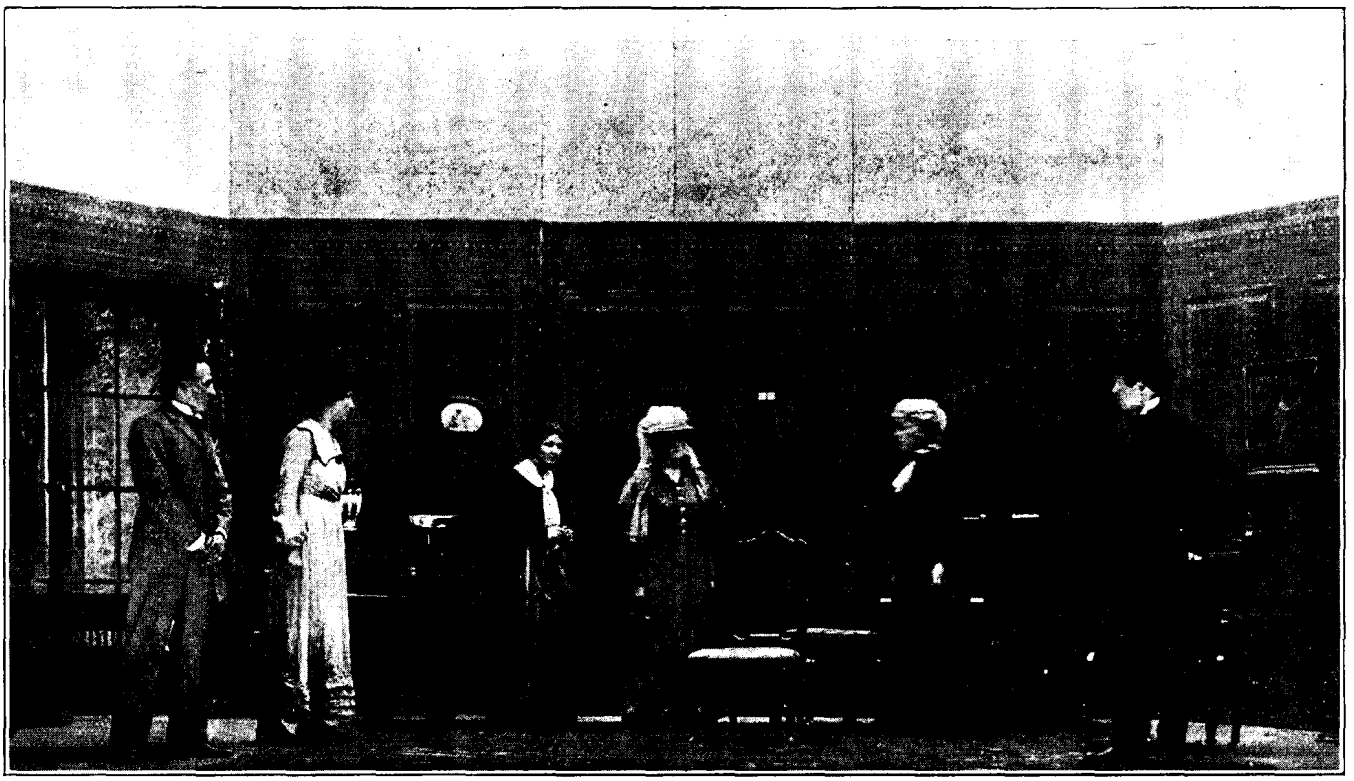
The manufacturing facilities at Relay House, Streatham Hill, will be considerably augmented to deal with the dual output of these two companies, which will manufacture Automatic Telephone apparatus and Manual Telephone apparatus respectively.

All enquiries in connexion with the Sterling Company's products should now be addressed to: Relay House, Streatham Hill, London, S.W.2.

NEW CHILI TELEPHONE CONCESSION.

THE Chilian Senate yesterday approved the new 50-year concession permitting the Chili Telephone Company, associated with the International Telephone and Telegraph Corporation, to penetrate throughout the country with its own lines and to connect the system with all other national operating systems.

It was in 1928 that the Chili Telephone Company became associated with the International System, and while since that time it has been operating the largest telephone system in Chili, yet their lines have not yet reached all parts of the country. International service with the neighbouring republics of Argentina and Uruguay has been established and a definite prospect now is opened for an extension to other territories served by the International System via the Buenos Aires—Madrid radio link of the Compania Internacional de Radio (Chili). This new concession brings Chili within speaking distance of Europe, and shortly a similar connexion will be effected with the United States.



MRS. MOONLIGHT'S FIRST RETURN.

"MRS. MOONLIGHT."

MR. E. A. POUNDS' production of this play, by Benn W. Levy, described as "A Piece of Pastiche," was successfully given at the theatre in the Guildhall School of Music and at the Cripplegate Institute early in January. The "pastiche," or phantasy-piece, as we should prefer to describe it, depends for its main motive on the idea that the heroine, having expressed, while in possession of *a magic stone, the unholy wish never to grow old, becomes a prey* to the dread of its fulfilment, whilst all those she loves are yearly showing the ravages of age. This is in effect what happens; and once you have accepted the phantasy as valid, you can proceed to enjoy a very well-written and moving drama. Mrs. Moonlight, tormented by the prospect of unchanging youthfulness of appearance, elects to disappear and efface herself, reappearing under different sobriquets at intervals of twenty years—the first time to find her husband re-married to her adopted sister, and opportunely to prevent her daughter's marriage with an undesirable by exercising *her own youthful charm upon him; and the second time to find* her grandson grown up and her husband bereft of his second wife and most of his faculties. His puzzled recognition of his beloved lost wife, whilst her personality remains an enigma to the other characters about her, formed a touching climax to the play.

The chief honours fell, we think, to Miss Sallie Latimer in the title part of which she gave a sympathetic and charming rendering, while Mr. Walter Beale as the somewhat self satisfied, good-natured husband, sustained a heavy part with great effect. Mr. Roy Beaumont as Willie Ragg gave a finished representation of the plausible "bounder," and Mr. Edwin Neal was admirable as the foolish swain who, however, makes a solid (if second choice) husband for the young heroine, Jane. This latter role was acted with considerable natural charm by Miss Nora Cheason, both as a coquettish young girl and a sensible wife and mother. Miss Peggy Murray was most delightful and convincing as the faithful Scottish *maid, and Miss Eilleen Jones filled the part of the second wife,* Edith, with distinction. It only remains to add that Mr. Leslie Craft was quite adequate in the small part of Peter.

Mr. Pounds' production of the play reflects the greatest credit on himself and all concerned, and bore plainly the marks of his experience and good taste. All taking part were connected with the Service. The play was received with considerable enthusiasm and appreciation.

W. H. GUNSTON.

PRESENTATION TO MR. E. H. DYKES.

THE closing hours of 1929 were marked by a pleasing function in the C.T.O., London, at which a presentation, on the occasion of his retirement, was made to Mr. E. H. Dykes, Inspector of the Maintenance Staff of the Engineer-in-Chief in that office. The chair was occupied by Mr. W. Deane (Sectional Engineer, C.T.O.), who was supported by a large gathering of all ranks in his department as well as representative members of the traffic side of the office, past and present.

The CHAIRMAN, in his opening remarks, paid tribute to Mr. Dykes' unblemished service of 46 years, a record of which any officer might be proud, and subsequently made the presentation of a cabinet gramophone and accessories. Other speakers included Messrs. Hart, Sutton, Gayfer and Tyrrell (the latter on behalf of the Traffic side). The common burden of their remarks was a reference to Mr. Dykes as one of nature's gentlemen, which had enabled him to win the respect and esteem of all with whom he was brought into official contact. Individually, the speakers recalled various outstanding events in his official career, notable among which have been the part he played in the first establishment of Baudot working between this country and the Continent in 1898, his journey to India in 1905 to set up the same instrument in that country, and finally its inauguration for the purposes of purely British telegraphy in 1910.

During the proceedings the Chairman read telegrams received from the maintenance staffs of the Birmingham and Glasgow offices, with whom he had been associated in connexion with the work last named.

Mr. Dykes, in a reply tinged with emotion, recalled the conditions which prevailed in his department when he entered the service, and sketched its expansion. He then thanked everybody, of all ranks, on both the engineering and traffic sides, for their tolerance, helpfulness and loyalty. He would not pretend to have had no differences or anxious moments, but he had striven never to lose his temper, as nothing was gained thereby.

Judging by the testimony of the other speakers, he literally succeeded in this and other high endeavours, and there were probably not a few whose final handshake was accompanied by the thought that here was a man who had achieved very much more than the average as regards the things that matter most in life.

J. G. K.

CORRESPONDENCE.

HOW TO IMPROVE THE TELEGRAPH SERVICE.

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

DEAR SIR,—I do not wish to create an unfavourable impression as a result of continued, although, I hope, constructive criticism.

It must be admitted that Mr. Teasdale has produced a hard nut for critics to crack, but gives an opening when he tramples on my pet theory.

An express delivery fee of 6*d*. per mile in excess of the radius of one mile is suggested, and to be charged to the addressee, which imposition, your correspondent states, will be a further inducement to the recipients to become telephone subscribers.

I again submit that this would be a disastrous policy, and that it is another vivid illustration of confining thought to within a certain circle. Not only the addressee, but Fleet Street, and the senders, would be inclined to delete the words "be a further inducement to" and substitute the single word "force." *If you refuse to have a telephone we shall make you pay* 6*d. extra on all messages which you receive*!

The majority of people who reside a mile or so from an office of delivery in rural areas, if not subscribers by now, are not likely to be so for many years to come. To impose a fee under such conditions would seem like victimisation when it is considered that factories, business houses, and others to whom the telephone is of vital importance and a valuable asset, would be exempt.

Mr. Teasdale states that he does not advocate an increase in cost to the sender. Even so, I maintain that the latter would refrain from using the service on being informed of the addressee's liability. Both must be considered. We are servants of the whole public—not 50% of it.

The suggestion to display notices in all post offices calling special attention to facility of telephonic delivery would be of much greater value if reproductions were also embodied in general advertising matter, such as folders, brochures, and posters. People will unconsciously distribute the two former, and the poster will serve to educate, thus lightening the burden on the counter clerks' shoulders, not adding to it, as is suggested.

If the most modern and prominent advertisements are studied, the atmosphere of "notice" will be found to be entirely absent. Even typographical productions convey a personal touch. Study of psychological effect is a very important item on the list of a successful advertiser's qualifications.

Included in copy for external display, the reproductions suggested would give more prominence to telephonic facilities, and the dual purpose of advertising both telegraph and telephone services be better served. I contend that both would benefit. Is there any reason why the systems should not assist each other to push their "wares"?

W. T. L. (C.T.O.).

THE CIVIL SERVICE UNIVERSITY STUDENTS' ASSOCIATION.

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

DEAR SIR, This Association has been formed for the simple purpose of the advancement of the interests of university education in the Civil and Local Government Services, and for the furtherance of the economic welfare of all those employed in the public services who have obtained university degrees or diplomas, or who may now be studying in preparation for such.

The Association is not a trade union, nor is it a grade union. All classes of Government employees are eligible for membership, providing solely that they have already obtained their university qualifications. Those now preparing for university examinations are also admitted as Student Members. The motto of the Association is "We Study to Serve the State."

Men and women are alike eligible. There is no subscription. There are no political aims. There is no clashing with the interests of any other staff association. There is no conflict with the Treasury or with any other Government Department. There are no obligations whatever upon members. The only conditions of entry are that Members must have already studied to serve the State, or Student Members must be now in course of studying to serve the State.

There is no restriction whatever as to grade or office in which employed, except that heads of departments, and those belonging to the Administrative Grade are not, of course, expected to join. Nor is there any desire to overlap with the Institute of Professional Civil Servants. The idea underlying the movement is to get together all those who have studied to serve the State over and above the obligations of their normal conditions of service. It is hoped to prepare a case to put before the Royal Commission to secure economic recognition for all such enthusiastic servants of the State.

For that purpose, all who have at any time obtained university degrees or diplomas, or who may now be in course of preparation for such, are requested to write at once to the Organising Secretary at "Thirlmere," 1303, London Road, S.W.16, stating briefly their university qualifications obtained or for which preparing, their office of employment and grade, date of entry into service, and date of attaining university qualifications, and what promotion, increment, or other recognition of any kind they may have received from their State employers.

No entrance fee is necessary. Only enclose a stamped addressed envelope with every communication. Write at once. There is no time to lose. There must be a very large number of readers of the *Telegraph and Telephone Journal* who are eligible for Membership and Student Membership of this Association.

Holders of Certificates from Learned Societies or Professional Bodies such as the Institute of Bankers, Chartered Institute of Secretaries, &c., &c., are also eligible to join the Association and are cordially invited.

Within less than six weeks 122 Members of the Association have been enrolled (86 of whom are in London). They include 61 clerical officers, 4 higher clerical, 3 executive, 10 S.C. & T.'s, 9 traffic officers and 4 telephonists, amongst whom 23 hold university degrees, 23 have matriculated, 15 passed the inter-examination, 9 have various diplomas and 28 are members of professional societies.

J. T. E. A. WADDELL, B.A., D.P.A.

C.T.O. NOTES.

Promotions. Messrs. E. Colliver and R. Sleigh, Overseers to Assistant Superintendents, W. Wallman, C. T. Drywood, A. W. J. Rates, W. P. J. Ward, E. C. Gillett, A. C. Moody and H. Thomas, Telegraphists to Overseers.

Retirements.—Messrs. J. W. C. Duncan, Assistant Superintendent, A. W. J. Hooper, H. M. Sim, Overseers, W. A. Gunn, C. O. Viveash, J. Williams, G. W. Matthews, Telegraphists, Miss M. V. Hailes, Telegraphist.

Obituary. We regret to record the sudden death of Miss A. F. Stapley, Assistant Supervisor. She was on duty on Jan. 7 and died the same evening. Miss Stapley was of a quiet, unassuming nature, and leaves behind her many sorrowing friends. To her relations we extend our deep sympathy.

We also regret to record the death of Mr. A. Bowden, on Dec. 10, 1929. He had been retired for about 5 years.

Bowls. In our last notes it was reported that the Bunbury Cup was won by the Admiralty Club. This was incorrect. The Admiralty Club were the winners of their section and played the winners of the other section, the L.T.S., and were defeated by them. The holders of the Cup are therefore the L.T.S. (as recorded in the *Journal* for December, p. 56).

Chess.—The "Centels" are at the head of the table in the Civil Service League, Division 3, being half a point ahead of the Admiralty II, who, however, have a match in hand.

There is every prospect of a fine finish in this section, with the Admiralty II holding the advantage, and the Air Ministry close up.

The "Centels" bade good-bye to the Civil Service Minor Cup, the Ministry of Pensions II beating them in the second round for the second year in succession. It was a good match, four games being sent for adjudication.

In the London League "C" we share the top position with the Railway Clearing House, having won 5 and drawn 1.

The match with the R.C.H. was a fine contest and ended in a draw.

The second team, in Section 5 of the Civil Service League, have won 4 and lost 4.

The office contests are well supported again, 20 enthusiasts are battling for the Laxton Cup and office championship, and a good number of juniors are contesting the Junior Knock-out Handicap.

With more than half of our fixtures safely negotiated in this, our seventh season, we still hold our very fine record of never having lost a game by default. We have played over 2,500 league games in the different leagues without a failure. In view of the peculiar office conditions regarding duties, &c., this is a record of which everyone may well be proud and reflects great credit to everyone.

The City of London Male Voice Choir.—The choir have given another successful concert in aid of the Wanstead Orphanage at Waltham Cross. The financial result was in keeping with the musical success and it is pleasing to announce that the Orphanage have bestowed two life governorships on the Conductor (Mr. R. P. Mitchell). These have been transferred to the C.T.O. Benevolent Fund.

During this year the Choir will be assisting the Alexandra Orphanage and also competing in the London Musical Festival in March.

Samuel Smiles.

It seems so remarkably easy to put one's foot in it. I remember once when climbing Hellvellyn (perhaps climbing is not quite the right word; ascending would be better, it sounds more dignified and leaves the reader in doubt as to whether I really climbed or only crawled—anyway, I remember that on that occasion a lady of the party failed to tread delicately, with the result that one well-booted leg disappeared up to the knee in a bog. It was really most amusing, and I seized upon the opportunity to remark that it was a case of "'Knee plus ultra,' i.e. and to wit, 'Thus far and no farther,' or in other words, 'Never no more.'" I was told to lend a hand instead of gibbering bad Latin and being an insufferable idiot. The appositeness of the quotation as applied to the particular situation was lost and what was a real good joke was killed with scorn. Then there was the incident of the Scot who was once my friend. It was a braw nicht when he rose to leave my house. He very carefully donned a thick overcoat, gloves, muffler and goloshes and completed with a hat and an umbrella. When he had finished swathing he remarked, "Must take care of myself—good Scotsmen are scarce." "Yes," I said, "so I've noticed." He hasn't been since. Similarly, there was a sister who had been to see an old friend's new baby. After a considerable (and boring) account of its many qualities the sister said "And directly she saw me she laughed." "Which shows," said I, "that the kid was born with a sense of humour." Well now, didn't it? but—anyway, sisters don't matter much.

Latterly I seem to have plunged the hoof through the pie-crust again and C.A.S. has boxed my ear with a large lump of verse—very good verse, too, mark you, although she merely calls it rhyme. At first it seemed rather thrilling to have verse addressed to me, but later I came to the conclusion that pride was not the reason for my ear swelling. She conveys her rebuke in such an "arch way" that I cannot possibly be cross with her. And she calls me "Boy!" Now isn't that *real nice!* After that I should simply hate to run over her with my bath-chair—it would seem *so* ungracious, wouldn't it? The extent to which I misplaced the pedal extremity can be judged by the fact that I am charged with having imputed treason and crime to her. Ah! woe is me, alackaday! Does she so hang upon my words that she must needs hang me with them afterwards? It just shows how careful one should be with one's feet when writing. Be warned in time to watch your words, and if not by me, then by the example of the man who said "I will" once too often and spent the rest of his life in sackcloth and ashes.

If to her plea for pardon I say "Granted, my fault entirely," I gather that Samuel smiles again—so I say it. But I bet her name is not Samuel, and thus another good joke goes west, and two more feet are planted in error. The man's a perfect centipede!

PERCY FLAGE.

Streatham Exchange.

On Dec. 21 the Staff of the Streatham Exchange entertained one hundred poor children from North Lambeth to the Circus at Olympia.

Two London General Omnibuses collected the children and helpers at 1 o'clock and set forth. It was a very riotous, noisy journey, but Olympia was reached in due course, when the songs of the visitors were hushed in the wonders of the performance. After two and a half hours of spellbound enjoyment, in which the antics of a trapeze Charlie Chaplin were most vociferously applauded, tea was kindly provided by Mr. Bertram Mills. The homeward journey was made in much the same fashion as the outward, and home was reached after a most enjoyable afternoon.

E. M. G.

Our Portrait Gallery.

Miss Beatrice Ashmead started her telephone career with the National Telephone Company at the old Queen Victoria Street Exchange, graduating from there to many other London exchanges.

Her long experience at all types of exchanges combined with her well-known keenness have enabled her to acquire a very thorough knowledge of all phases of her work.

No. 5.—MISS B. ASHMEAD.

Her personality and zeal for the welfare of her staff have endeared her to all those with whom she has come in contact. During her service she has worked at Queen Victoria Street, Hop, Gerrard, North, Battersea, Paddington, Western, Holborn, Victoria, Avenue, and Central, where she now remains as the Chief Supervisor.

Miss Ashmead takes a keen interest in the Civil Service Women's Missionary Society. Her chief hobby is gardening.

Onaway Awake.

(*New Version.*)

C.C.S.! All hail—beloved!
Thou, the mainspring of the Service.
Thou, the magic, mighty medium
Through which endless traffic passes!
Doth not thy congestion pilot
Leap to notice—leap to notice—
When, thy digits swift appearing,
Ev'ry marker pilot gloweth?

When thy boards are staffed, beloved,
I am happy—I am happy!
As the Supers in the springtime,
When returns their truant bonus!
Smile the staff and smile the Supers,
Smile the august ones above us!
But we lose the way of smiling
When thy boards go out of order!
Doth not thy congestion pilot
Leap to notice—leap to notice
When thy path is blocked, beloved,
And there are no calls arriving?

When displays are mutilated
Or thy digits all are darkened,
Points thy shining marker pilot
To thine interception circuit!
Doth not every force within thee
Leap to action—leap to action
At the impulse of directors
Oh, thou mainstay of the Service?
C.C.S.! C.C.S.! All hail, beloved!

C. A. S.

Reliance Exchange.

An enjoyable Christmas party was given on Thursday, Dec. 19.

By kind permission of Mr. Warner, the Chief Engineer, the party was held in the Engineers' Mess Room, Mr. Streatfield giving his ready assistance. The tasteful and cosy decorations reflected great credit on those responsible.

Mr. Ballard, the Service Superintendent, made an excellent M.C.

Miss Roe, Supervisor of the Exchange, Mr. Howard, Traffic Officer, and about 40 telephonists, engineers and friends were present. The entertainment consisted of songs rendered by the Misses Dennis and Rush (which received spontaneous appreciation), community singing, games and dancing.

A very pleasurable evening concluded with the singing of Auld Lang Syne.

W. J. H.

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.1.

MANCHESTER NOTES.

New Premises.—At last we have a permanent habitation for the District Manager's Office at Manchester. During the past 20 years removals have been effected at intervals of about every seven years, but we hope the latest removal to Telephone House will suffice for many years to come.

The new building, which occupies a commanding position in Chapel Street, Salford, was commenced on Jan. 1, 1926; its progress was delayed for about nine months during the disastrous strike of 1926, and was further delayed by a subsequent plasterers' dispute of some months' duration. Anyhow, at the end of September last a portion of the building was made ready for the reception of the District Manager's staff, the Accounts and Traffic Section occupying the whole of the 4th floor and a portion of the 6th floor being allotted to the Contract Section.

The building is of 8 floors, excluding the basement, and the area of each floor is approximately 20,000 sq. ft. The switchroom on the 7th floor, in which the Toll Exchange will be housed, is reputed to be the largest in Europe. Construction is proceeding apace on this exchange and is expected to be ready for service early in the spring in conjunction with the opening of three automatic exchanges in Ardwick, Collyhurst and Moss Side. Eventually three automatic exchanges, Blackfriars, Deansgate and Victoria, will also be housed in the building, which will be the hub of the very extensive director automatic scheme designed for the Manchester automatic area.

The removal of the District Manager's Office from our old quarters at Peru Street was effected during the week-end Sept. 21-23; over 50 vanloads of furniture and records were dealt with and put into pre-arranged positions ready for the staff on Monday morning, and it is satisfactory to record that 75% of the staff were able to settle down in their new domicile by 11 a.m. Some of our old office fittings were discarded and new and up-to-date fitments supplied, but there still remains more to be done in this direction. When completed, however, it is thought the Manchester District Manager's office will be the best equipped office in the country.

Staff Dance at Telephone House, Nov. 16.—"Telephone House" is the great new building which will soon become the nerve centre of the Manchester automatic system. It is a very massive youngster of whom we are all hoping great things, and the first social step in its young life has now been taken. It has had its first party.

To the outsider the building presents a very solemn, very businesslike, exterior, and few passers-by on that historic evening could have imagined that such a spirit of gaiety was rife on the 5th floor.

The first staff dance, held in the new dining-room, was really a wonderful success, and members of the various telephone staffs, their friends and wives, some 350 in all, had a thoroughly enjoyable evening.

In making a happy speech of welcome to all present Mr. J. T. Whitelaw, the District Manager, read a letter in which Mr. J. G. Maddan, the Postmaster Surveyor, expressed the hope that "all would have a jolly evening, and that everything may go so well as to make everybody in love with Telephone House."

In spite of the large attendance, supper was served to all the dancers simultaneously, in three other rooms. The arrangements were a triumph of organisation and did great credit to the small army of helpers, many of whom had spent a very strenuous afternoon in preparation.

The District Manager's staff is already working in the building, but for the supervisors and telephonists in the Manchester postal area the dance was the occasion of their first visit. First impressions are lasting ones, and the recollection of this most enjoyable event will go a long way towards establishing for "Telephone House" a warm corner in all our hearts.

Staff Changes.—Since our last notes appeared several staff changes have taken place. Mr. J. C. Dalziel came to us in August last as Higher Clerical Officer on promotion from Scotland West vice Mr. J. C. Macdonald, promoted to Scotland West as Chief Clerk. Mr. Dalziel's stay, unfortunately, was not of long duration, as he found the salubrious (?) air of Manchester was not of the best for his health, he has therefore departed once more for the "land o' cakes," this time to Edinburgh. Mr. Macdonald, on his departure, was presented by the District Manager (Mr. J. T. Whitelaw), on behalf of the staff, with a canteen of stainless cutlery.

Mr. R. German, Assistant Traffic Superintendent, has been transferred to Headquarters Traffic Section. He was the recipient of a number of gifts from the staff especially suitable to a young man leaving his "spiritual" home.

We welcome Mr. R. H. Diggles, Higher Clerical Officer, who came to us on promotion from Liverpool in October last, and our congratulations are tendered to Mr. C. Fallows, Clerical Officer, on his promotion to Higher Clerical Officer at Manchester vice Mr. Dalziel.

Miss B. Sandham, Writing Assistant, has left us to take up other duties as a married woman. She was very popular amongst the staff, as evinced by the large number of individual presents given to her, as well as a farewell token of esteem and goodwill from the staff consisting of a very pretty tea service and a set of spoons.

Civil Service Commission.

Forthcoming Examinations.—Male Assistant Superintendent of Traffic (Class II) in the London Telephone Service and Male Assistant Traffic Superintendent in the Provinces, General Post Office (18—23, with extension for service in H.M. Forces).

Regulations and particulars, together with the forms on which applications must be made, will be sent in response to requests (preferably by postcard) addressed to the Secretary, Civil Service Commission, Burlington Gardens, London, W.1. The latest date for the receipt of application forms is 6th March.

WHERE TO STAY.

GLASGOW TELEPHONE NOTES.

By the time these lines are in print, Mr. George C. Dewar, of the Accounts Section at this Office, will have taken up duty at Birmingham on his promotion to the Higher Clerical Grade. Mr. Dewar, whose portrait we give

MR. G. C. DEWAR.

above, entered the service of the National Telephone Company in June, 1902, and the Post Office at the transfer in 1912. By his wide experience of telephone accounting matters, he is well fitted for the duties of the new position. His colleagues at Glasgow congratulate him on his promotion, and tender their best wishes for his future success.

The Glasgow Trunk Exchange Staff gave the inmates of the Bellahouston War Hospital a most enjoyable evening's entertainment on the evening of Dec. 13 last. The proceedings commenced with a high tea followed by a whist drive and musical items. It is perhaps somewhat unfair to mention names, as so much of the success of an evening of this kind depends on the workers behind the scenes, and they are thanked equally with those who came more directly under the "public eye." Miss Heron's comic songs and impersonations were greatly enjoyed, also Miss Meikleham's singing. Mr. Scantlebury manipulated the piano with skill, and Mr. Hunter (Assistant Traffic Superintendent) acted as an efficient M.C. Mrs. E. J. Johnson presented the prizes for whist. Amongst those present were Mrs. and Miss Coombs (the District Manager would have been there but was on official business in London), the Traffic Superintendent, also Miss Cameron, Supervisor, Central Exchange, Miss Kay, Supervisor, Trunk Exchange, and others, who all added to the success of the evening by making up Whist parties and in other ways helping to entertain the guests. The thanks of the boys in blue were voiced by Mr. Furie, one of their number, who spoke in very appreciative terms of the pleasure given by these efforts of the Staff of the Post Office.

On the occasion of his leaving for Guildford, Mr. A. E. Higgens, Assistant Traffic Superintendent, who came to Glasgow as a trainee 3 years ago, was presented with a "Revelation" travelling case by his colleagues of the Glasgow Traffic Staff, as an expression of good fellowship. The presentation was made by the District Manager, Mr. A. E. Coombs, who, in a racy speech, summed up "Arthur" as the "Peter Pan" of the Traffic Branch and referred to the unusual popularity he had attained in his short sojourn amongst us. Mr. Coombs predicted a successful career in the Service for Mr. Higgins, and feelingly conveyed to him all the good wishes of the Glasgow Staff.

The staff of the Giffnock Telephone Exchange held their first Annual Dance in the Marlborough House, on Friday, Jan. 10, where a gathering of over 100 spent a most enjoyable evening. Mr. Johnson (Traffic Supt.) and Mrs. Johnson were unable to attend. Mr. J. B. Smith, Contract Officer, performed the duties of M.C. in an agreeable and efficient manner. The Dance Committee are to be congratulated on their successful arrangements.

The Whiteinch U.F. Literary Society, advertising a telephone demonstration and lecture by Mr. A. E. Coombs, for Monday, Dec. 9, made a novel abbreviation, and incidentally awarded the District Manager a new degree. The announcement of the lecture read as follows: A Lecture and Demonstration on "The Telephone Service from Within," by A. E. Coombs, P.O.T., Glasgow.

Quite a big "pot," in fact.

First Impressions.

The report of a short visit to the Central Exchange, Glasgow, by a new entrant in the course of training for duty as a Contract Officer.

ON entering the Central Telephone Exchange, one is amazed, and, to the unititated, this enormous undertaking has a very complicated appearance. After a tour round under the able guidance of Mr. Wilkins, everything is explained away, and through the efficiency of the staff a wonderful system becomes simplified.

In the operators' room there are three boards: "B" (Junction Board), really the gateway of the exchange; "A" Board, where all central area subscribers' calls are dealt with; and Monitors' Board, whereat all complaints, &c., are attended to by the Supervisors.

Considering the number of calls dealt with by this exchange, 60,000 a day, each operator accounting for, on an average, 140 an hour, the one thing that struck me most was the entire absence of noise. This, I think, is due principally to the wonderful lighting system, these supervisory lamps (white) indicating to operator when a subscriber is calling and also showing the state of connexion; in passing I also noticed that when a public call office call comes through a red light is shown. On asking where all the power came from, enabling this wonderful system to be worked, I was taken to another room and there shown batteries charged by generators, one battery and one generator working, the other being held in reserve, thus safeguarding the chance of breakdown. This is really the heart of exchange.

The Main Distribution Frame is an education in itself; there we have cables (containing thousands of wires) joined up. These cables are teased out and joined up in any order in the M.D.F., from these they are jumpered out into numerical order, relayed across to the Internal Distribution Frame, and thence to the operators' board. I have often wondered how a record of all calls made by a subscriber could be kept with any degree of accuracy, but the meter system soon explained this.

Being my first visit to an exchange, it has been a very instructive one, and also one that I am never likely to forget. It has also placed me in a position whereby I am able to smooth over any minor complaints that are sometimes made by telephone users.

BEN MCARDLE.

NEW YEAR'S MEET OF C.T.O. PENSIONED OFFICERS.

ON Jan. 8, at the usual rendezvous in London, all but one hundred pensioned officers of the C.T.O. assembled to celebrate their survival of retirement dangers through another year. The chair was taken by J. Bailey, Esq., I.S.O., who seemed well-pleased with his easy task, and who parried the "lunges" of speakers who made reference to his past, with his usual disarming smile! Mr. C. S. Keen, indefatigable as ever, splendidly seconded by Mr. H. Adams, were responsible for the organisation, which included a dainty 5 o'clock tea, for which the Express Dairy were responsible. Mention is made of the actual caterers in order to assure present-day C.T.O.-ites of the high standard of respectability of the rendezvous itself! Several who had promised to attend were unfortunately prevented from so doing at the last moment by personal or domestic stress or other causes. Among the latter, Mr. A. W. Edwards' jovial presence was missed, due to eleventh-hour calls upon his time. One does not forget that he is a life-governor of Bart's. There seemed a rather heavy list of those who had fallen by the way during the last six months, but reassuring news of others, Adam Gordon, for example, relieved the shadows that were inevitable.

The speeches were as usual mostly reminiscent of the "dear dead days beyond recall," when it would appear boys and young men were no better than those of to-day. In fact, one rather estimates latter-day youth have somewhat improved their manners. Leastways, the writer is perfectly certain that never during its entire existence have the present patrons of the C.T.O. Operatic and Dramatic Society witnessed the unenviable sight of one of the principle characters being dragged off the stage, having imbibed too freely. Such was, however, the story of the St. Martin's Amateur Theatrical Society in the "good old days"!

This is not *typical* of the recollections of the veterans, of course, but from "grave to gay, lively to severe" went the tales, until with musical honours for the two organisers and many a hearty hand-shake and good-bye, we parted one from another.

It is claimed that the number present is a record in Civil Service department pensioners' meetings of this character. The 97 names now follow, and should prove of considerable interest to C.T.O. readers especially :—

Messrs. W. W. Abrey, G. Adams, H. E. Adams, T. J. Allison, S. R. Ashby, B. G. Askew, J. Bailey, I.S.O., J. Bearman, T. G. Beavis, H. E. P. Bell, G. T. Bennett, C. Bent, E. Bird, C. J. Boulton, H. J. Broughton, J. A. Buffin, F. W. Butler, W. J. Callow, T. W. Charter, Capt. A. J. Cherry, M.C., Messrs. A. J. Condy, J. H. Couldrey, E. M. Diaper, H. G. Dicks, J. W. C. Duncan, C. Elphick, H. W. Evans, C. J. Faunch, F. J. I. Fischer, W. S. Fisher, E. Fulcher, F. J. Furby, R. A. Furness, P. Garrood, J. N. Geary, W. E. Gibbons, A. T. Good, J. Gough, E. C. Govier, T. W. Gunter, W. Haggerty, A. Hardman, F. W. Harrison, C. Heywood, F. Hicks, G. H. Hickman, E. L. Hilton, S. K. Hiscox, S. M. James, G. Janes, A. E. Johnson, D. W. Jones, W. E. Jones, A. W. Judd, C. S. Keen, R. E. Kemp, G. F. A. Lange, E. Lewis, C. R. Lowe, A. W. F. Ludlow, J. J. Mansell, F. W. Miles, C. J. Minors, F. Mitchell, A. Morgan, F. J. Muller, R. H. Mulock, *H. Oakman, S. F. Pace, H. Pond, E. F. Poole, W. S. Read, J. Rees, L. C. M. Rowan, C. Sanderson, J E Sayers, H. W. Senhenn, S. T. Shapcott, A. F. Simmons, J. G. Smith, S. J. Smith, C. W. Sparkes, H. C. Stelbom, E. J. Stone, J. H. Sherrington, G. E. Taylor, W. J. Town, H. Trollope, C. J. Turner, W. Turner, J. J. Tyrrell, E. Veale, E. A. Ward, W. A. Webster, H. B. Winder, W. G. Wood and C. E. Wright (also late E.-in-C.O.).

* Since compiling this list it is regrettable to state that Mr. H. Oakman passed away after but a brief illness only a few days following this meeting.

J. J. T.

LEEDS DISTRICT NOTES.

Retirement of Mr. G. S. Wallace, Assistant Superintending Engineer.—On Wednesday, Jan. 15, a Social Evening was held at the Guildford Hotel, Leeds, when a wireless set was presented to Mr. Wallace as a token of regard from the staff generally of the North-Eastern District. The Chair was taken by Mr. J. W. Atkinson (Superintending Engineer), and among those present were the following gentlemen: Lt.-Col. Jayne, D.S.O., O.B.E., M.C. (Postmaster Surveyor); Messrs. R. Alexander and J. Shea (Assistant Superintending Engineers); F. G. C. Baldwin (Assistant Superintending Engineer, Newcastle); E. S. Francis and W. W. B. Crompton (Executive Engineers); S. A. Pickering (Staff Officer); J. N. Lowe (Contract Manager); T. B. Johnson (late Superintending Engineer); E. H. Farrand (late Executive Engineer); and H. B. Sutcliffe (late District Manager), and a representative number of the District Staff.

Mr. Wallace has had a varied career, having been closely connected with the Telephone Service practically since its inception. He commenced in 1883 as a Day Operator with Messrs. Tasker's, Sheffield. About the end of 1884 he took the position of Test Clerk at Sheffield Telephone Exchange, subsequently becoming Chief Clerk and Assistant Secretary. In 1890 he was appointed Chief Inspector with the late National Telephone Co., Ltd., at Leeds, and in 1897 became that Company's local Manager at Halifax. He, however, left the Telephone Service in 1901, becoming the Mains Superintendent with the Halifax Corporation Electricity Department, which position he shortly afterwards relinquished to take over the management of the Tunbridge Wells Corporation Telephone Department. This post he held until that concern was absorbed by the National Telephone Co. in 1903, when he became Local Manager at Bradford. In 1905 he was appointed Chief Electrician at Manchester, and, on the acquisition of the National Telephone Co., by the State in 1912, became Executive Engineer, which position he held until his promotion to be Assistant Superintending Engineer at Leeds in 1924. During his career at Manchester Mr. Wallace was responsible for the organisation and conversion of the Manchester telephone system from Magneto to C.B. working.

A large number of those present, including the Chairman, testified to the esteem, both as an official and as a friend, in which Mr. Wallace was held, and one and all wished him and Mrs. Wallace the best of health and happiness during his retirement, one speaker (already on the Retired List), aptly welcoming him as a recruit to the "Seven Days a Week Rest Society."

The formal presentation was made by Mr. E. S. Francis with musical honours, after which Mr. Wallace suitably responded.

An interesting and varied musical programme occupied the remainder of the evening, the artists being: Miss Pollard and Messrs. McElvie, Farndale, Galt, Bailey, Worth and McDougall.

A very successful evening was concluded by the singing of the National Anthem.

Promotions.—Mr. J. Shea, Executive Engineer, Leeds, has recently been promoted to be Assistant Superintending Engineer, N.E. District, Leeds, vice Mr. Wallace, superannuated; and Mr. W. W. B. Crompton, Assistant Engineer, London, to be Executive Engineer vice Mr. Shea, *pro tem.* The congratulations of the staff are tendered to these gentlemen.

B.B.C.'s North Regional Station.—Wireless "fans" in the North are keenly interested in the progress of the new North Regional Transmitting Station which is at present being erected on about 30 acres of land at Moorside Edge, approximately two miles north of Slaithwaith (pronounced Slowit !). The following details regarding the station have been kindly communicated by the Chief Engineer of the British Broadcasting Corporation :—

"The station buildings will be similar in outline to the buildings erected at Brookman's Park for the London Regional transmitter, but the mast system will consist of three 500-ft. masts place in triangular formation, one mast being common to both aerials. This arrangement is different from that obtaining at Brookmans Park, where there are four masts and where the two aerials are on opposite sides of the building.

The station buildings will house two transmitters, differing only in detail from those working at Brookmans Park. Each transmitter will be capable of delivering 50 kw. into the aerial, the well-known system of low-powered choke modulation being employed. The high tension supply for the transmitters will be obtained direct from D.C. generators, other generators being available for filament current supply and grid negative. Power will be obtained from Diesel engines, the power house being situated at the far end of the station buildings. An accumulator battery will be available for handling the lighting and heating load of the station when the engines are not running, and to enable the station to be run on full power for a short period in the event of a failure of the engines.

Telephonic communication is being established with the Manchester studios by means of circuits in the new Manchester-Huddersfield screened cable, a new cable being laid from the cable route through Slaithwaite to the station site. Four music circuits and one control circuit will be available."

West Yorkshire Telephones Benevolent Fund.—The number of contributors to the Benevolent Fund last year reached the splendid total of 400. The Fund, which has now £500 invested in War Stock, has been of great assistance in many cases of distress amongst the Engineering and Telephone Operating staffs, where the pressing need was for immediate financial help to tide over a period of exceptional difficulty, usually due to the illness or death of the bread-winner. Many of the cases dealt with eventually came under the care of larger organisations than that of our little Fund, but the machinery of these organisations of necessity takes time to operate, and on the principle that he gives twice who gives quickly, it can truly be said that the £200 which our Fund has so far disbursed does not represent the measure of the help which it has been able to give.

Leeds Post Office Football Club.—The progress made by the football team since our last notes is indicated by the results—8 games played, 4 won, 1 drawn, 3 lost, goals for 23, goals against 15.

In the first round of the Lancashire and Yorkshire Postal Cup the team plays Bradford P.O. at Roundhay (home ground) on Jan. 29.

Christmas Greetings ! !—

"Postman ! Postman !"

"Yes, madam" (walks back long garden path).

"Are you the *regular* postman ?"

"Yes, madam."

"Then you are the one that broke the latch on the garden gate."

The Christmas Dinner held in the Bradford Exchange staff dining-room was voted a great success. The kitchen staff had risen nobly to the occasion and the strength of the rum sauce was held responsible for the conversion of "the voice with the smile" to "the voice with the giggle."

Culled from the Calendar.——

"It is not what you start that counts, it's what you finish."

"Make use of your opportunities; in life there is no moving staircase to take you to the top while you stand still."

LONDON TELEPHONE SERVICE NOTES.

Contract Branch Notes.—The business done by the Contract Branch during the month of December resulted in a net gain of 1,979 stations as compared with 2,404 last year. Increased ceasements due to bad trade, and so on, proved too much for us and even an increase in the gross new business was insufficient to prevent a drop in the net gain.

We have had two or three record months for completing new kiosks and by the time these notes appear there will be over 1,600 working in London. The number actually in use on Dec. 31 was 1,581 and there were outstanding advice notes for 149 more.

The Five-Power Naval Conference has provided a great deal of work for certain members of the Contract Branch, especially the one who was appointed to the Committee to look after the comfort and the convenience of the delegations. An appreciable number of private branch exchanges and various complicated installations have been provided, with suitable reserve facilities to meet emergencies, and it is hoped that a full description of the arrangements made and the facilities provided will be included in a later issue.

Those who know Mr. Luetchford in the South-East Contract Office will be very glad to learn that he is getting better from his long and serious illness and that he has great hopes of leaving hospital very shortly. Our best wishes to him for a speedy recovery.

Our congratulations to Messrs. J. Fox and B. J. Grafham on their promotion to Contract Officer, Class I.

Obituary.—It is with the deepest regret that we have to record the death of Mr. J. A. Stuart, Contract Officer, London Telephone Service, who passed away, after a painful illness, on Dec. 29 last.

"Jimmy" Stuart entered the service at a somewhat advanced age and on that account was debarred from the benefits of establishment; but during his 20 years' service he earned the esteem of all who knew him, and his untiring interest in his work undoubtedly contributed to the delay in seeking medical aid until his physical condition had gone beyond recovery.

Though one whose voice was seldom heard, his kindly manner, good nature and patience under difficulties endeared him to all who came in contact with him.

The interment, which took place at Finchley Cemetery on Jan. 4, was attended by colleagues from the London Contract Offices, and wreaths were sent by the indoor and outdoor staffs.

L.T.S. Bowls Section.—The London Area Association met at Treasury Chambers on Friday, Jan. 10, and the important business of arranging fixtures for next season was successfully accomplished.

The L.T.S. team are, of course, chiefly interested in the 1st Division, which varies this year as compared with last year, by the substitution of the 4 bottom clubs by the 4 top clubs promoted from the B division. The newcomers to the League are: Admiralty, A.G.D., C.T.O. and Headquarters.

Fixtures for 1930.

April	28, 1930.	Captain and Vice-Captain,	at	Chiswick.
May	1 „	Headquarters	(League)	„
„	8 „	A.G.D.	„	„
„	21 „	C.T.O.	„	„
June	5 „	Customs & Excise	„	„
„	18 „	L.P.S.	„	„
„	27 „	S.B.D.	„	„
July	8 „	Admiralty	„	„
Aug.	21 „	Engineers	Friendly	„

The Green opens on April 26, and another interesting date fixed was the final for the Bunbury Cup which will be played this year on Wednesday, Sept. 10.

This year the Civil Service Championships will be played in Scotland during the week commencing July 21.

L.T.S. Football Club.—Only two matches have been played since the last notes appeared under this column and one of these, which took place at Chiswick on Saturday, Jan. 11, against the Board of Education had to be abandoned at half-time owing to the severe weather, with the L.T.S. leading by 5 goals to none. There is little doubt that this match will have to be replayed.

In the Challenge Cup 1st round, against the Customs, on Jan. 4, the L.T.S. recorded an easy victory by 7 goals to 1. Buckley had another great day, scoring 4 goals.

L.T.S. Notes.—Captain E. F. Arthur.—By the time these notes appear, Captain Arthur should have taken up his duties as Head Postmaster of Bangor and the L.T.S. will be the poorer by his transfer. During the major part of his service in the L.T.S. he has been associated with the Development Section and has seen this section grow from the "man and boy" stage (at which time our friend was the "boy") to the important place which the section occupies to-day in the London organisation. During his service in the L.T.S., which commenced in 1908 as a Third Class Clerk, Captain Arthur has been generally popular and in many ways has demonstrated his real ability in the manner in which he has handled the varied types of cases which in these days fall to the lot of a "Proposals" Officer. During the war he received a Commission in the Welch Regiment, attained the rank of Captain and Adjutant and was mentioned in despatches.

Apart from his official duties he has done much to promote the cause of further education in the L.T.S., and has been a member of several London Committees connected with the promotion of this work. He has been a regular contributor to this Journal through the medium of the "Contract Branch Notes" for some years. In the world of sport, tennis, badminton and golf have claimed his attention, and in this connexion it is understood that there is a tennis club at Hampstead which, in losing the services of a zealous hon. secretary, is not too enthusiastic about his appointment.

The staff at Bangor are to be congratulated on the choice of their new chief, who leaves London with the best wishes of his colleagues for his future.

A representative gathering of L.T.S. men and women assembled in the Conference Room at Cornwall House on Jan. 7 to say good-bye and to wish their colleague, Captain John Webb, M.C., every success on the occasion of his departure for Egypt to take up the position of Telephone Superintendent with the Egyptian State Telephone Service. The Controller, Mr. Napier, on behalf of Captain Webb's many friends in the Service, presented him with a gold watch and chain and other tokens of esteem, and spoke in eulogistic terms of the manner in which Captain Webb had filled various positions in the London Telephone Service, and referred particularly to his work in connexion with the introduction of automatic exchange working. Mr. Dive, the Assistant Controller, delighted the gathering with a racy contribution delivered in his own inimitable fashion, and Captain Webb, in reply, modestly attributed much of his success to the loyal support he had received from his assistants. We understand that Captain Webb has contracted for a five-year period, with the possibility of further extension. We wish him every success.

National Sanatorium, Beneden.—The first of the series of Winter Concerts provided by the L.T.S. was held on Dec. 28, 1929.

As on many previous occasions Miss Worth undertook the direction and again it proved very successful. Some old friends and one or two new recruits assisted, and it was declared by the staff and patients to have been another tribute to the efforts put forward by the L.T.S. staff.

The Concert opened with a couple of community singing numbers, followed by a request song rendered by Mr. Hugh Williams—"Take a Pair of Sparkling Eyes" (Sullivan). An encore was demanded, and "My Dreams" (Tosti) appeared to have given equal pleasure. Miss Beare then sang a carol entitled "Birds," by Belloc, and received a wonderful reception. An old favourite at the "San" is Miss Beare, and of course she was not allowed to leave without an encore. Charles Conyers followed with a humorous item. He kept the audience roaring with laughter and responded again and again to the demands for more. Next followed a duet, "The Miserere Scene," from "Il Trovatore," by Miss Nellie Beare and Mr. Hugh Williams, followed as an encore by that charming duet, "Flowers that Sing." Mr. Arthur Hider sang "The Floral Dance," and his first appearance at these concerts leads us to hope that he will come to our assistance on some subsequent occasion. His item and encore were received with warm expressions of appreciation. The quartettes, "Pro Phundo Basso," "The Torpedo and the Whale," and "The Regular Royal Queen," by Misses Beare and Worth, Messrs. Hugh Williams and Arthur Hider, proved very popular numbers. Miss Margaret Worth sang "Love's Old Sweet Song," and she evidently knew her audience, for the chorus was taken up with gusto. Messrs. Williams and Hider caused a good deal of amusement with their version of Offenbach's "Two Gendarmes," and in response to an appeal for more, sang "The Moon hath Raised Her Lamp Above" (Benedict). Further songs by Miss Beare and Mr. Hider and a ventriloquial sketch by Mr. Conyers, with his "Saucy Willie Winks," brought the programme to the final item. This took the form of a community duet, "The Keys of Heaven." Under the guidance of Mr. Hugh Williams the gentlemen sang the "invitation," and Miss Beare instructed the ladies when to say "Nay" or "Yea." The singing of "Auld Lang Syne" brought a very happy and enjoyable evening to a close. Cigarettes, chocolates and biscuits were then distributed to the patients, all of whom expressed gratitude to the L.T.S. staff, and a vote of thanks was accorded Miss Worth and the artistes.

As usual, the hospital staff provided an excellent tea and supper for the artistes. Before leaving Mr. Hugh Willaims claimed the privilege once again of thanking the matron and her assistants for their kind hospitality, and referred to the pleasure it gave them to find amongst the audience and at the supper table two such indefatigable workers in the cause of the Sanatorium as Mr. Durrant and his colleague, Mr. Trollope.

We congratulate Mr. C. D. Iliff on his promotion to the grade of Assistant Superintendent of Traffic, Class I. Mr. Iliff's genial disposition and never-failing courtesy have endeared him both to his colleagues and the staff of which he has had control. We are sure that the promotion will prove highly popular and that the success which has attended his ventures in the past will continue unabated in his new sphere.

May he never forget the "Service" by "Design."

A BRIEF CHRONOLOGY FOR STUDENTS OF TELEGRAPHS, TELEPHONES AND POSTS

BY HARRY G. SELLARS.

(*Continued from page* 60.)

1890, Mar. 1 ... Rogers obtained a speed of 200 w.p.m. with a telegraph printer constructed on the principle proposed by Vavin and Fribourg.

Nault, of France, proposed a system of perforating Hughes signals, the tape at the receiving end to be reperforated and run through a local Hughes apparatus.

International Postal Union, in Brussels, dealt with payment of subscriptions to newspapers through the post.

Post Office Committee recommended abolition of re-direction charges in Inland Postal Service.

Decided that, in extending deliveries to places unserved, ¾*d.* should be credited for each letter and 1½*d.* for each parcel.

1890, Dec. 9 ... Bell's patent of the membrane telephone receiver expired.

Letters delivered by British Post Office 1,650,000,000.

Post Office Savings Bank Depositors 4,248,000, deposits £59,000,000.

1891, Jan. ... Prof. Ewing experimented in connexion with the molecular theory of magnetism.

1891, Feb. 1 ... Railway letter service, under which letters not exceeding 1 oz. might be handed in at a passenger station for immediate transmission by train, was established. An additional fee of 2*d.* was charged by the Company.

A. C. White patented in America a common battery system for telephone working.

1891, Mar. 25 ... Express Delivery Service established in London.

1891, April 1 ... London-Paris Telephone Service opened to the public. The special cable laid was designed by H. R. Kempe.

Swinburne constructed his "Hedgehog" current transformer.

National Telephone Company's adhesive stamps withdrawn at the request of the Postmaster-General.

Dry core cable first used in England.

1891, June 1 ... Separate insurance for parcels abolished and substituted by registration coupled with insurance. For registered inland letters and parcels fees ranged from 2*d.* for £5 to 6*d.* for £25 compensation.

Limit of compensation for unregistered parcels raised to £2. Charge of 2*d.* for advice of delivery of any Inland registered postal packet introduced.

1891, July 30 ... Edison telephone transmitter patent expired.

Insurance up to £50 for parcels extended to British Colonies.

Maximum limit of deposit in Post Office Savings Bank raised to £200.

1891, Aug. 1 ... Express Delivery Service extended to rest of United Kingdom. Messengers could be summoned by telephone, and letters could be dictated to a Post Office for delivery. Local "Express" services conveyed parcels and letters from sender to addressee.

Wilhelm Eduard Weber died.

International Postal Union, in Vienna, dealt with postcards, counterfeit postage stamps, the use of the International Bureau at Berne for liquidating international postal service accounts, &c.

Act of Parliament empowered rural sanitary authorities to guarantee telegraph offices and to meet the cost out of rates. Telegraph system in rural districts extended.

J. Poole published "The Practical Telephone Handbook."

[NOTE.—The item referring to "The Practical Telephone Handbook," dated July, 1880, should be erased. This useful work was first published in 1891.]

1891, Dec. 21 ... S. P. Thompson suggested the use of inductive shunts and transformers in telephone circuits.

London theatrical performances transmitted by telephone to Birmingham.

Raikes revision of Post Office wages.

1892, Jan. ... Clerks from certain Post Offices attended at schools to open Savings Bank accounts for children. £40,000 deposited in this way during the year.

Sir William Crookes foreshadowed wireless communication.

1892, Feb. 3 ... 600 words a minute received on Wheatstone receiver on a racing circuit from Leicester serving simultaneously London, Birmingham, Manchester and Liverpool.

1892, Mar. 1 ... Inland Telegraph Money Order system extended to all telegraphic Money Order offices with fees ranging from 4*d.* for £1 to 1*s.* for £10, in addition to the charge of at least 9*d.* for the telegram and its repetition.

1892, Mar. 21 ... Deputation from the London Chamber of Commerce, headed by Sir Albert K. Rollit, met the Postmaster-General with a resolution expressing the view that facilities should be provided for the development of the telephone "whether by private companies or the Government themselves." A statement in the House of Commons was promised.

1892, Mar. 22 ... Postmaster-General (Sir James Fergusson) in the House of Commons opposed the Bills presented by the National Telephone Company and the New Telephone Company in which very extended powers were sought. He said it was essential that the Government should own the trunk wires.

1892, Mar. 29 ... Dr. Cameron, in the House of Commons, moved that "the telephone monopoly possessed by the Post Office should be worked directly, and in connexion with the Postal Telegraph Department." The motion was lost by a majority of 58.

1892, Mar. ... C. A. Stevenson, of Edinburgh, suggested a "coil" system of wireless communication between ships.

1892, Apl. ... Prof. J. J. Thomson showed that the surface of contact between two non-conducting surfaces is the seat of a permanent difference of potentials.

1892, May ... H. M. Crane and Hammond V. Hayes (U.S.A.) devised common or central battery systems. Experimental common battery telephone exchange established in Boston.

1892, May 23... Treasury Minute outlined policy of the Government in relation to telephone trunk wires and future licences.

1892, May 27... Bill presented to Parliament authorising the Post Office to acquire and erect trunk telephone lines and to grant licences for the establishment of local exchanges.

House of Commons passed a resolution extending daily deliveries of letters to places where they were not in force.

1892, June 4 ... Willoughby S. Smith and W. P. Granville patented an inductive method of wireless communication.

1892, June 16 Telephone Bill referred to a Select Committee of the House of Commons.

1892, June 18 Strowger patented an improvement of his automatic telephone system.

Western Electric Company produced self-restoring indicators for telephone switchboards.

1892, June 28 Bill for raising £1,000,000 for purchase and extension of the trunk telephone system passed House of Commons.

M. E. Branly noticed that metallic filings acquired a better electric conductivity when an electrical discharge takes place near them.

1892, July ... Sir Oliver Lodge arranged a form of parabolic mirror with vibrator and receiver, and proved the possibility of emitting and receiving parallel beams of electric waves by reflection.

1892, Aug. 1 ... International Express Service commenced.

1892, Aug. 11 Heads of arrangement for the sale of telephone trunk wires initialled by Sir James Fergusson, Postmaster-General, and J. S. Forbes, on behalf of the National Telephone Company.

1892, Sept. 1 ... New series of Postal Orders issued endorsed with the words "Not Negotiable."

Sir William Thomson became Baron Kelvin, of Largs.

Hughes duplex telegraph installed between London and Amsterdam, Antwerp, and Brussels.

(*To be continued.*)

THE

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CONTENTS.

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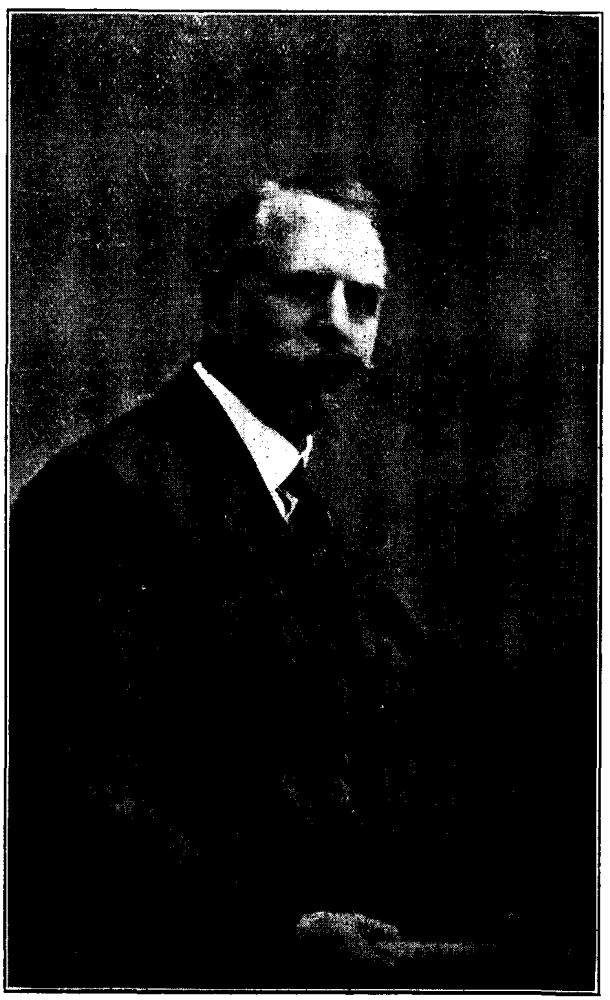
TELEGRAPH AND TELEPHONE MEN AND WOMEN.

LXXIII.

MR. CHRISTOPHER FEARNHEAD MOORHOUSE.



MR. MOORHOUSE was born at Canterbury in 1872 and educated at St. Bonaventure's Grammar School, Forest Gate. His connexion with the telephone service dates as far back as December 1886, when he entered the United Telephone Co. On the amalgamation of the United with the National and Lancashire and Cheshire Companies he was appointed Assistant Cashier, and subsequently became an Assistant Engineer in the Regent Street district of London. Rising to the position of Local Engineer and Local Manager for the Paddington and Kilburn district, he was appointed District Manager for the Eastern District of London in 1899. On the decentralisation of the London districts, Mr. Moorhouse was appointed Divisional Engineer for the South-East and South-West, and, later, Contract Manager for the whole of London. From thence he was transferred to Brighton in 1906, subsequently becoming District Manager for that district, a position which he still occupied at the time of the transfer of the National Company's system to the Post Office. In April 1919 he became District Manager of Telephones for Reading, a position which he still fills. During that period the number of telephones in the Reading District has more than trebled, having increased from 11,671 to 40,499.

Mr. Moorhouse has been described as a good all round man with resource and plenty of tact, always an invaluable quality in a district manager. We have heard that he is fond of music and gardening, and adds to these tastes a penchant for collecting old china and the pursuit of Freemasonry. He is keenly interested in all questions concerning the staff.

HOW TO IMPROVE THE TELEGRAPH SERVICE.

(FROM A GERMAN CORRESPONDENT.)

THE articles of the *T. & T. J.* from March till December, 1929, concerning the improvement of the English telegraph service are very interesting not only to English people but also to foreigners. The opinions of the authors being different one from another in some of the main points of view are able to shed light on the questions and suggest how to improve this service. By opening the columns of this paper to their respective proposals, the editors of *T. & T. J.* merit praise, particularly at the present time, when telegraphs do not pay and are not satisfactory in any country of Europe. We foreigners, when reading these proposals, have to reflect in which regard our telegraph service differs from the English service, consequently the English proposals are of more or less value to the foreigners.

The principal point of view of all considerations is to state what will be the future of the telegraph service. The public telegraph traffic is everywhere greatly and perpetually declining. The main reason for this decline is the competition of the telephone; the number of telephone stations is growing very fast, the extension of speaking possibilities becomes greater, especially in consequence of the laying of underground telephone cables, besides which the quality of telephone transmission is constantly improving. You can thus get a telephone connexion for a longer distance within a considerably shorter time than formerly. By this development much traffic is drawn more and more from the telegraph to the telephone. I do not believe this evolution in favour of the telephone is yet ended.

In order to find out the future of this evolution and the level of telegraph traffic, one needs to examine the different kinds of telegrams.

Till now the telegraph has been most used when the sender or the receiver has no telephone, i.e., is not a telephone subscriber. But at present you find more and more public call-boxes in the streets and in the restaurants, &c., where non-subscribers can telephone any time of the day or night to subscribers. Or, if the person phoned up is not a subscriber, he can be called by the telephone office to a public call-box to be connected with the caller. The number of public call-boxes has grown very considerably and quickly, and simultaneously the number of non-subscribers has much diminished. The consequence of this development will be a further decline of this kind of telegram.

Besides, to-day one uses the telegraph service when one wants to have a written message as a confirmation of a telephone conversation or an agreement or when sending numbers or code words to avoid telephone mistakes. Telegrams of this kind originate mostly from bankers, great firms, &c. I believe this kind of telegram will become more scarce, because the best customers of this kind of telegraph service take private lines in increasing numbers and correspond directly with one another on these private lines, as the newspapers have long done. This will be possible when the future development of the harmonic telegraph or frequency telegraphy or similar installations will be able to give enough telegraphic channels for these purposes between the respective towns and subscribers at a low rate. The Government has but to procure the telegraphic lines or channels and will no longer have to transmit the telegraph messages of these customers.

Perhaps within a short time we shall have constructed an apparatus as supplement to the telephone apparatus for telegraph service; on the same line we shall telephone by the telephone apparatus and then, when we want to have a written confirmation of this conversation, we shall switch on the supplemental apparatus and be able to telegraph and write the main points of the conversation. By that system the Government will not need to procure a line or a channel nor to operate messages.

Perhaps it will be possible to develop further the existing type of apparatus so that it would be connected with the line during the conversation and would register all sounds and words of the telephone conversation upon a cylinder simultaneously. By this system the Government would not need to provide battery or other equipment, as is the case with the present system. This cylinder-apparatus can be bought by the telephone subscriber; no other special installation would be required.

Actually, the telegraph service is often used for a long-distance message, instead of the telephone: for a long-distance telephone conversation you have usually to wait longer and to pay much more than when telegraphing. But by the measures taken by the governments, the number of telephone lines is perpetually increasing, which will shorten the time of waiting for telephone conversations. Also, the quality of speaking is improving, even for long distances, and the fees for telephone conversations for long distance are showing a sinking trend. Therefore, after a short time, the advantages of the telegraph for a business man in comparison with the telephone will have disappeared in that regard and simultaneously that kind of telegram.

What remains for the telegraph service in future? When you only want to send a quick message without expecting an answer—for instance, for ordering a hotel room, for announcing an arrival, for greetings, &c., or when you have not time enough to wait for a telephone connexion—then you will telegraph even in future. This kind of telegram will remain, but I do not believe that this form of correspondence will be of great extent.

Beside the telephone we find another enemy to the telegraph; it is the postal service. The postal service, also, has greatly improved the speed of transport and delivery by using the most rapid modern trains, the aeroplanes and zepps. To-day, when you send a letter in the evening, it is delivered the next morning at almost every town, not only in the same country but also in the capital towns of other neighbouring countries. By using these means of communication you are able to have the messages in the hands of the addressee very quickly and very cheaply, and these messages can be much more voluminous than is possible by using the telegraph. We see that this development also will damage the telegraph domain.

When we consider the future of all these different kinds of telegrams, and when we appreciate fully the immediate future development of the telephone and postal service, it is clear that telegraph traffic *must* sink further to a lower level. We see that the reasons for this sinking are quite natural and cannot be removed by any measures of the governments: it is not the deficiency of public confidence in the telegraph system and not a depression of trade and business which causes the diminution of telegraph traffic. The technical development has created new means of communications, such as the telephone, the aeroplane, the zepps, and the business man is obliged to use the natural advantages of these new means and to refuse means like the telegraph which cannot offer the same modern advantages. This progression cannot be restrained. Therefore, all proposals for drawing back again the traffic from telephone to telegraph or for restraining the present telegraph traffic from passing over to the telephone, &c., are useless and bound to fail.

The sole duty of the telegraph service remains to-day to improve the speed of transmission and delivery of the telegrams in order to furnish the best means of communication for that kind of traffic where the telegraph is still used, as I have explained, and to consider that this future telegraph traffic will be much lower than the present.

R. K. F.

TELEGRAPHS AND TELEPHONES IN EGYPT.

BY F. C. BURSTALL

(Deputy Inspector-General, Egyptian State Telegraphs and Telephones).

SIDE by side on the plateau at Giza stand the giant Pyramids of Cheops and Kefron, whilst nearby lies the great Sphinx, each a massive and silent wonder, transmitting its messages of a by-gone age. Side by side at the base of the plateau stand their modern counterparts—wonders, neither massive nor silent, yet day and night transmitting their messages of a present age. I refer to the "Pyramids" Telegraph and Telephone Office. Thus, in the heart of the desert do the emblems of antiquity cast their shadows on the most useful inventions of a modern age.

In this short article I intend to review only the Public Telegraph and Telephone Services; it may therefore be briefly stated that the Telegraph and Telephone Administration erects and maintains for the Egyptian State Railways all its electrical communications, including wires for "Staff," "Tyre," "Signal Repeater" and "Traffic Controls," and trains the traffic personnel, such as station masters and their assistants, in telegraph duties.

In Egypt the entire telegraph and telephone services are now State-owned. Formerly the local telephone systems were the property of the Telephone Co. of Egypt, but these were purchased by the Government in 1918. Prior to this date the trunk lines, which were erected by the State, were leased to the company for operating purposes, the company paying a 70% royalty on all income thus derived.

The telegraph and telephone geographical area of Egypt may be regarded as a kite with a long tail, the kite being the triangular northern portion known as the Delta, having the Mediterranean coast from Alexandria to Port Said as its base-line and Cairo as its apex. South of Cairo is the tail, the narrow but intensely cultivated strip of the valley of the Nile, generally from 2 to 10 miles wide, which extends some 800 miles to the borders of the Sudan. Apart from the above, there are the Province of the Red Sea, the Peninsular of Sinai, and the Oases in the heart of the Western Lybian Desert; the distance from the nearest rail-head to the Oases varying from 200 to 400 miles.

If one embarked on a sailing barge, otherwise known as a felucca, at Rosetta, near Alexandria, and followed the familiar telegraph and telephone pole routes up the Nile to their entry into the Sudan, the distance traversed would be nearly 1,000 miles.

The reader of this article may now have gained some idea of the size and formation of the country under consideration, the area of which approaches 350,000 square miles, including the vast expanses of desert. Further, if the desert areas are excluded from the calculation, Egypt is one of the most densely populated countries in the world.

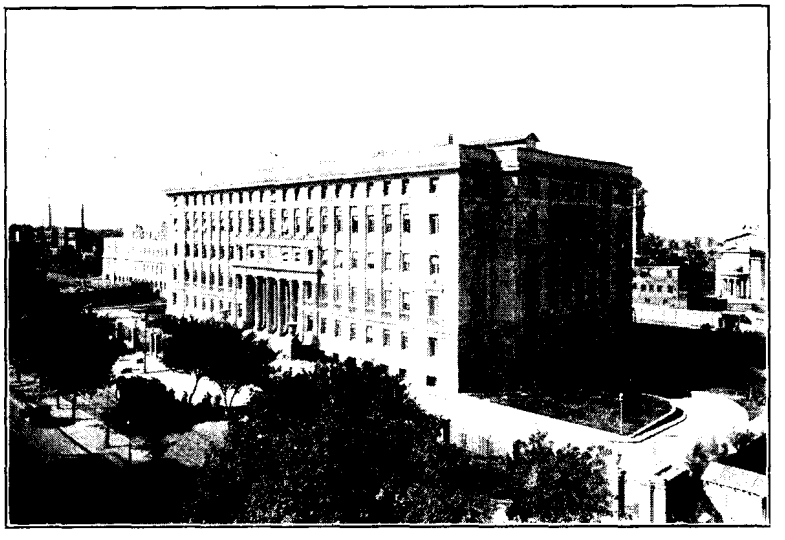
The headquarters of the Telegraph and Telephone Administration is in Cairo. The building illustrated houses the entire headquarters staff, also the Central Telegraph Office, the Auto-manual and Long-distance Exchanges. A duplicate building on an adjacent site is now in course of erection and will, *inter alia*, accommodate three 10,000 automatic telephone exchanges, the first 16,500 equipments of which will be opened at the end of 1930. In this latter building two rooms, each having an area of 1,337 square metres and a height of 4.7 metres, have been provided to meet the ultimate requirements: the basement will accommodate the Apparatus Room, power plant and batteries, the ground floor, the auto-switching equipment.

TELEPHONES.

The public telephone system consists, at present, of 100 exchanges with 39,000 telephone stations. Trunk communication is practicable between all inland exchanges—also to Palestine and Transjordania; negotiations are proceeding to extend to Syria and the Sudan. A still wider scheme is projected whereby Egypt may shortly be in wireless telephonic communication with Europe and, thereby, with the world in general.

In addition to the foregoing there is also a separate telephone system provided for the Ministry of the Interior and Public Works Department which consists of 90 exchanges and 4,500 telephone stations, used largely for police and irrigation purposes. These exchanges, which are dotted about all over the country-side at villages not generally served by the main system, are interconnected with each other and have also access to the public service at certain points.

The telephone development of Egypt is capable of vast expansion, having been retarded to a great extent in the past by an insufficiency of plant, a feature which the programme now in hand will entirely overcome. An unfortunate result of this



TELEGRAPH AND TELEPHONE HEADQUARTERS BUILDING, CAIRO.

shortage, coupled with the existence of a "flat rate" system of rentals, is the abnormal usage of existing lines with a consequent high level of ineffective traffic. The average calling rates per line are 20 per day and 2.75 in the busy hour at Cairo and Alexandria, and similar figures are recorded for the larger provincial centres. In one of the Cairo exchanges the busy-hour calling rate exceeds 4.0 per line.

Another feature which tends to force up the average calling rate is the absence of coin-box call offices; such installations are impracticable at present owing to the similarity in size of coins of different values. Call offices are therefore all of the "attended" type, which restricts, on economic grounds, their general installation. Thus cafes, shops, &c., having ordinary flat rate telephones become virtually free public call offices and such telephones are an asset to the proprietors in luring customers who, having had a free call, may be sufficiently conscience-stricken to buy something for "the good of the house."

It is hoped to remedy shortly the grave defects which accompany high calling rates by the introduction of a message rate tariff and the standardisation of currency to permit of the introduction of coin collecting boxes.

An interesting service point is that subscribers are provided with telephone directories in either Arabic or European characters

and have the option of offering their calls in any of the four following languages: Arabic, English, French and Italian. It will be realised, therefore, that all the telephone operators have to be fair linguists, as the following photographic extract from the standard expression card will show :—

ايطالي	فرنساوي	انجليزي	عربي
Il vostro No. prego?	Votre No. S.V.P.?	Your No. Please?	اعادة النمرة المطلوبة على تحرتك كام من فضلك المشترك الطالب
Sarete chiamato fra poco.	On vous appelera plus tard.	You will be rung later.	اذا صادق المشترك على البيانات التى اعادتها عليه العاملة ولكنه لم يضع سماعته على الحامل بعدين نتدهلك
Lo communichero' con la Sorvegliante.	Je vous communiquerai avec la Surveillante.	I will connect you with the Supervisor.	عند ما يستعلم المشترك عن امر وايس فى استطاعة عامل التسجيل ان تجيب عليه كلم الريسه
M'informero' e vi faro' sapere	Je m'informerai et vous ferai savoir.	I will enquire and let you know.	اذا . ينيسو تحويل المشترك الى موضوع الاستعلامات يجب على العاملة ان تاخذ منه البيانات المطلوبه راح ابحث وبعدين اقول لك
Il No. è..... vogliate prenderne nota.	Le numéro est ..... Voulez-vous prendre note.	The number is ..... will you please make a note of it.	عند ما يستعلم المشترك عن نمرة مشترك فى بلد آخر النمرة.... خد مذكرة عنها من فضلك
Mi dispiace non posso informarvi.	Je regrette je ne puis vous renseigner.	I am sorry I cannot trace it.	اذا . يمكن الاستدلال على النمرة انا متاسفه مش لاقيه النمرة
Desiderate notare per conto vostro una communicazione per la Sorveliante di... (Centrale) ?	Voulez-vous que j'enregistre une communication pour la Surveillante de... (Central) à votre compte?	Shall I book you a call to the Supervisor... (Central) on your account?	اذا اخ المشترك فى الطلب اعمل لك طلب تكلم ريسة سنترال ... على حسابك
"Bustan" (Nome del Centrale)	"Bustan" (nom du Central)	"Bustan" (Name of Exchange)	اجابة النداءات على خطوط الترنك « بستان » (اسم السنترال)

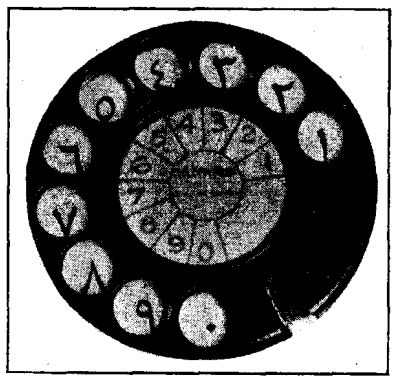
TYPICAL PAGE OF STANDARD OPERATING EXPRESSIONS IN FOUR LANGUAGES.

Before leaving the subject of telephone operators it should be remarked that females are employed for day duties only, and then solely in the large cities and towns, whilst in the smaller provincial towns male operators are exclusively appointed. The average lengths of service in the female division are: supervisors 5½ years, operators 2½ years; from which it will be realised that the operating schools are kept quite busy training new recruits.

From the standpoint of modern equipment, the present telephone exchanges may be classified as a motley crew, but Nemesis is on the trail, and "standardisation" is peeping over the horizon. Thus the magneto exchanges of various types, including lamp call and auto clear, are doomed to disappear and be replaced by "automatics" C.B. and C.B.S. within the next 5 years.

The "automatic" programme provides for the conversion of the whole of Cairo to a "Rotary" 5-digit network by 1931, involving the installation of two 10,000-line units, with eight satellites, the latter varying in size from 3,000 to 100 lines. A new trunk exchange is also being provided. In Alexandria, a new telegraph and telephone building is now in course of construction which will accommodate three 10,000-line "Rotary" automatic units to serve the city area. The initial equipment is for 15,000 lines and a new trunk exchange will be installed in the same building. All the "Rotary" equipment is being supplied by Messrs. Standard Telephones & Cables, Ltd., London.

In such a complete change of system, an intensive method of education of the telephone users has been planned. Apart from house-to-house visits of Service Inspectors, "Instruction Centres" are being established, each equipped with small working models of an auto exchange and facilities for making typical calls, during the progress of which the various tones are emitted from a loud-speaker, whilst a lamp display panel in front of the caller indicates by illuminated numerals whether the correct numbers have been dialled. Incidentally, the numbers appear on all dials in both Arabic and European characters.



AN AUTOMATIC DIAL.

At each centre specially selected officers are stationed to give instruction, and at Mansura, where an "ATM" automatic exchange is to be opened shortly, an average of 250 telephone users have presented themselves for tuition.

"Automatics" are also being installed in the larger provincial towns of Port Said, Mansura and Suez, whilst the remaining centres will be served by C.B. or C.B.S. exchanges.

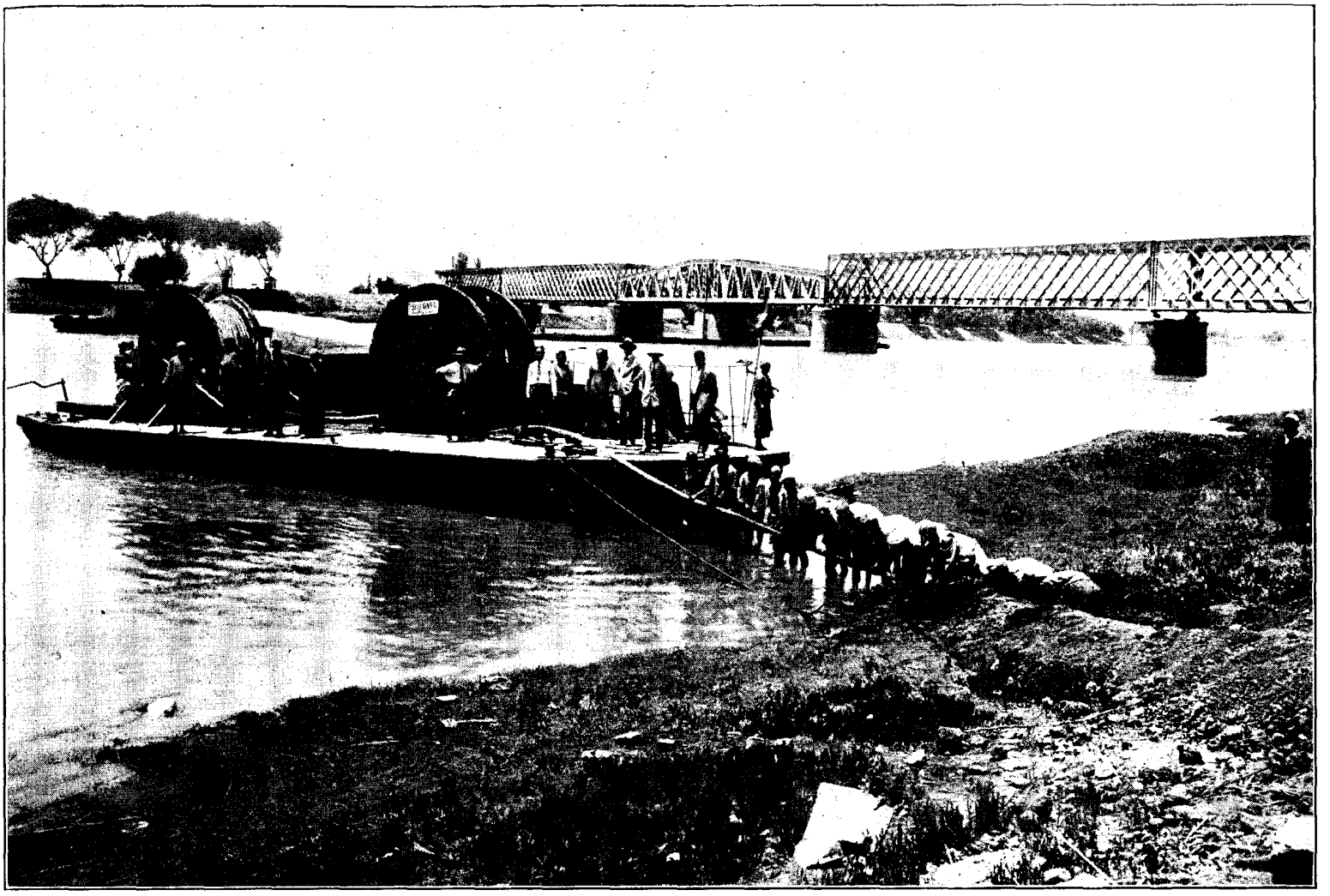
Of the other major projects now in hand, the laying of a continuously loaded non-repeatered trunk cable between Cairo—Tanta—Alexandria is nearing completion. This is the first underground trunk cable of any considerable length in Egypt, the distance between the terminal points being about 125 miles. The cable is being supplied by Messrs. Pirelli General, Ltd., Southampton.

The climatic conditions of Egypt are peculiarly favourable to the use of aerial trunk routes, but these are also undergoing a process of spring-cleaning in the replacement of all iron circuits by copper. The transmission of long-distance calls will be further improved and brought into line with accepted international practices by the use of repeater units at Cairo and elsewhere; the desirability of introducing carrier wave is also being carefully studied.

The circulation of trunk traffic is based on a system of zone, group and minor exchanges, whilst the provision of trunk circuits is calculated on a maximum delay, under normal conditions, of not more than half an hour in connecting the longest calls.

The trunk charges are divided into three categories: "Normal," "Busy hours" and "Night"; an "Urgent" call, which takes precedence over all other waiting calls is connected on payment of a triple fee of the period in which it is made.

The trunk rates are very reasonable and for the "Normal" period are fixed at approximately one penny per seven miles.



A NILE CROSSING IN THE CAIRO-ALEXANDRIA TRUNK CABLE.

The increase in trunk traffic may be gauged from the fact that the revenue from this source has risen from £31,500 in 1920 to £193,750 in 1929 without any appreciable change in tariff.

The introduction of "fixed time" and "particular person" call services is at present under consideration.

Before leaving telephones it should be stated that the problem of rural development has its well-merited place in the general scheme. Each year sees a steady addition to the list of provincial call offices—centres at which, very probably, a telephone has hitherto been almost unknown. All these constitute potential exchanges in the future, which, when the telephone habit has been fostered, may become small but busy centres, tending to augment the telephone capital account, which has risen from £780,000 in 1920 to £2,500,000 in 1930, and also to swell the revenue account, which has increased from £220,000 to £700,000 in the same period.

Finally, telephones play a not insignificant part in the ceaseless campaign which is being waged on the illicit importation of narcotic drugs. Many a smuggler who might have thought himself immune from capture in the past, has now happily, from the point of view of the country's welfare, a decreasing chance of escape as the telephone and telegraph networks spread.

TELEGRAPHS.

In Egypt, as in most other countries, the telegraph service has been, to some extent, the victim of the steady encroachment of telephones on its preserves; nevertheless, telegraphs continue to flourish and render efficient service.

Apart from the inland telegraph service, Egypt is a transmitting administration for other neighbouring countries, i.e., the Hedjaz, Yemen, Abyssinia, Erythrea and the Sudan. Formerly it was also the transmitting administration for Palestine, Transjordania and Syria, but these countries have now direct communication with Europe by means of the Eastern Telegraph Company's cable between Haifa and Cyprus, or, alternatively, by the wireless station erected at Beyrouth by "Radio France."

The inland traffic is steadily increasing, in spite of the competition of telephones, largely owing to the fact that during the main crop seasons, such as cotton, onions and cereals, business firms show preference for "Telegraphs" rather than "Telephones" in their commercial relations, as a telegram may be kept as a confirmatory material document.

The total number of messages dealt with in 1928-29 was 5,179,644—divided as follows:

Local Commercial messages	...	...	2,545,286
Foreign	„ ...	...	362,681
Service	„ ...	...	321,157
Railway Traffic	„ ...	...	1,950,520

The average delay on the above-mentioned commercial traffic, over all lines, was 13 minutes 26 seconds from the time of handing in until receipt at the office of destination.

There are 805 telegraph offices in Egypt, divided into two categories :—

(*a*) Government telegraph offices, which includes the State telegraph offices, and State railway telegraph offices, the latter being worked by employees of the Railway Traffic Department.

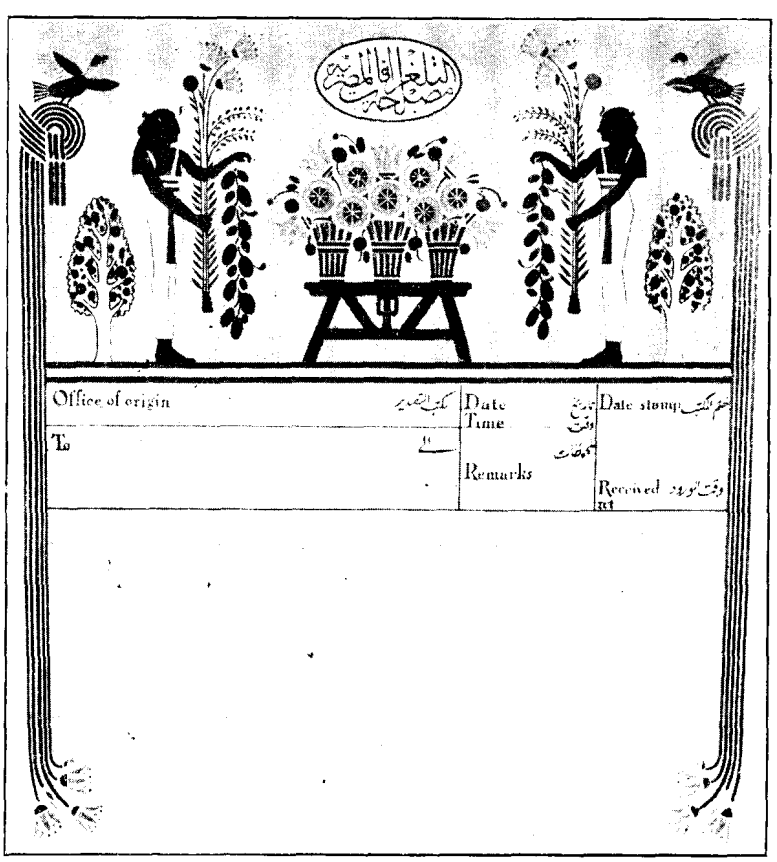
(*b*) Licensed telegraph offices, which belong to the Delta, the Fayoum, and Basse Egypt Light Railways Companies.

In a cosmopolitan country like Egypt, the Telegraph Department is at once confronted with the serious difficulties of languages. Arabic is the predominant language, and about 70% of the total telegrams are transmitted in a morse code specially adapted for Arabic characters.

From a traffic point of view the incidence of Arabic and European messages has a very restricting effect on the type of apparatus which may be successfully used. It is for this reason that simple circuits open or closed, single current simplex, single and double current duplex and quadruplex are almost exclusively employed.

High-speed instruments such as the Baudot cannot be used effectively, as this particular instrument has never been re-designed to meet the needs of Arabic characters. Wheatstone has been tried, but in practice the result has been less satisfactory than simpler types, and it has therefore been superseded.

It may be of interest to remark that for festive occasions the public may, on payment of an additional fee, send their congratulatory messages for delivery on an ornamental telegraph form. A photograph of the form is given below, but lacks the striking colour effects of the original.



A CONGRATULATORY TELEGRAPH FORM.

Foreign traffic, apart from that referred to earlier, is disposed of by three routes, namely, the Eastern Telegraph Co., The Marconi Co. of Egypt and Radio France.

Before passing to wireless, attention should be drawn to the absence of any public phonogram service. This serious omission is also attributable to the language question, as to employ Arabic only would restrict the service at the outset, whereas the use of other languages also would probably lead to so many errors that the service would be unpopular on that account. Thus for the moment this excellent public facility cannot be introduced.

Telephone-telegram service is, however, in operation for Arabic telegrams only between smaller State offices, and works satisfactorily.

WIRELESS.

The State wireless services only undertake "Ship-to-shore," "Aircraft" and "Point-to-point" internal traffic.

The Marconi Company of Egypt, having purchased the Abou Zabal Wireless Station from the British Post Office, now operate International Correspondence under licence from the Egyptian Government.

There are nine Egyptian wireless-telegraph stations, exclusive of mobile land stations, to handle the afore-mentioned services. The coast stations of Alexandria and Kosseir serve, within prescribed limits, the ships traffic in the Mediterranean and Red Seas, respectively. Some of the inland stations are situated in Oases in the heart of the Lybian Desert and form the only means of electrical communication between these points and the rest of Egypt. Some idea of the inaccessibility of a typical Oases station may be gleaned from the fact that it would take at least five days to reach it by camel, or if, haply, a motor-car convoy were practicable, the journey might be uncomfortably made, provided no undue mishap occurred, in about 15 hours.

In lighter vein, and for the instruction of those uninitiated in the joys of camel riding, it may be said that, provided one can remain in the saddle during the three very distinct and unpleasant undulations which a camel makes in rising to its four feet before starting off, an hour's trot, to those unaccustomed to it, will cultivate a pain which may be termed a twin brother to a good sharp attack of lumbago.

To conclude this section without reference to broadcasting would be a serious omission. It is the policy of the Egyptian Government to make provision for this service in the near future, in which event I hope that I shall not be deputed to act as an "Uncle" in the "Children's Hour," for in telling the tale it would be necessary to do so in half a dozen different languages, failing which there would be a distinct slump in the market value of Uncle's popularity.

In this short article I have endeavoured to make a lightning tour of this Administration's activities without delving into technicalities. I hope, however, that I have conveyed the impression that the Egyptian State Telegraphs and Telephones, with its 7,500 employees, is contributing a fair share not only to the development of the internal communications of Egypt but also to the end that, in due time, it will form an integral and efficient part of a network which will be world wide.

NORTH MIDLAND DISTRICT: DISTRICT MANAGER'S SOCIAL COMMITTEE.

AN enjoyable evening was spent at the Co-operative Restaurant at Nottingham on Feb. 4, when Mr. Chris Thompson, Telegraphs, Birmingham, gave a Lantern Lecture on "Southward to the Alps." The lecture was illustrated by beautiful slides mostly of the lecturer's own preparation, and was given in a manner in which seriousness and humour were nicely balanced. The hearty vote of thanks which followed testified to the pleasure which the audience had had in hearing Mr. Thompson. It is hoped that he will again be able to visit Nottingham and complete his lecture by taking us "Southward from the Alps."

Supper was served immediately after the lecture and subsequently Dancing and Whist were provided until the end of a very happy evening.

THE TELEPRINTER.

A. P. OGILVIE (*Headquarters Traffic Section*).

(*Continued from page* 83.)

(IV.)

Receiver.—Mounted on the base immediately in front of the motor, a polarised relay of distinctive construction is fitted for the reception of incoming signals. This relay may be inserted in the line circuit on short distance routes, but normally it is included in the local circuit of a Post Office Standard Relay "B" or "G." The elongated armature moves between marking and spacing stops and carries, at right angles, an extension to a mechanical relay. *The purpose of the mechanical relay is to provide more power than* may be obtained from the Teleprinter polarised relay when the latter is operated by weak variable line currents. As, however, the arrangement of working the Teleprinter in the local circuit of a separate line relay ensures that steady currents of ample strength are available it is a question whether the mechanical relay device

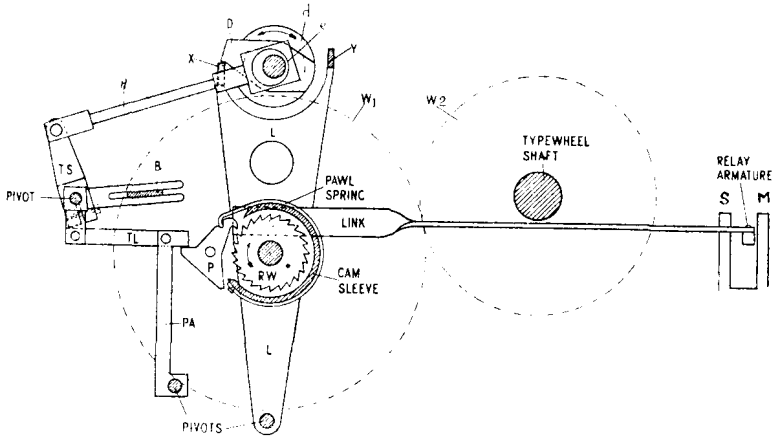


FIG. 9.

may not be dispensed with on Post Office machines, and trials are in progress to determine this point. A study of Fig. 9 will show how the movements of the polarised relay armature are transmitted by the mechanical relay to rod (H), thence to the trip shaft (TS). The motor drive is connected through a friction clutch to the cam sleeve and is coupled or uncoupled by the action of the pawl abutment (PA). Immediately the "start" impulse is received the relay armature moves to the spacing stop and this movement, conveyed to rod (H), causes the trip shaft (TS) to withdraw the trip lever (TL) and pawl abutment (PA). The friction clutch then becomes operative and the motor drive is coupled to the receiver cam sleeve. This cam sleeve (C) has five tracks, only two of which at the moment need be considered. Track 3 controls the traversing bar (T) which carries a striker pin (S). At rest, the striker pin is positioned opposite the centre one of five selecting fingers (F), but when the cam revolves, track 3 moves the traversing bar to the left until the striker pin is opposite the first selecting finger, then to the right until the fifth selecting finger is reached, finally returning to the zero or midway position. Track 5 on the cam sleeve controls the striker blade (B). Five steps in this track cause the blade to move forward each time the striker pin is opposite successive selecting fingers. The striker blade is also controlled by rod (J) and responds by tilting upwards or downwards to the movements of the trip shaft also in turn controlled from the relay.

Bearing in mind these principal operations it is not difficult to follow the ingenious translation system. Assume that the letter S (+ — + — —) has been signalled. The "start" impulse moves the relay armature to "spacing," the movement being conveyed to the trip shaft which releases the clutch mechanism bringing the cam into action, at the same time tilting the striker blade downwards clear of the striker pin. The cam then revolves and the

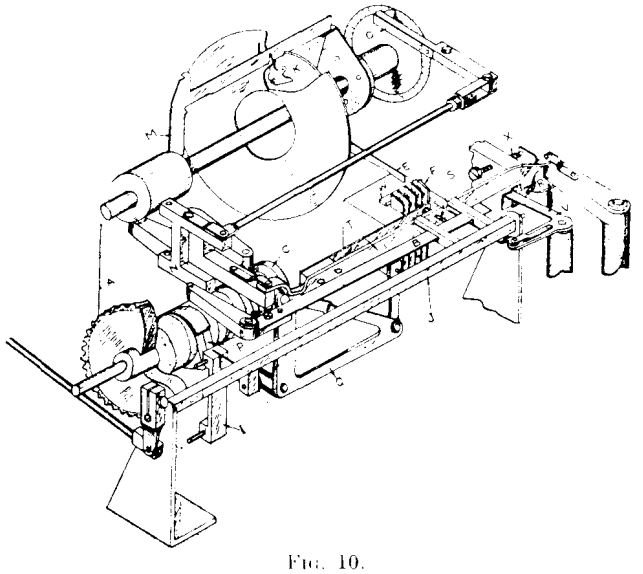


FIG. 10.

traversing bar brings the striker pin opposite to the first selecting finger in time for the first impulse of the signal combination. This, for the letter S, is positive, consequently the relay armature returns to the "marking" stop and the striker blade is tilted upwards into the path of the pin (S). At this point the appropriate step in track 5 throws the striker blade forward and the pin moves the first selector finger in. The next impulse (negative) moves the relay armature to the "spacing" stop, tilting the trip bar and the striker blade out of the path of the striker pin so that in the next forward stroke the blade misses the pin and the second selecting finger remains unaffected. The third impulse (positive) again brings the striker blade

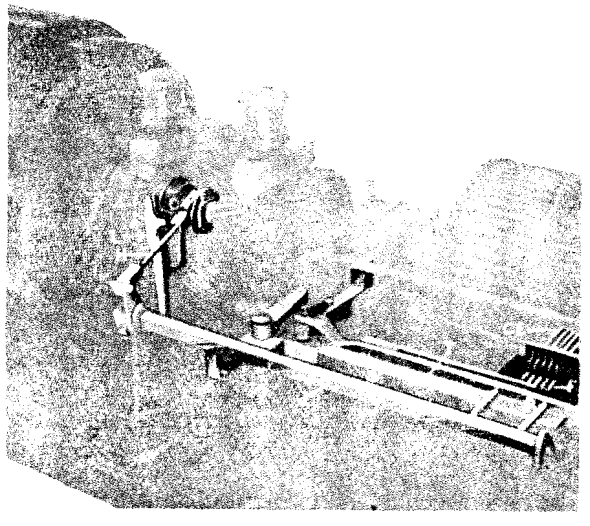


FIG. 11.

into the plane of the pin and at the next stroke the third selecting finger is pushed in. The remaining impulses keep the blade clear and the traversing bar completes its travel without affecting the last two selecting fingers. On completion of a revolution the cam sleeve is brought to rest by the interposition of the pawl abutment controlled from the trip shaft, and the motor drive is uncoupled. As a result of these operations the signal combination + — + — — is translated into a corresponding permutation of the selecting fingers preparatory to the printing of the letter S.

Printer.—Five combination discs or combs (K) mounted side by side on a drum are capable of being turned a fraction of an inch to occupy one of two positions. Associated with these discs are five extension pieces (E) controlled by the selecting fingers (F). Each comb is slotted on its edge and for each permutation set up

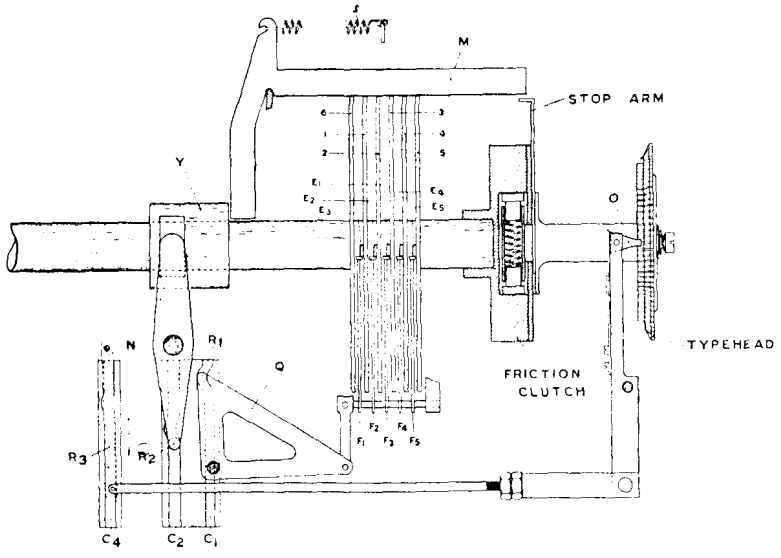


FIG. 12.

two longitudinal slots are exposed at one point on the periphery of the combs, permitting the entrance of a latch (M), the outer end of which drops into the path of the typehead stop arm.

The typehead and stop arm are continuously rotated through a friction clutch, but the interposition of the latch arrests this movement. A hammer (O) controlled from track (4) is at that moment actuated and strikes the back of the type exactly opposite thus printing an impression of the letter on the tape. An improved typehead is now being fitted consisting of a wheel of short type bars to give a better pointing stroke than that obtained from the form of typewheel illustrated.

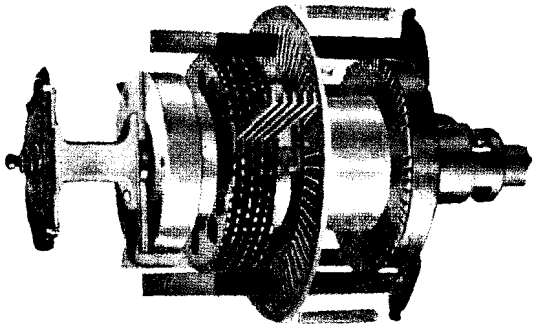


FIG. 13.

Letter and Figure Shift.—A sixth or shift comb is provided to determine, when a combination is set up on the other five combs, whether the appropriate letter or figure equivalent shall be printed. This comb is actuated by two bellcranks corresponding to the shifts which move it into one of two possible positions so as to close one set of slots and open the other, thus when a "letter-space" signal precedes the signalling of the combination — + — + — (R or 4) the shift comb closes the figure slots and opens the letter slots, allowing the letter R to be printed.

Other mechanical details which need not be described are provided for resetting the selecting fingers and for restoring the printer latches. It should perhaps be mentioned that the selection of a letter is made in one revolution of the cam and printed during the next, concurrently with the selection of the following letter. This overlap leads to the printing being one letter behind, a feature which has not caused any practical difficulty.

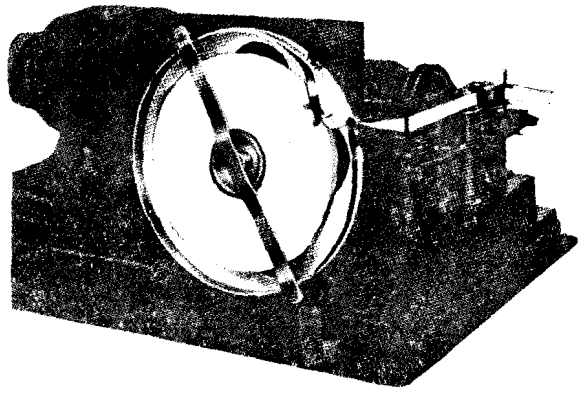


FIG. 14.

The tape feed arrangements and the printing platen are shown in Fig 14. The inking of the type is effected by means of two felt ink rollers held by springs against the face of the type as the type-wheel revolves. Some inconvenience is occasionally experienced as a result of the tape slipping between the guide strap of the holder and the coil. A more effective tape holder has now been designed and will in time gradually replace the existing fitting.

(To be continued.)

CORRESPONDENCE.

THE "LAG"—ITS CAUSE AND CURE.

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

SIR,—In looking through the *Telegraph and Telephone Journal* one comes across many articles dealing with the fact that the advantages of the telephone are as yet unappreciated by many people in this country, and many and various reasons are given for this state of affairs.

I suggest that a good deal of information on the question might have been got and possibly a few orders obtained if the Department's own staff above certain grades were canvassed. Some few weeks since I was talking to one of our higher officials on the question of development, &c., and in the course of the discussion I elicited the fact that he was not on the telephone at his private residence.

It occurs to me that if many of the Department's officials are not on the telephone it might be interesting and possibly helpful to Contract Staffs if they ascertained the reason by systematic enquiry.

I assume, of course, that "W. G.," the writer of the article in the January issue, is himself a subscriber and likewise all his immediate colleagues.—Yours faithfully,

J. M. SHACKLETON.

HOW TO IMPROVE THE TELEGRAPH SERVICE.

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

DEAR SIR,—Your correspondents "W. H. L. and J. S." (Carlisle), in their letter on the Inland Telegraphs in your November issue appear to have hit several nails on the head in the course of their remarkably well-thought-out suggestions. I must say, however, that their scheme for graduating charges on inland telegrams according to the actual mileage distance of the destination *from the office of origin* (which, it is inferred, is what they suggest) strikes me as being a weak point. Endless difficulties would certainly arise in assessing distances, especially at small offices, and to have a complete list of telegraph offices with distances and charges, specially compiled for each separate office, would be a tremendous proposition.

I have given the question of a zone system of charging for inland telegrams some thought, and have come to the conclusion that a system of charging on a "County Distance" basis is the simplest and most practicable. It can be done as follows:—

Divide Great Britain and Northern Ireland into 58 counties or areas.

Fix—

(1) the lowest rate per telegram of 12 words (say 9*d.*) for telegrams to any destination in a county which is situated not more than (say) 50 miles *from any part of the county* (*or area*) in which the office of origin is situated.

(2) a higher rate for telegrams to destinations in counties between 50 and 100 miles distant *from any part of the local area.*

(3) a still higher rate for distances of from 100 to 200 miles, and

(4) the highest rate for places beyond 200 miles.

Senders of telegrams between Scottish, North of England or Northern Irish towns and the South of England would undoubtedly be called upon to bear the heaviest burden, but this would be only just, as at present the services they make use of are indirectly very heavily subsidised; these users would, moreover, still get far more value for money than the senders of short-distance telegrams. Doubtless the opposition of our Scottish and Northern Irish friends would be modified by the fact that Scotland and Northern Ireland would each be scheduled as unified areas, and the charge for any telegram originating and terminating in Scotland, and likewise in Northern Ireland, would be at the lowest rate.

The scheme would permit of all offices in the same county (or other area) using a standard zone list of counties and rates.

As an example, the standard zone list for use at all telegraph offices in the London Postal area might be as follows:—

County (or Area).	*Charge per word.*	*County (or Area).*	*Charge per word.*
Anglesey	2*d.*	Lancashire	1½*d.*
Bedfordshire	¾*d.*	Leicestershire	1*d.*
Berkshire	¾*d.*	Lincolnshire	1½*d.*
Brecon	1½*d.*	London (Postal area) ...	¾*d.*
Buckinghamshire	¾*d.*	Merioneth	1½*d.*
Cambridgeshire	¾*d.*	Middlesex	¾*d.*
Cardiganshire	1½*d.*	Monmouthshire	1½*d.*
Carmarthenshire	1½*d.*	Montgomeryshire	1½*d.*
Carnarvonshire	1½*d.*	Norfolk	1*d.*
CHANNEL ISLANDS ...	2*d.*	Northamptonshire ...	1*d.*
Cheshire	1½*d.*	NORTHERN IRELAND ...	2*d.*
Cornwall	2*d.*	Northumberland	2*d.*
Cumberland	2*d.*	Nottinghamshire	1½*d.*
Denbighshire	1½*d.*	Oxfordshire	¾*d.*
Derbyshire	1½*d.*	Pembrokeshire	1½*d.*
Devonshire	1½*d.*	Radnor	1½*d.*
Dorset	1*d.*	Rutlandshire	1*d.*
County Durham	2*d.*	SCOTLAND (all parts) ...	2*d.*
Essex	¾*d.*	Shropshire	1½*d.*
Flint	1½*d.*	Somersetshire	1½*d.*
Glamorganshire	1½*d.*	Staffordshire	1½*d.*
Gloucestershire	1*d.*	Suffolk	1*d.*
Hampshire	¾*d.*	Surrey	¾*d.*
Herefordshire	1½*d.*	Sussex	¾*d.*
Hertfordshire	¾*d.*	Warwickshire	1*d.*
Huntingdonshire	1*d.*	Westmorland	2*d.*
Isle of Man	2*d.*	Wiltshire	1*d.*
Isle of Wight	1*d.*	Worcestershire	1*d.*
Kent	¾*d.*	Yorkshire	1½*d.*

The vast majority of counter officers would soon get to know the county of destination to which the great bulk of telegrams handed in locally are directed, and any information required for assessing the charge would generally be provided by a glance at the zone list. In the case of telegrams to little-known destinations reference to the Post Office Guide would, of course, sometimes be necessary in order to ascertain the county of destination, but this is already done under the present system in these cases for the purpose of ascertaining whether there is a telegraph office of the name given, or whether the spelling, &c., is in conformity with official requirements.

Accountant-General's Department, F. J. BINDER.
Dec. 17.

DISTANT CONTROL OF WIRELESS BROADCAST RECEIVERS.

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

DEAR SIR,—Many thanks for your article contributed by Mr. B. S. Wallace on the "Distant Control of Broadcast Receivers."

The use of the electric bell system, leaving the front door push intact, is ingenious. Evidently Mr. Wallace resides quite near a station, as he is able to work several speakers with one L.T. stage and no reaction.

Would he be good enough to tell us how he obtains his output of real quality. Does he consider the pentode superior to the super-power valve, or the moving-coil speaker a better job for real results than the balanced armature type.—Yours faithfully,

Preston, nr. Weymouth. J. W. WILLSHIRE.
Feb. 17.

ORDERING GOODS BY TELEGRAPH AND TELEPHONE.

MR. W. ERIC JACKSON, L.L.B., Barrister-at-Law, recently made some very interesting remarks, and gave some very useful information in an article which appeared in the *Electrical Review*. "Writing," he says, "is not legally necessary to a valid and enforceable contract of sale," and thus a contract made over the telephone for the sale of goods is enforceable, but if writing is not used there must be evidence of some kind, and the law lays down what that is to be. "If the goods are of less value than £10 in value no formality is necessary." If the goods are over that value there are four types of evidence permissible. For example, if goods are ordered by telephone and *delivery* can be proved, the case is proved. If the buyer after telephoning sends a messenger to fetch the goods, it is up to the vendor to prove that the goods were actually delivered to the purchaser; but should these transactions take place in Scotland, the English Sale of Goods Act does not apply, for: "In Scotland any evidence, verbal or otherwise, is enough to prove a contract of sale." In the case of an order telephoned from, say, Glasgow, ordering goods from, say, London, it is Scottish law which would apply, since the order is executed in Scotland, and since verbal orders are good law in Scotland for goods up to any value, the proof of the telephone order will be enough. There is, of course, the difficulty that when an order is received over the telephone "one cannot tell where it comes from in actual fact."

Our barrister friend expresses the opinion that, "A telegram is a much more satisfactory mode of ordering goods quickly from a long distance as the original copy of the telegram retained by the Post Office will be evidence against the buyer." It is admitted, however, that even then, were the telegram written by some unauthorised person not actually an employee of the buyer, the original copy would be of little use in a court of law.

That Mr. Jackson's article was not based on mere supposition or imagination is clear, from the fact that the Yorkshire police recently issued a warning to traders to take special care in receiving and executing orders received by telephone since "the number of frauds perpetrated by such means is reaching an abnormal scale."

The moral is not that Yorkshire is a wickeder county than any other, but that "a word to the wise is sufficient."

J. J. T.

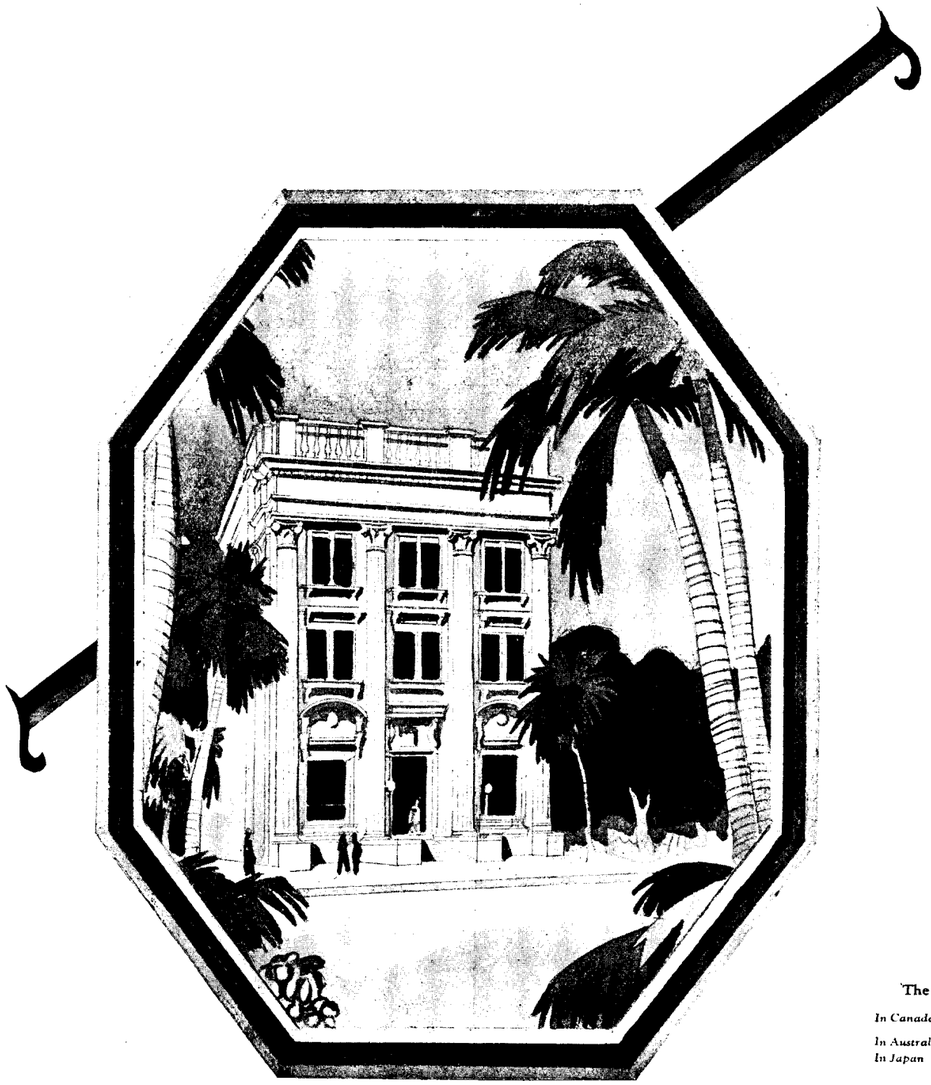
RETIREMENT OF MISS E. M. COOK.

ON Feb. 6 a large company assembled in the Typewriting Department of the Registry at the G.P.O. North, London, to say farewell to Miss Edith Marianne Cook, the Chief Superintendent of Typists, on her retirement after nearly 37 years' service, first with the National Telephone Company, and since 1911 with the Post Office. Miss Cook was one of the original members of a staff of nine girls engaged in the newly formed Typewriting Department of the Company in 1896, and in 1901 became the Clerk in charge of that Department. On her transfer to the Post Office in 1911 the typewriting staff had grown to some 25, and she also was placed in charge of the typists in the P.O. Registry, numbering in all, with the ex-National typists, about 110.

The affection and esteem in which Miss Cook was held by her staff and by her colleagues was evidenced by the large gathering which mustered, representing all Departments of the Post Office, and by the numerous presents she received. These included a china cabinet, onyx and chromium clock, tea service, gold watch-bracelet, and electric tea kettle.

Mr. R. A. Teare, the Registrar, in a happy speech, made the presentation on behalf of his large "family," of which, he said, he regarded Miss Cook as a sort of elder sister. His references to her popularity and the good spirit of team work which she had inculcated were heartily cheered. Mr. W. H. Gunston, on behalf of her old colleagues in the National Company, said a few words expressive of their appreciation of her work and character, after which Miss Cook, in a short but heartfelt speech, returned thanks to her friends and colleagues.

Miss Cook's position as Chief Supt. has been filled by Miss Ida Beaumont.

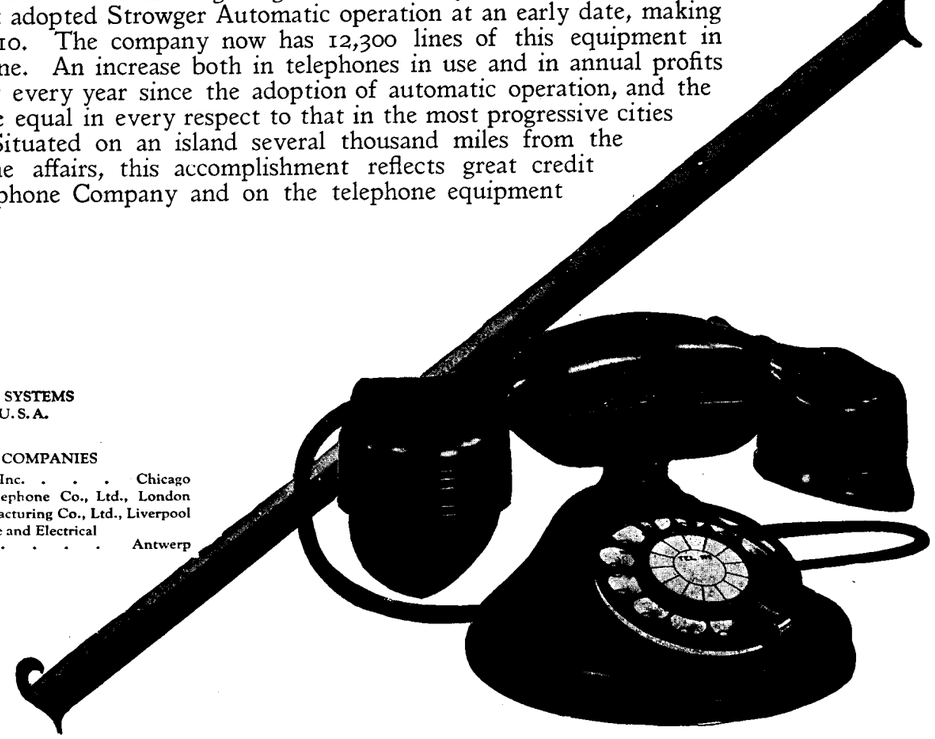


The beautiful telephone building of the Mutual Telephone Company of Honolulu, Hawaii. This company owns and operates more than 20,000 telephones throughout the island group, of which approximately 65% are automatic.

S wger Automatic Meets S e Conditions in Honolulu

island of Hawaii has presented a considerable number of difficulties to the proper velopment and operation of telephone service. The relative humidity is high, making ust prevention an important problem. The prevalent saltiness in the air aggravates iculties of insulation in all electrical circuits. The white ant and other tropical insects are a constant menace to poles, bell boxes and other wooden parts. Added e obstacles, is the fact that over thirty per cent. of the telephone subscribers to the Oriental races, making the language problem of prime consideration if service is to be provided.

ese problems have been met with a high degree of success by the Mutual Telephone y of Honolulu. It adopted Strowger Automatic operation at an early date, making installation in 1910. The company now has 12,300 lines of this equipment in n in Honolulu alone. An increase both in telephones in use and in annual profits n made practically every year since the adoption of automatic operation, and the is considered to be equal in every respect to that in the most progressive cities United States. Situated on an island several thousand miles from the of world telephone affairs, this accomplishment reflects great credit n the Mutual Telephone Company and on the telephone equipment it uses.



The
Telegraph and Telephone Journal.

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

Editing and Organising Committee - - - Lieut.-Col. A. A. JAYNE. J. STUART JONES. W. D. SHARP. W. H. U. NAPIER. J. W. WISSENDEN.

Managing Editor - - W. H. GUNSTON.

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.*

VOL. XVI. MARCH, 1930. No. 180.

RURAL LINES.

IT is not our purpose to comment at length on the debate on Mr. Ramsbotham's recent motion in the House of Commons to transfer the postal, telegraph and telephone services to an *ad hoc* public corporation. The arguments of the movers were faithfully dealt with by the Postmaster-General, and the motion was lost by 187 votes to 51. We shall only refer to Mr. Ramsbotham's statement —" As for our rural telephones, the condition of affairs cries to Heaven for redress," (which was probably uttered in ignorance of the fact that 133 rural exchanges and over 4,000 rural call offices were opened in 1929) in order to remark that rural development is proceeding at a greater rate than any other form of telephone development, and to suggest also that it may profitably be considered in conjunction with an article in the American *Telephone Engineer* of December last.

Most critics in talking vaguely of the sufficiency or deficiency of rural telephones in various parts of the world are apt to lose sight of the question of efficiency. Rural lines are provided in certain countries by all sorts of authorities and individuals. They are of all sorts of grades of construction and of all varieties of transmission value. Thus we learn from the *Telephone Engineer* that the Secretary of the Minnesota Association is their authority for the statement that 43 per cent. of the rural telephones of that state are operated by mutual lines.

> " We have heard it said," continues that journal, " that 80 per cent. of the rural telephones of Iowa are on grounded lines. A drive across that state will prove that there are not many places where the rural lines are of high grade construction. We are familiar enough with conditions in the five states bordering Lakes Erie and Michigan to know that the rural telephone plants in many places could stand substantial improvement.
>
> Perhaps there has been too much said about this condition, but it is likewise true that there has been too little done about it. Conditions can not be remedied in one year or two, but will require years of effort. Millions of dollars will have to be expended to put the rural lines of the country in first-class shape.
>
> It is certain that these millions will not be expended until the farmers of the country are willing to pay rates that will justify the expenditure and this cannot be expected during the present depressed condition of agriculture."

We hasten to make it clear that these criticisms do not apply to the system of the American Telephone and Telegraph Company and its associated companies (known generally as the Bell system), nor, presumably to the larger independent companies in the U.S.A., but to the lines erected by communal or co-operative effort or by small rural companies. They are instructive as showing that cheap rural service can be obtained at a price. But telephone engineers (especially in those countries which aim at providing such a standard of transmission as will enable trunk service to be afforded not only to the nearest small town, but also to the big centres of industry and to countries overseas) will rub their eyes when they read of those percentages of lines worked on earth returns.

We do not know if our rural telephone-users cry to Heaven, but they are at least able to call to London, Glasgow and Manchester, not to mention the Continent and the United States, while we doubt whether some subscribers in Iowa on grounded lines would be able to make themselves heard very far beyond the nearer home-towns.

One moral to be drawn from this story is the danger of talking of " the rates in America " and " service in America " with the large vagueness frequently indulged in by our critics. Rural Iowa is America as well as New York or Chicago, and though we should not dream of pointing to the telephone service in the former to which the *Telephone Engineer* alludes as typical of justly vaunted American excellence, we are quite accustomed to having Iowan rural rates quoted against us as a warning and a sign !

A WORLD TELEPHONE SYSTEM.

THE January number of *Europäischer Fernsprechdienst* contains an able article on " The World Telephone System in its Geographical Implications " by one of the editors, Dr. Craemer, a former high official of the German Post Office. Dr. Craemer envisages the early spread of inter-continental telephony between Europe, Asia, and Africa on the one side and North and South America on the other side of the Atlantic, between Europe, South Africa, Western Asia, and Australia, between Japan and California, at first by radiotelephony and later—in cases where it is possible—by

submarine and overland trunk cables. He foresees telephone service by wire extended overland to Russia, Siberia, China, and even Japan, and across the Mediterranean by cable to Egypt and Northern Africa in such a manner that at least the western parts of Asia and the northern parts of Africa will form traffic feeders to the eastern terminals of the transatlantic service. No part of the globe promising traffic escapes his prophetic vision, or is omitted from the wide scope of his suggestions. The article will well repay careful study, and we shall welcome the development of the extensions he foreshadows—the earlier the better!

One of his statements on a point of detail which taken by itself might give rise to erroneous impressions seems to us to call for comment.

It is to the effect that long wave circuits will hardly come into consideration for future services, to which he adds that in the newly-opened radio channels between Europe and North America short-wave working has been adopted. It is true that the long-wave radio channel between England and America has been supplemented by 3 short-wave circuits, but it should be made clear that the long-wave circuit, by reason of its greater stability and the longer daily period during which it is effective, functions in considerable measure as the backbone of the service. The provision of a second long-wave circuit is in fact under consideration. Short waves have good transmission efficiency during part of the day only, different wave-lengths having their best transmission at different times of the day, so that with a choice of three wave-lengths it is possible to ensure that, under average conditions, at least one short-wave circuit will be good at any time. Short-wave circuits supplement rather than replace long-wave circuits. In neither kind of transatlantic circuits are satisfactory results obtained during 100% of the day. A combination of a short and long wave-lengths therefore gives a greater assurance of continuous service than either type of circuit alone.

As Dr. Craemer says, a truly promising field lies before telephone and telegraph engineers in the extension of inter-continental telephone services, and we join in his hope that full co-operation between state administrations and private companies may render it fruitful.

HIC ET UBIQUE.

THE number of telephone stations in Great Britain given in the first paragraph of this column last month referred to Dec. 31, 1929 and not to Jan. 31 last.

Telephone service between this country and the Vatican State was opened on Feb. 20. On the same date the existing Anglo-Italian service was extended to include all places in Great Britain on the one side and all places in the Italian zones I and II and Florence and Rome.

The Postmaster-General of South Africa's report for 1928/29 states that the long distance telegraph and telephone route between Cradock, Middelburg, Naawport, and De Aar is nearing completion. This will provide communication between Port Elisabeth and Capetown, Johannesburg, Bloemfontein, &c. There will be a repeater station at Cradock.

The official report of the Italian Ministry of Communications for 1928/29 shows that there were 333,057 telephone stations in Italy at June 30 1929 as against 292,867 at the end of the previous June. The number of telephones in Milan has risen from 30,659 to 36,044; in Rome from 21,617 to 25,987: in Turin from 13,549 to 16,446; in Genoa from 11,812 to 14,056, and in Naples from 8,696 to 10,926.

According to the *New York Herald*, new rates came into force in New York on Feb. 1. In Zones I-IV and VI, VII (Manhattan, part of Bronx and Brooklyn) they represent an increase of from $4.75 per month for 75 calls to $6 (business premises) and from $4 to $4.50 for 66 calls (residences). In Zone 5 (part of the Bronx) the new rates are $5 and $4.25 respectively. In Queens (Zones VIII, IX, and X) again they are $6 and $4.50. This means for 900 calls (business rate) the annual charge will in general be about £15, and for 792 residence calls, about £11 3*s*. 0*d*. (We learn that these rates were introduced on a temporary basis not to exceed three months. The rates ordered by the New York Public Utility Commission will provide for an increase of the principal business rates from $4.75 to $5.75 per month, and of the residence rates from $4 to $4.40.)

An agreement is expected to be signed during the coming week, says the *Exchange Telegraph*, with the German concern of Siemens-Halske for the installation and operation for a period of 38 years of the telephone system in Athens.

Those of us who have read the latest American novels have become familiar with the word "mortician" in the sense of funeral undertaker. But wait!

Suppose you want to lop some branches which interfere with a telephone route. Send a crew of ordinary tree-trimmers and then send a crew of So-and-so's "dendricians," and you will see the difference! At least, so says an advertisement in an American telephone journal. "Dendricians" is distinctly good.

The "party line" is not so rife in this country as in America, and the following incident related in an American paper may lose some of its point over here, though descriptive of a typical rural American grievance.

I wanted the "vet" like billy-o, and of course these two champion long-distance talkers had a monopoly of the wire.

"I've just put the roast on for dinner," I heard one tell the other, "and it's doing so nicely."

Twenty minutes later they were still going strong. I bore it for a minute or so and then "cut in":

"Missus," I interjected, "I can smell your meat burning."

There was quite a scream, but I got the line clear.

A certain reverend gentleman in the wilds of the West Country—apparently of Irish extraction—resented enquiries about his wireless licence, and a conciliatory letter was sent to him from Headquarters by a certain male colleague whose first initial is "A." He has received the following reply and is in some doubt whether he ought not to ask the reverend and amorous gentleman whether his intentions are strictly honourable.

MY DEAR AMELIA,—Excuse my addressing you by your christian name. Amelia sounds more like honey than Annie, and it is such a sweet letter you have written, but why so distant? In common courtesy you should have put at least "Dear Sir" instead of "Sir." Courtesy always pays, and is the soul of success. Your letter is certainly more amorous than your previous effusion. No threats!—but still doubts. "As your letter would seem to suggest" is not worthy of you, my darling one. How very considerate of you to send an envelope and to save me postage. A distinct advance. We are getting to know each other better. I should so much like to work in the office with you. You have not yet taken advantage of my offer. My licence No. is ..... and I am licensed till Nov. 30 next. Good-bye, sweet one. Write soon.

Yours faithfully.

TELEGRAPHIC MEMORABILIA.

"EDISON warns President Hoover to keep the Government out of business!" is the headline of an American newspaper which in a report of an interview with Thomas A. Edison goes on to say that the great inventor declared that: "One of the highest duties of the President is to keep the Government out of business. It is his biggest job and I should include in that job the clearing out of the bureaucracies which are growing up in Washington and becoming a wasteful nuisance. . . . The Government never really goes into business for it never really makes ends meet, and that is the first requisite of business."

Presuming this to be a correct report of the celebrated American, one may be permitted to enquire if he has seen the latest result of the British Post Office business with its few odd millions on the correct side of the balance sheet, let us say, 40,000,000 dollars as a gift to the Treasury?

As regards the side-kick at bureaucracies in Washington, one might substitute "Whitehall" and with a very brief examination of our own newspaper files discover paragraphs certainly not less unkind and let us believe not less erroneous.

Taking all the nasty medicine first from our transatlantic relations which we know is administered, "more in sorrow than in anger," we may also read in the *T. and T. Age*, the editor's criticisms on certain statistics of the French *P. T. et T.* concerning which and flaggelating both administration and its public the writer says:—"It may be said in general that the French public has not yet learned how to use the telephone to the best advantage. On the other hand the notoriously poor service offered by the present equipment and administration of the system in France, certainly accounts for much of the failures."

No doubt other pens than that of the present writer would be better able to deal with these friendly criticisms—for one realises that they are really friendly. It is a strange coincidence that a current number of the *Electrical Review* reports that so far as the administrative side of the French question is concerned one very vital matter is being actively dealt with by a reduction of the number of lines under the charge of individual operators. Thus at the following Paris exchanges the number of lines has been respectively reduced as follows: Boulogne, 260 to 200; Montreuil, 240 to 180; Vincennes, 320 to 240 (later to 200); Levallois, 200 to 180, and so on.

Esperanto!—It cannot be denied that Esperanto is making steady headway. That it will ever actually take the place of any mother-tongue one may have very definite doubts. It is certainly becoming popular in many countries, amongst those Postal, Telegraphic and Telephonic employees, where the duties of these officials bring the latter into more or less personal contact with foreign nations. Accordingly we may note with special interest the anticipated presence of no less than 1,300 delegates from forty countries to this year's World Congress of Esperantists, to be held in Oxford during the month of August. In addition to the usual business meetings, a "Summer University" is being held at the same time. Lectures and the subsequent discussions will be in Esperanto. Will the British Post Office provide an Esperantist interpreter for Oxford Post Office business? If the University cannot provide one, there should be no difficulty in obtaining a qualified person from one if not all three sections of the G.P.O.

Round the World.—ALGERIA.—La Société Lignes Télégraphique et Téléphoniques is engaged in laying an underground telegraph and telephone cable between Oran and Algiers and Constantine. The section between Algiers and Maison has been completed. AUSTRALIA.—A Cabinet sub-committee has been appointed to consider the whole position of wireless and to make suggestions for its reorganisation. A telegram from the Sydney correspondent of the London *Daily Telegraph* states that the Director of Postal Services there, Mr. H. P. Brown, commenting on the situation (the 11th ult.) is reported to have said that the matter of the assimilation of the cable and wireless rates had not yet been agreed upon. "The question of tariffs was in the hands of the Imperial Advisory Committee on which Australia was represented," but he had no knowledge of any action taken. AUSTRIA.—The new draft Austrian Electricity Act contains clauses which have been drafted for the protection of radio listeners against interference caused by electrical apparatus. There is however, dissatisfaction among listeners and the Austrian Broadcasting Company (Ravag) is discussing the matter with the Federal Ministry of Commerce. BELGIUM.—Radio-Belgique states that two high-power radio stations are under construction at Veltham, one for Radio-Belgique and the other for the N.V. Radio. The two transmitters says, *World Radio* will deliver 15 kw. to the aerial, sufficient, it is computed to cover the whole of Belgium. CANADA.—The Bee Telephone Co. is constructing an important extension by constructing a new line from Oshawa to Sudbury (Ont.) *via* North Bay. 10,000 poles and 9,000 miles of wire will be used. The line will be specially suited for the carrier system of wired-wireless operation. This stretch of line is a link in the scheme to span the dominion from the Atlantic to the Pacific and will place Halifax in direct communication with Vancouver. CHINA.—According to reports from the *Times*, *Electrical Review* and a German report from Shanghai, the situation as regards the agreements between China and the Eastern Extension and Great Northern telegraph companies, which expired in December last, is still in suspense though the companies are continuing their activities. The Chinese Government still owes the companies considerable sums of money. It is also announced that a "Communication" loan of 10,000,000 Mexican dollars for the reorganisation of the China cable telegraph and telephone systems has been issued. To add to the complications, it is known that wireless installations are now being erected for the Chinese Government with American capital. FRANCE.—The Automobile Association has been officially informed that tourists may take wireless sets into France either mounted or as personal luggage. Duties and taxes must be paid, *and* no refund will be granted on re-exportation. The duty on British sets is 22% *ad val.*, and in addition there is a luxury tax on sets and on loud-speakers. *Why spend your holidays abroad? World Radio* reports that the Paris Municipal Council has adopted a resolution recommending the State to provide all lighthouses with two-way radio apparatus. The idea has considerable support. GERMANY.—*The Reichspostamt* has decided to erect a new high-power transmitter at Heilsberg, East Prussia. Prospective power 60 to 100 kw. with two aerial wood latticed masts of 32.5 ft. More than twenty high-seas fishing steamers are now equipped with two-way radio sets, says *The Electrical Review*, giving direct communication between owners and captains at a minimum distance of 200 miles. GREAT BRITAIN.—The Great Western Railway Company is considering the construction of a Beam radio beacon to assist the navigation of its steamers in Plymouth Sound during fog. The *Times* understands there are some financial difficulties as to annual expenditure on maintenance at present. The Picture Telegraph service between London and Berlin has now been extended to Frankfurt Main and to certain English provincial towns. The British Broadcasting Corporation's accounts with the Post Office show cash receipts for wireless receiving licences as £1,358,187. Of this the B.B.C. receives £887,616, the Post Office (for expenses) £178,686, and the Treasury £291,885. ITALY.—*Reuter's Trade Service* informs us that the Minister of Communications has been authorised to grant the sum of 500,000 lire as the Government's contribution towards the cost of installing the Vatican's wireless station. *The T. and T. Age* states that the Vatican's Automatic Telephone Exchange is made up of no less than 800 lines. *The Electrical Review* announces the opening of a very powerful new broadcasting station at Santa Palomba, 14 miles south of Rome. Antennæ power 50 k.w., height 330 ft., wavelength 441-8 metres, and estimated cost £150,000, installed by Radio Corporation of America. INDIA.—The Indian Broadcasting Company is expected to discontinue operations shortly, if it has not done so before these lines are in print. Expenditure has exceeded income by £15,000 annually, cables Reuter's Bombay Agency. As these lines

go to the press there seems to be more than the mere possibility that the Government of India will take over the affairs of the I.B.C. IRISH FREE STATE.—The Government has sanctioned plans for the erection of the high-power transmitting station at Athlone at a cost of £70,000. There are already two broadcasting stations in the I.F.S., one at Dublin and the other in Cork. The licence revenue amounts to £13,000 per annum, which would be insufficient to meet expenses were it not for the thirty odd thousand pounds derived from imported sets, &c. It is suggested that all radio dealers should keep a register of all sets, sales and repairs, in order, apparently, to check the number of sets actually in use with that of the number of licences issued! JAPAN.—*Reuter's* Tokio agency reports that a direct wireless telegraph service was successfully opened between Japan and England on January 17th last, made possible, it is added, by improvements effected by the Marconi Company. PERU.—*The T. and T. Age* announces that the International Telephone and Telegraph Corporation have acquired a controlling interest in the Peruvian Telephone Company. The latter company operates more than 65% of the telephones in Peru. The All America Cables, Inc., an affiliated company of the International T. and T. Corp. has operated the submarine cables to Peru for many years. The Peruvian Government apparently have granted a concession to All-America Cables to lay submarine cables for telephony, *but* a vital stipulation is that such cables shall be available for telegraphic or telephonic use, or simultaneously for both. According to *Reuter's Trade Service* the concession still further stipulates that within two years the company must erect wireless stations with the U.S.A., Spain, Argentina, Chili and Central America for telegraphy, and for wireless telephony, with Spain at least. PORTUGAL.—A draft decree was recently published showing that Portugal intends making radio-telegraphy, radio-telephony and broadcasting a State monopoly. There appears to be some vehement opposition, largely because of the necessary restrictions that would be imposed upon amateurs. U.S.A.—*The T. and T. Age* announce that the W. Union Telegraph Company have installed over 125 telegraph stations for air-transport companies during the last seven months. The service will be similar to that maintained by a railway company. In the State of Pennsylvania a complete network of police telephones has been established. Ninety-five towns and cities are linked up and over one hundred local authorities. For transmitting messages from the various headquarters a telephone-typewriter (*query* teleprinter) is used which types the message simultaneously to each local station. *Funeral Services by wireless.* It is proposed to broadcast funeral services in New Jersey. The N.J. undertakers affirm that the services could be accurately timed from the broadcast stations! The new transcontinental radio telegraph circuit of the Mackay Radio and Telegraph Company between the Atlantic and Pacific coasts was opened on Nov. 15, and appears to be doing well. The transmission from New York by remote control to Sayville is on 36 metres, and has been successfully picked up near Pitcairn island, nearly 5,000 miles from the American station. (Compare with note under Canada, above.)

Personal, &c.—Sir H. A. Kirk, late director-in-chief of the Indo-European Telegraphs, left £3,217 gross and £3,011 net personalty.

C.O.D.O.C.—Mr. Arthur Brough has again been congratulated by *The Daily Telegraph* musical critic on his "efficient little orchestra." This was on the occasion of the Centels production of *Les Cloches de Corneville* at the Cripplegate Institute.

Messrs. Creed & Co., Ltd., Croydon, have formed a new company in Germany, associated with the International Telephone and Telegraph system, which is to be known as *Creed Telegraphen Apparate G. m. b. H.*

The Postmaster-General informed the Bournemouth Council, in reply to a resolution suggesting legislation to provide for the laying underground of wires which would interfere with local amenities, &c., that "of the 8,000,000 miles of telephone and telegraph wire owned by the Post Office 6,800,000 miles were actually underground—a greater proportion than in any other country in the world."

The Carrier Current System.—"The use of the carrier-current systems is no more expensive than the common telegraph where transmission over distances of 1,500 miles are involved. . . . The carrier system is more immune to interruptions from power lines and aurora borealis."—John McMillan, Telegraph Manager, C.P.R.

J. J. T.

RETIREMENT OF MR. CRAWFORD MILLAR.

MR. CRAWFORD J. MILLAR, who is retiring from the position of District Manager of Telephones for the Bristol District, entered the service of the National Telephone Company at Glasgow in 1889, and when that company's business was transferred to the State in 1912 he was acting as the company's Assistant Superintendent for Scotland. Mr. Millar has thus over 40 years' telephone service to his credit. During that long period he has been located from time to time at Glasgow, Nottingham, London, Exeter, Edinburgh and Gloucester, and since November, 1921, he has been in charge of the Bristol telephone district. The first public telephone exchange in Bristol was opened in 1881, and at 1921 the business had been built up to the extent of 15,400 telephones. It is of interest to record, as illustrative of the bounding nature of telephone development, that there are now over 30,000 telephone stations in the district, so that the number of telephones added during the past 8 years has been almost equal to the number obtained during the preceding 40 years.

On the afternoon of Jan. 28, at a meeting in the Telephone District Office at 11, Woodland Road, Mr. Millar was presented with a McMichael super portable wireless set and an easy chair, from his colleagues in the Bristol district. Mrs. Millar was at the same time presented with an opal ring. The presentations were made by Mr. Pugh, Postmaster-Surveyor of Bristol, and included in the company were Major Batchelor, D.S.O. (Superintending Engineer), Messrs. Gray and Baxter (Assistant Superintending Engineers), Mr. Rattue (Sectional Engineer), Mr. B. Waite (District Manager of Telephones, Cardiff), Mr. Cass (Assistant Postmaster), Mr. W. Newton, Chief Superintendent (Postal), Mr. O. J. Harvey, Chief Superintendent (Telegraphs), Dr. Kemm (Medical Officer), Mr. J. T. M. Smith (Chief Clerk, Telephones), Mr. A. E. M. Carey (Contract Manager), Mr. J. M. Crombie (Traffic Superintendent), and representatives of the various branches of the District Manager's staff.

Mr. Millar was also presented with 3 fine etchings of Bristol from the Telephone District Managers of Great Britain and Northern Ireland. The presentation was made on their behalf by Mr. Waite, of Cardiff.

[A portrait and biographical sketch of Mr. Millar appeared in the April 1928 issue of the *Journal.*]

WIRELESS TELEPHONE SERVICE WITH SHIPS AT SEA.

THE Postmaster-General announced on Feb. 21 that following on the success of wireless telephone communication from the liner *Majestic* to this country on her outward voyage in the previous week, the experimental service would be extended on the homeward voyage to cover calls to as well as from the vessel. It was proposed to provide service daily between the hours of 12 noon and 6 p.m., commencing with Sunday, Feb. 23. The minimum charge is £4 10*s.*, covering 3 minutes' conversation, and £1 10*s.* per additional minute or fraction thereof. A "Report Charge" of 10*s.* is payable (in place of the normal charge) when for any reason beyond the control of the Post Office the person asked for cannot be found and connected up with the caller.

Subscribers desiring to book a call to the *Majestic* should proceed as when booking an ordinary trunk call, and when put through to the recording operator should ask for "Ship Service." The caller should give, in addition to the name of the passenger with whom conversation is desired, his own telephone number and the name associated with that number in the telephone directory.

As indicated in an earlier notice a similar service will be available to and from any ship on the North Atlantic route which is fitted with a suitable type of wireless telephone apparatus.

EXTRACTS FROM TELEPHONE PROGRESS REPORTS FOR 1929.

LONDON.

Growth in the London Area.—The direct exchange lines provided have increased from 181,606 in December, 1921, to 384,739 in December, 1929, i.e., an increase of over 110% in eight years.

The continued growth of the system is further illustrated by the fact that there are now 137 exchanges in the London area as compared with 130 last year. This number includes 24 automatic exchanges, 109 manual exchanges, 2 Toll exchanges, the Trunk exchange and the Tandem exchange. There has been an increase of 28,756 exchange lines during the year, which is about 8%, the total on Dec. 31 being 384,739. In addition, there are 16,641 private telephones, i.e., telephones provided by the Post Office but not connected to the public exchanges. The total number of telephones (exchange and private) in the London area at the end of 1929 was 661,977, representing an increase of 47,794, or 7.8%.

The average number of calls of all classes handled in the London Trunk Exchange daily during 1929 was 60,050.

Toll Service.—The area served by the Toll Exchange has been extended by the inclusion of towns formerly served by the Trunk Exchange. The Toll Exchange now serves the South-East portion of England, from Aldeburgh and Felixstowe on the East to Portsmouth and Milford on the South Coast. The northern boundary of the area embraces the towns of Diss and Bedford, and the Western boundary includes Bicester, Basingstoke and Southampton. A full list of the provincial towns and villages obtainable through Toll Exchange appears in the London Telephone Directory.

The outgoing traffic from London to towns in the Toll area is dealt with at an exchange known as Toll A, and the total number of provincial lines connected to this exchange has increased from 939 lines in 1928 to 1,177 in 1929. The incoming traffic from the same area is dealt with at Toll B Exchange, and the number of provincial lines connected to the latter exchange has increased from 690 lines in 1928 to 898 lines in 1929. Part of the increase is due to the transfer of territory from the Trunk Exchange. The more rapid service possible under Toll conditions has resulted in a marked increase of telephone traffic in the area transferred.

The total traffic dealt with daily in the Toll Exchange was 122,125 calls, representing an increase of 27% over that of the previous year.

Local Service.—The number of local calls originated during the year 1929 was 647,631,825, an increase of 9.3% over the figure for 1928.

Conversion to Automatic Working.—Substantial progress has been made in the conversion to automatic working of subscribers' lines within the 10-mile radius from Oxford Circus. In this area about 18% of the whole number of lines are connected to automatic exchanges, as compared with 6% at the same date last year. Approximately one-quarter of the total originated calls in the London area are now dealt with wholly or partially on automatic equipment.

The introduction of automatic working on a large scale in such a complex area as London has, necessarily, been accompanied by difficulties. These difficulties, however, have not proved greater than was anticipated, and the system is yielding good and improving results. The advantages of automatic working will be realised still further as subscribers become more accustomed to the new system. The significance of the various tones used to indicate to a subscriber that (*a*) his line is free for dialling, (*b*) the wanted number is engaged, (*c*) is being called or (*d*) is unobtainable, is being better appreciated, but there is still a marked tendency on the part of some subscribers to abandon their calls before the called subscriber has been able to reply. Better results are obtained if, after allowing a reasonable time for the called subscriber to reply, the number is dialled a second time after a short interval of time instead of enlisting the services of an operator.

Much trouble is experienced, especially in the "Busy Hour," owing to delay in answering the telephone. Such delays not merely cause inconvenience and annoyance to the calling subscriber but also hold up plant which, otherwise, would be free to carry calls for other subscribers. It is hoped, however, that as the use of the telephone extends, subscribers will appreciate that it is in their own interest to see that their telephones are answered promptly and that conversations are not unnecessarily prolonged. Time and annoyance would frequently be saved if called subscribers would at once give their names or the name of the firm instead of saying "Hello."

Incidentally, it may be mentioned that the use of the dial by blind subscribers has been facilitated by the provision of a "nick" in the edge of the finger plate opposite the numbers 4 and 7. This has been found to be quite effective.

New Exchanges, Buildings and Sites. Automatic Exchanges.—During the past year 16 new automatic exchanges have been opened, viz.:—

Western (Kensington Area), Archway (Tollington Park, Hornsey Road, Crouch End), Reliance (Kennington Area), Edgware, Metropolitan (City of London), National (City of London), Mitcham, Hillside (North Finchley area), Ilford, Temple Bar (Covent Garden and Strand area), Beckenham, Maida Vale, Fulham, Flaxman (Chelsea area), Colindale (Kingsbury area), Hendon.

These new exchanges provide for an equipped capacity of 80,000 lines.

Apparatus is being installed in the following automatic exchanges which will have a total equipped capacity of 32,500 lines:—

Addiscombe, Fairfield (Croydon area), Amherst (Hackney area), Gladstone (Cricklewood area), Macaulay (South Lambeth area), Primrose (St. John's Wood area), Shepherds Bush, Livingstone (Norwood area).

Equipment specifications have been issued for six exchanges having a combined initial capacity of 31,000 lines, whilst preliminary arrangements are in hand for other exchanges, bringing the total number of automatic exchanges to be constructed in London during the next five years to 47.

New buildings are in course of erection for the accommodation of the following automatic exchanges:

Acorn (Acton area), Gulliver (Kentish Town), Hampstead, Leytonstone, Mayfair, Perivale, Pollards (Norbury), Prospect (Barnes), Terminus (King's Cross area), Whitehall.

LIVERPOOL.

New and Improved Exchanges.—New exchanges have been opened for service at Burton and Knowsley and extensions of existing exchanges were carried out at Ashton, Birkenhead, Bromborough, Crosby, Gateacre, Heswell, Huyton, Kingsley, St. Helens, Warrington and, in the Isle of Man, at Castletown and Douglas. It has been decided to open new rural (automatic) exchanges at Hale (Widnes) and Knowsley in 1930, the latter replacing the temporary manual exchange opened in 1929, and buildings to accommodate the apparatus are in course of erection. A new manual exchange will also, it is anticipated, be opened at Neston and extensions of existing equipment are projected at Lymm, Mossley Hill and Rock Ferry. Work continues on the new Exchange Building at St. Helens and it is anticipated that the building will be ready for the installation of the plant in 1930.

Telephone Progress and Increase in Number of Telephones.—During the 12 months ended Sept. 30, 1929, the number of new telephones fitted was 7,259. After allowing for cessations, the net increase was 3,215 telephones, or 4.6% on the total at Sept. 30, 1928, which is not quite so satisfactory as in the previous year, when the net increase was approximately 5.75%. This is due not only to a smaller number of new stations but to an increase in the number of cessations, for which the removal of businesses from Liverpool to London has been partly responsible.

The number of telephones has increased from 34,910 in September, 1912, to 72,644 at September, 1929, a growth of 108% in 17 years. The figures for each year during that period are shown in the Appendix.

During the year the canvassing staff has been kept busy, and every effort has been made to ensure that the non-subscribing public are made conversant with the rates and the advantages of becoming telephone subscribers. The development in private-house telephones has been maintained and the ratio of these to business telephones continues to increase. Development in this direction has, no doubt, been stimulated by the recent extension from 1½ to 2 miles of the radial distance from the exchange which is covered by the basic rental charge for a telephone. For subscribers between these distance limits this represents the substantial reduction of £2 per annum in the telephone rental charge.

Telephone Traffic.—During the past year there has been a still further substantial increase in the number of calls dealt with in the district, the total number approximating to 70¼ millions, an increase of about 3½% over the previous year. The quality of the service has been well maintained. Written complaints were comparatively few and fewer than in the preceding year, and referred mainly to plant and apparatus faults, which are more or less unavoidable. The total number of written complaints received represented only one complaint to approximately every 49,000 calls dealt with.

[*Other reports held over*].

PROGRESS OF THE TELEPHONE SYSTEM.

THE following is a brief review of the growth in the British Post Office telephone system during the year 1929.

The total number of stations working in the Post Office system at Dec. 31, 1929, was 1,848,468, representing an increase of 125,885, or 7.3% for the year. The figures for London, England and Wales (excluding London), Scotland, and Northern Ireland separately are as follows :—

	Total No. of Stations.			
	At Dec. 31, 1928.	*At Dec. 31, 1929.*	*Increase. No.*	*Increase. %*
London	614,183	661,977	47,794	7.8
England and Wales (excluding London)	931,803	999,529	67,726	7.3
Scotland	155,193	164,125	8,932	5.8
Northern Ireland	21,404	22,837	1,433	6.7

Residence rate installations at the 31st December, 1929, numbered 416,296, the net addition during 1929 being 40,955 or 10.9%, compared with a net growth in business (subscribers) exchange installations of 24,282 or 3.8%. At the 31st December last, the percentage of residence rate subscribers to the total exchange subscribers was 38.8, as compared with 37.3 a year previously and 25.1 in July, 1922, when the reduced tariff for residence lines was first introduced. In the London Telephone Area nearly half of the subscribers' lines are now rented at the residence tariff, the percentage having increased from 30.5 in July, 1922, to 48.4 in December, 1929.

The total number of call office stations at the 31st December, 1929, was 29,924, of which 5,803 were in the London Telephone Area and 24,121 in provincial districts. The net addition during the year 1929 was 4,408, or more than double that for the previous year, viz., 2,013. The substantial increase during the past year is largely the result of the recent extension of call office facilities in rural areas. Of the net growth of 4,408 for the year, 4,110 were added in provincial districts.

Of the total of 29,924 call office stations at the 31st December last, 7,541 were kiosk call offices, the net growth during the year being 1,520. The number of kiosks in the London Telephone area increased during the year from 1,214 to 1,581, and the number in the provinces from 4,807 to 5,960.

During the year 1929, 133 new rural exchanges were opened under the rural development scheme of 1922, bringing the total number opened under the scheme up to 1,373. In addition to the 1,373 exchanges opened, there were at the end of the year 89 others in course of construction.

The total number of exchanges working at the 31st December, 1929 was 4,606, of which 3,115 serve rural areas.

The number of rural party lines at Dec. 31, 1929, was 10,322, as compared with 10,382 a year previously, a decrease of 60. Actually 1,367 rural party line stations were provided during 1929, but there were 1,427 cessations, many of which probably represented transfers to exclusive line service.

The number of railway stations in rural areas connected with the exchange telephone system at the end of 1929 was 1,470, representing an increase of 434, or 42% over the previous year's total. This substantial increase (which is more than double that for the previous year), is largely due to the provision of call offices, 354 out of the total net addition of 434 circuits during the year, or 82%, being call office circuits.

At the time of going to press, the results for the last two months of 1929 in respect of trunk calls were not available, and the year's figures will be given in a later issue. Particulars of the October traffic which have not yet been quoted are as follows :—

The total number of inland trunk calls dealt with was 10,280,109, representing an increase of 679,365 or 7.1% on the October, 1928, figure. Outgoing international calls numbered 51,708 and incoming international calls 56,224, representing increases of 8,527 (19.7%) and 11,005 (24.3%) respectively over October, 1928.

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

LONDON—Hurstway, Redhill, Springpark (West Wickham), Theydon Bois.

PROVINCES—Summertown (automatic) : Aldbourne, Bassenthwaite Lake, Fenwick, Hollington, Inverkeilor, Kilchattan Bay, Kimpton, Kincaldrum, Marrburn, St. Osyth, Worlingworth (all rural automatic) ;

and among the more important exchanges extended were :—

LONDON—Thornton Heath.

PROVINCES—Boxmoor, Cheetham Hill, Crosby, Denton, Douglas (I. of M.), Gatley, Harwich, Hyde (Ches.), Ilkley, Sale.

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

Greenock—Wemyss-Bay

Guildford—Aldershot (Section of Guildford—Basingstoke cable)

while 78 new overhead trunk circuits were completed, and 83 additional circuits were provided by means of spare wires in underground cables.

GLASGOW TELEPHONE NOTES.

THE subject of our portrait and notes this month is Miss Elizabeth Reid Wallace, Senior Assistant Supervisor, Class I.

Like others in the service who have risen to positions of responsibility, she commenced her career by joining the operating staff of the late National Telephone Company, subsequently transferring to the Glasgow Corporation Telephones, eventually rising to the positions of Supervisor and Assistant Chief Operator. On the transfer of the Glasgow Corporation Telephones to the Post Office she was graded as Telephone Operator with Supervising

Allowance. The rank of Assistant Supervisor, Class II, was attained on Dec. 31, 1911, promotion to the Class I grade following on Sept. 7, 1914, which position she continues to fill with distinction, as second in command of the Glasgow Trunk Exchange.

Miss Wallace, while being an efficient officer, is popular with the staff and knows how to get the best results from them. She has no strenuous hobbies, but is fond of a good holiday and has visited most parts of the British Isles and also indulged in some trips abroad. Fancy work, music and reading are her home recreations, and rumour has it that she delights in giving pleasure by kindly actions.

"A Wonderful Thing is the Telephone."

The telephone's the greatest boon
  That ever was invented.
That's why you must install it soon,
  If not, you will lament it.

Not on the 'phone? Why, how absurd!
That's why your rival "bags the bird."
  The telephone, professional men
  Admit, is mightier than the pen.
By telephone financiers
Control their stocks, and purchase shares,
  No matter if you sell or buy
  Upon the telephone rely.
No matter WHAT you wish to do
The telephone will help you through.
  Your day's work done amusements call,
  The 'phone connects you with them all.
In times of sickness or of grief
The telephone will bring relief.
  Although you think it may annoy
  Just try it, for 'twill prove a joy.
In short, at length you must contract
For installation. That's a fact!
  So as Shakespeare says in language tickly
  If it were done "'twere well done quickly."

M. L. TULLOCH.

The staff of the District Manager's Office and their friends met in the Grand Hotel on Monday, Jan. 27, to bid good-bye to Mr. G. C. Dewar before he left to take up a higher duty at Birmingham.

The entertainment, which was designed with a view to meeting various tastes, opened round the whist tables. After propitiating the God of Chance, tea was served and the whist winners received their prizes, the presentation of which was carried out by Mrs. Law. The prime desideratum of the evening then followed when Mr. Dewar was presented with a mahogany bureau from the staff. The presentation was made by Mr. Coombs, who in words well chosen, paid a glowing tribute to Mr. Dewar as a colleague and a man. Mr. Dewar then conveyed his thanks to the staff in his inimitable manner. Mr. Law and Mr. Wright (who occupied the chair) also spoke as to Mr. Dewar's sterling qualities. When it is considered that the keynote of the speeches was sincerity, nothing more need be said of the high esteem in which Mr. Dewar was held.

The latter part of the evening was spent in song and readings, and worthily did the artists earn the thanks of the company suitably expressed by Mr. Lucas. In conclusion, it must be said that the arrangements for the function were such as would satisfy the demands of the most austere critic, and everyone who was present must feel a sense of indebtedness to Mr. Murray and his committee for their efforts to furnish a memorable evening—an evening which must live in the annals of the Glasgow Telephones.

Glasgow Post Office War Hospitals Entertainments Committee.—Under the auspices of the above committee the staff of the District Manager's Office provided an entertainment at Ralston Hospital for totally incapacitated ex-service men. A special tea was given and all the little extras which make a social evening a success were provided and thoroughly enjoyed by the men. Mr. Law, Chief Clerk of the telephones, presided. The main item on the programme was a whist drive, and play for the prizes was very keen indeed. Mrs. Law presented the prizes. Mr. D. Reid, Contracts, gave two monologues which were greatly enjoyed. Miss McGill, of the Fees Branch, who organised the evening, led the community singing. Dr. Vickers, on behalf of the patients, thanked the staff of the Telephones and the committee for the splendid evening and also for their continued kindnesses to the patients at Ralston. Mr. Coombs, in reply, said that in coming to the hospital the staff were only endeavouring to repay a small instalment of the debt we owed to the men who had done so much for us during the dark days. He said that the activities of the Committee were only possible through the magnificent generosity and enthusiasm of the telephone girls, who were as keen to-day as when the war was in progress. Auld Lang Syne brought a pleasant evening to a close.

On leaving Bridgeton Exchange on Jan. 25 to take up new duties outside the Service Miss M. F. Gilmour was presented with a leather hand-bag by her colleagues as a token of their appreciation and of their best wishes for her future success.

Spirella says: The main-*stay* of the Service is woman.
Reiditski says: That's true. Corset is.

FOR OUR ADVERTISERS.

The following contracts are open and all references should be made, unless otherwise stated, to the Department of Overseas Trade, London, S.W.1.: *Australia*, Melbourne, Postmaster-General's Department. Mar. 11. Supply of bells and buzzers (Schedule C. 552) (Ref. B.X. 603). *Morocco*, Rabat, Posts, Telegraphs and Telephones Administration. Mar. 13. Supply of glass insulators, bronze and copper wire, and galvanised ironwork (Ref. B.X. 6140.) *Australia*, Melbourne, Postmaster-General's Department. Mar. 24. Supply of resistances and reactances (Schedule C. 557) (Ref. B.X. 6046). Melbourne, Postmaster-General's Department. Same date. Supply of dial parts (Schedule C. 555). Melbourne, Postmaster-General's Department. Mar. 25. Supply of cordless telephone switchboards (Schedule C. 566) (Ref. B.X. 6071). *New Zealand*, Wellington, Posts and Telegraphs Department. Mar. 26. Supply of 10,000 double-ended wrought-iron arm-bolts (Ref. B.X. 6091). Wellington, Posts and Telegraphs Department. Mar. 31. Supply of spare parts for B.P.O. dial No. 10 (Ref. B.X. 6097). *Australia*, Victorian Railway Commission. Mar. 30. Supply of d.c. neutral relays for power signalling purposes (Contract No. 43,457) (Ref. B.X. 5793). Melbourne, Postmaster-General's Department. April 1. Supply of submarine cable (Schedule C. 561) (Reference B.X. 6070). Melbourne, Postmaster-General's Department. April 15. Supply of cord-type switchboards (Ref. B.X. 6135). *Egypt*, Ministry of Public Works. April 30. Supply and erection of H.T. overhead transmission lines in isolated basins of Upper Egypt. Specifications, &c., from the Chief Inspecting Engineer, 41 Tothill Street, London, S.W.1. £10 5*s*. *not* returnable.

Memo.—The British Chamber of Commerce Journal, in Sao Paulo, directs attention to the possibilities of Brazil as a market for British-made wireless apparatus, especially the all-electric type working on a.c. at 110 volts, 60 cycles, but warns possible exporters that American practice has accustomed the Brazilian public to a type of valve quite unlike the British "staggered" pins, and therefore all valves would have to be of the transatlantic pattern.

J. J. T.

March.

So this is March. One feels that one ought to write a poem about it. Many important things happen in March such as Ides and Hares, Area Transfers and Mallows. Then there's Lady Day which, although a quarter day, is just as long as any other day, but far more terrible. Indeed, many people cannot think of it without emotion or at any rate feeling or being moved. During March, too, we meet the twins Quinqua and Quadra Gesima. They always seemed to me most mysterious, and long before I knew what they were I pictured them as a couple of giants—something like Gog and Magog—but quite genial old fellows. If I ever keep giraffes I think it would be nice for them to be known by these names. Indeed, it seems a pity that two such splendid names should be going begging, as it were, and I feel that I want to buy two giraffes at the earliest opportunity. In time, of course, one would call them Quin and Quad as a mark of good-feeling and affection. Possibly when they got playful there would not be time enough to call them by their full names or it might not be necessary to call them at all. This, however, is by the way. By far the most important events of the month are Pancakes and Spring, and of the two it is difficult to say which is the greater. One is somehow torn between the appeals of duty and beauty. To eat pancakes is undoubtedly a duty and one out of which we are entitled to as much pleasure as we can get. Of Spring I need say nothing because so much has been, is being, and will continue to be written about it. It gives rise to onions and cleaning, lambs and primroses and the first cuckoo. Birds begin building—somewhat in the Drage manner—and the young man's fancy also turns Dragewards.

March is really worth a poem, don't you think ? I should like to write one, but my difficulty for the moment is that the only word I can remember which rhymes with March is starch, and that doesn't strike the sympathetic poetic chord. It seems just a bit too stiff. Of course there's larch, which is rather wooden, or parch which suggests a drink—Ha ! a fine idea—let's !

PERCY FLAGE.

City Exchange New Year Party.

On Jan. 24 City Exchange celebrated the New Year by holding a party in aid of the Poor Children's Tea, in the Dining Hall at G.P.O. South. The preliminary arrangements were ably conducted by the Entertainment Committee.

Mr. Furze was asked to act as Master of Ceremonies, and under his pilotage affairs went with a swing. About 250 members of the City Exchange staff and their friends gathered soon after 6.30 p.m., all in excellent spirits, and prepared for plenty of fun. The floor was cleared for dancing, a band had been engaged for the evening, and ample provision had been made for the serving of light refreshments.

Dancing and games occupied most of the time until soon after 10 p.m., and Miss Knapman presented the prizes for the various events to the successful competitors. An exceptionally enjoyable evening it proved to be, and we look forward with confident anticipation to many similar opportunities *for good fellowship and mutual entertainment.*

H. F. E.

A New Year's Party given by the City Exchange Staff to the poor children in the Southwark District on Feb. 1 was in every way a great success. At 4 p.m. 200 girls and boys arrived ready for their tea, and seated themselves at the tastefully decorated tables, behind which helpers from the Exchange were ready to wait upon the children. They needed no second bidding, after the grace was said, to start away on the food, and they did not sit back again until " they were ready to bust," as one little fellow remarked.

After the tea, Miss Knapman kindly recited the " Pied Piper of Hamelin," which was followed by some community singing, until the Marionettes arrived and amused both children and helpers for nearly an hour.

The Vicar then told the children to remain seated while Father Christmas and the Good Fairy (this part being realistically carried out by a City Telephonist) distributed dolls to the girls, and toys to the boys. On leaving the hall after a very enjoyable evening, each child received a packet of chocolate and a new penny.

P. O. P.

Our Portrait Gallery.

No. 6.—MISS F. NIGHTINGALE.

Miss Florence Nightingale—actually a connection of her illustrious namesake—is the Supervisor-in-Charge of Putney. During the early years of her service she was personal clerk to Miss Heap, first Superintendent of Female Exchange Staff in the London Telephone Service, subsequently taking up work as teacher in the Operating School with occasional periods of duty as Interviewing Officer ; and passing from this to the position of Supervisor-in-Charge.

Our subject's hobbies are walking and mountaineering anywhere—but especially in Italy—singing, sketching, and sculling ; the last named accomplishment being particularly appropriate in a Supervisor-in-Charge of Putney, an exchange whose urgent traffic problems rightly claim the personal observation " on the spot " of all good traffic officers while the University crews are on the tideway !

Poor Children's Tea.

The Staff of the Battersea Exchange entertained 130 poor and crippled children at St. Philip's Hall on Saturday, Feb. 1. Iced cakes and dough-nuts ; bon-bons and balloons ; and heaps of other good things, dear to the hearts of children, were in abundance.

Then there was the Conjuror. How delighted they were with him, and how they all shouted together and told him where he had put the ball that had mysteriously disappeared.

Last but not least there was the Fairy Play, "Goody Two Shoes," written by the " Witch that lived near the Well," and acted by an " All Battersea " cast. This play was received in eloquent silence, broken only by occasional exclamations of admiration and bursts of laughter.

After the children had gone, somewhat tired, perfectly content, and laden with gifts, more happy hours were spent by the Staff and their friends, as previous experience had shown that it would be quite impossible to cease having a good time so soon.

Battersea considers itself fortunate in having its share of those delightful people who are able to rejoice in and organise social events.

The following lines were written by an onlooker at the play :—

Little Goody Two Shoes.
(A Play.)

The play for you and the play for me
Is the one that's given by "Battersea,"
Rendered in the St. Philip's Hall
For poor little children, one and all.

There's singing and dancing, and fun and glee,
And oh ! how jolly I think it would be
Dressed as the Parson, with solemn look,
Complete with gaiters, glasses and book.

The King in rich raiment, red and gold,
His daughter gave to a Prince whose bold
Adventures ceased at a witches' hovel,
To find the Princess with broom and shovel.

There were Eastern maids and fairies blue,
And butterflies of gorgeous hue,
And little children like you and me
Playing and singing, merrily.

The beautiful Princess was under a spell,
Cast by the witch living near the well,
Until the fairies sought and found
And set the Princess homeward bound.

The King and Queen and people too
Were joyed to greet their maid anew,
But the Prince who'd wandered o'er the land
Promptly asked for the maiden's hand.

And now that all is peace and goodwill,
(For the witch has vowed to do no ill),
I'll wend my way home, and think again
Of the play that was worth a trip in the rain.

BATTERSEA.

DEAR EDITRESS,—I wonder why my sonnet (?) to the C.C.I. has been mis-coded (more or less) and masquerades as C.C.S. ! Perchance it is a printer's error, or else (the thought fills me with terror !) my writing has so retrogressed the poor chap had to guess the rest !

Howe'er it be—'tis very plain such slips must not occur again. In future C.A.S. agrees to cross her eyes and dot her teas !

Postscript.

Fie ! fie ! dear Sir Percy—
I pray you have mercy !
Don't dance on my humble apology.
With comments so witty—
'Tis surely a pity
To waste such unique phraseology !

I "got you" the first time !
But this is the worse time
I've had since we started hostilities ;
My name isn't Sam,
But I don't care a —button !
I can smile at your cute
Versatilities !

I cannot compete
With your phrases so neat,
But a woman, forsooth, my dear Percy
(As doubtless you've heard !)
Must have the last word—
So here endeth this long contro*versy* ! C. A. S.

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.1.

C.T.O. NOTES.

Promotions.—Messrs. F. C. Whitaker, Overseer to Assistant Superintendent ; P. W. G. Stubbs and C. W. Gould, Telegraphists to Overseers ; Miss A. C. West, Assistant Supervisor to Supervisor.

Retirements.—Messrs. J. W. Duncan, F. T. Stimpson and J. W. Brown, Assistant Superintendents ; J. W. Attwooll, T. E. Hodgson and A. W. Bing, Overseers ; and A. H. Ashby and R. W. E. Lasham, Telegraphists.

Obituary.—We regret to record the deaths of several old friends in Leonard H. Tinson, Adam Gordon, "Bobbie" Weeks, Harry Oakman and T. Boulden. We extend our sympathy to all the relatives in their bereavement.

C.T.O. Art Society.—Mr. Hugh Davey, one of the Society's ablest and most enthusiastic members, has kindly consented to give demonstrations of his method of work in water colours. These meetings are open to non-members of the Society and anyone interested is cordially invited. Further particulars may be obtained from Mr. E. J. Shaw, C.T.O.

Reunion of the Retired Supervising Officials of the C.T.O.—The tenth reunion of "The Old Brigade" took place on the 8th January with a record attendance. No fewer than 97 sat down to tea and "tuned in" to a flow of tongues reminiscent of bygone days.

Mr. James Bailey, I.S.O., was in the chair, supported by Mr. W. S. Fisher, who is 83 years of age. To mention each individual would occupy too much space, but the whole party spent a very happy time together.

Sport.—A dance was held on the 10th January on behalf of the fund for the "Radway Cup"—for tennis—and it was a great success, 300 dancers having a most enjoyable evening. As a result a very fine cup has been purchased for competition.

Football.—The Centels have had a most successful tour of Southampton and Portsmouth. The Head Postmaster of Southampton attended the match which was played on the Civil Service Ground, and we were beaten by 4 goals to 2. Against Portsmouth, however, we were successful, winning by 4 goals to 1. The Centels enjoyed a conducted tour round the Dockyard and over H.M.S. *Queen Elizabeth*.

Opera.—Les Cloches de Corneville.—This opera was presented by the "C.O.D.O.C." at the Cripplegate Theatre on 27th, 28th and 29th January, and from one point of view was better than all previous productions. This applies specially to the chorus work, the singing and dancing being excellent, and in conjunction with Mr. Arthur Brough's very efficient orchestra we were like "Oliver Twist" in wanting more. The principals were perhaps not quite the strong combination that we look for from this club. Mr. Arthur Boyce as the Bailie and Mr. Bertie Figg as his "shadow" provided the light relief. Both Mr. Blundell and Mr. Frank Barber gave good performances in their respective parts of the Marquis and Grenicheux. Mr. F. V. Morey, by his portrayal of Gaspard the miser, shows excellent promise, and, provided he gives more attention to his diction, he should be a very useful member of the club. As Serpolette Miss Winifred Lenthall gave her usual polished performance, and Miss Mabel Slade as Germaine made a very promising debut.

The whole production was in the capable hands of Mr. Donald Bidgood.

Dramatic.—The Last of Mrs. Cheyney.—The Dramatic Section will give two performances of this play at Cripplegate Theatre on 18th and 19th March. Tickets, price 3*s.*, 2*s.* 4*d.*, and 1*s.* 10*d.*, may be obtained from Mr. J. Henry, Room 17, Central Telegraph Office.

Mr. J. W. Brown.—Saturday, 25th January, 1930, was the official date of retirement of Mr. J. W. Brown, Assistant Superintendent in Charge of Canvassing.

The spontaneous expressions of goodwill showered upon him on his last day of service by his numerous friends in various departments and the business world outside were a revelation, even to his most intimate colleagues, of the esteem in which he was held.

Entering the Service at Stockton-on-Tees in September, 1885, he transferred to London in 1890. "Jack" was a great personality, physically (he stood 6 ft. 5 in.) and temperamentally endowed with a kind and generous nature in like proportion.

With the advent of the competitive element in the Overseas Telegraph service the Department was not slow to recognise the qualifications of Mr. Brown for appointment as Outdoor Representative. His reminiscences of Pioneer Canvassing were highly entertaining. Irate complainants usually took a generous view after a chat with the "long un," but on occasion J.W. could be as firm as he was kind, as instanced by the historic occasion when a particularly impudent member of the staff was, after ample warning, suspended over a 4th floor balcony in the grip of a mighty fist.

The Beam Wireless services to the Dominions afforded a good scope for the exercise of Mr. Brown's talents, and his activities in the development of those services were of inestimable value.

His many friends have united in presenting him with a Globe Wernecke bookcase, and many good wishes will follow him to Barton-on-Sea for a happy retirement and many a good "card" on the Golf Links.

LONDON TELEPHONE SERVICE NOTES.

Contract Branch Notes.—The business done by the Contract Branch during the month of January resulted in a net gain of 5,596 stations as compared with 5,984 stations in the corresponding month last year. Trade conditions, particularly in the City, are still depressed owing to the recent financial crash, but there is an improvement on the comparative results of the previous two months.

The spirit of the times is speed and even more speed, and it would appear from the following letter recently received that we are not behind in this respect.

("Thanks so much for your speedy response to my letter of yesterday which came in person by a "chap" who had the sign on "the dotted line" at 11.59 a.m. this morning—some speed. If the rest of the job measures up to the same standard I will be able to have the laugh on some of my New York friends who think the New York Telephone Co. is the last word on Service.")

It must be disturbing to our Press critics to read these spontaneous ebullitions of gratitude, because we appreciate how difficult it is for most people, to sit down and write in praise of something which his daily paper would never even grudgingly admit possible. We feel, however, that the telephone user must often chuckle at the things he is told happen to him, but which he himself never experiences.

A large gathering assembled at Contract Branch headquarters in Cornwall House on Jan. 24 to wish Capt. E. F. Arthur of the Development Section farewell on his promotion to the position of Postmaster of Bangor. The Deputy Controller, Mr. Pink, presented him with a silver cigarette case, pipe, and fountain pen and pencil, and spoke of his excellent qualities during his period of service in the L.T.S. and gave an interesting topographical sketch of the new Postmaster's future home. Mr. Taylor, Principal Clerk Contract Branch, in a happy speech referred to his intimate knowledge of the excellent work performed by Capt. Arthur, and amusingly referred to the extraordinary phenomenon of a Welshman returning to his own country to improve his position. Capt. Arthur, in a reply of thanks, gave a racy outline of his career in the London Telephone Service, and carried the minds of many of his colleagues back to a period, which many of them had probably long since forgotten.

The many friends of Mr. R. J. Skelton of the North West Contract Office will be glad to learn that he is now on the high road to recovery after what proved to be a very serious operation. There have been many "anxious days," but these we hope have now passed. He has left hospital and returned to his home for convalescence, and it is sincerely hoped that he will be speedily restored to his normal health and strength.

L.T.S. Football Notes.—The club met with their first defeat of the season on Feb. 1 at the hands of the Office of Works 1st division team in the 2nd round of the League Shield Knockout competition, the final score being 4-2.

The game was strenuously contested throughout and the display of the Office of Works was unlike that of a team occupying the bottom position in the league.

Other League results are as follows:—

Jan. 18, Royal Mint, won 7-2.
" 25, War Office, draw, 2-2.
Feb. 8, Ministry of Health, won 6-2.

The club still occupy the top position in the League, but are being closely pressed by the Land Registry, who have only dropped the same number of points as the L.T.S. It seems almost certain that the championship will be decided by the match to be played between the two teams on March 1, and whichever team wins this match will almost certainly be promoted.

Several of our players have been honoured by the League in being selected to play in representative games. In the Civil Service League *v.* Nemean League, Casey and Webdale were found places, and in the match against the Business Houses League, Casey, Futerman, and Webdale were selected.

Webdale has also been asked to play in the Civil Service team against the Royal Air Force.

The London Telephonists' Society.—The programme prepared for the occasion of the fourth meeting of the London Telephonists' Society this season was one which departed from the form usually accepted as fulfilling the aims of the Society. That this novelty appealed to the members was proved by a greatly increased attendance and the general consensus of opinion that there resulted a most successful and enjoyable evening.

A series of four papers, each with the title of "My Service," was read representing important services rendered by women. The following order was observed in presenting the different points of view:—

The London Telephone Service—Miss E. A. Hobdell, Clerkenwell School.
The Nursing Profession—Miss D. M. Merriken, The Elizabeth Anderson-Garrett Hospital.
The Saleswoman—Miss N. Ellt, Messrs. Selfridge & Co., Ltd.
The Lady Journalist—Miss K. Courlander, *Daily Express.*

Four very important branches of public work were thus explored, and it very soon became apparent that each was, in its own way, of vital necessity to the public. Apart from the specialised training naturally required for work of such widely differing types, certain qualities were found to be common in each case. The speakers emphasised especially that one should have a love of work; from that quality naturally arises the ability to put into one's work more than is asked, and the natural result of such a condition is increased efficiency and happiness.

One lecturer particularly remarked on the need of charm to bind together in an harmonious whole the many ingredients needed to make a successful business woman, and in her definition of that elusive quality stated, to our eternal comfort, that charm may be fostered, and will grow out of the warmth of our other qualities.

In conclusion a vote of thanks to the speakers was moved by Mr. Pink, seconded by Miss Cox, in felicitous terms.

Stamford Dramatic Society.—The Stamford Dramatic Society (London Telephone Service) will give a performance of *The Best People*, a society comedy by David Grey and Avery Hopwood, at the Cripplegate Institute, Golden Lane, Aldersgate, E.C.1, on Monday, March 24 next, commencing at 7.30 p.m.

Tickets, 3*s.* 6*d.* and 2*s.* 4*d.* (reserved) and 1*s.* 2*d.*, are obtainable from Miss D. Coleman, Telephone School, Ironmonger Row, Clerkenwell, E.C.1 (Telephone Clerkenwell 0101).

National Sanatorium, Benenden. The second concert of the season, provided by the London Telephone Service Staff, and once again under the direction of Miss Margaret Worth, was held on Saturday, Jan. 25.

The programme commenced with some community singing conducted by Mr. Hugh Williams, who declared that the audience were as keen on singing as the artistes. "John Brown's Body" and "Fire Down Below" proved excellent numbers to warm up the patients and staff. The humourous sketches by Mr. Wilfred Stracey kept the audience in roars of laughter. Miss Blodwen Lloyd, a new comer to these concerts, but a very old friend of L.T.S. audiences, charmed the listeners with her powerful soprano voice. Her duet with Mr. Hugh Williams from the Welsh opera, *Howell and Blodwen*," by Dr. Joseph Parry, proved a popular item. Their encore, "The Keys of Heaven," in which the whole company joined, was received with even greater applause, and it is evident that this duet will have to figure in future programmes as a permanent item. Mr. Harry Brunning in "Chatter and Hawaiian Music" had a great reception. The skillful manner in which he manipulated the instrument associated with the Hawaiian part of his turn proved that he, too, had won the hearts of the audience. More songs by Miss Blodwen Lloyd and Mr. Hugh Williams and syncopations on the piano by Mr. A. C. Vincent followed and another enjoyable concert was brought to a close by the singing of "Auld Lang Syne."

The Medical Officer followed with some very appreciative remarks of the artistes and the founders of the concert (the staff of the L.T.S.), and in responding Miss Worth expressed the joy it gave the artistes and their friends of the service in being able to help to cheer the patients for an hour or two.

The Sanatorium Staff provided an excellent tea and supper for the artistes and before leaving Mr. Hugh Williams thanked the Matron, Doctor, and their Assistants for their hospitality.

Another concert, the last of the season, will be given on Saturday, March 1.

Personalia.—Resignations on account of marriage:—

Telephonists.

Miss M. A. Larner, of Ilford.
" D. F. Dolphin, of Romford.
" G. M. Silvester, of Toll B.
" L. F. M. Lister, of Avenue.
" M. A. White, of Park.
" A. A. M. Woodbridge, of Park.
" D. R. Barker, of Putney.
Miss C. E. Marchant, of Gerrard.
" E. W. Barlow, of Mountview.
" H. M. Roberts, of Tandem.
" M. B. Rose, of Lee Green.
" A. L. M. Zeithing, of Toll A.
" E. Beresford, of East.
" M. A. Sadler, of Fulham.

LEEDS DISTRICT NOTES.

Social Items.—The staff of the West Yorks Telephone District held a very successful Whist Drive and Dance at the Queen's Hotel (L.M.S.) Leeds, on Thursday, Feb. 13. In addition to a large gathering, which included members of the staffs of the Leeds, Bradford, and neighbouring Exchanges, and the District Manager's Office, we were favoured by the presence of Lt.-Col. Jayne, D.S.O., O.B.E., M.C. (Postmaster-Surveyor); Messrs. J. Bownass (Assistant Postmaster); J. F. Murray (Traffic Superintendent); and J. N. Lowe (Contract Manager).

Messrs. T. W. Lawrence and C. A. Atkinson carried out, very effectively, the onerous duties of M.C. for whist and dancing, respectively.

Col. Jayne, in presenting the whist prizes, said he was pleased to see such a representative gathering and that, although there were over 200 present, it would appear to be necessary to take the Town Hall for the next function, as so many more members of the staff than could be accommodated had wanted to come. He wished the "Circle" every success in their efforts to provide social amenities for the staff and congratulated the organisers on the success of the evening.

The whist drive winners were as follows:—

Ladies—1st, Miss Lambert; 2nd, Miss Feakes.
Gents—1st, Mr. Yeadon; 2nd, Mr. Lowe.
Sealed Number Prizes—Miss Wordsworth and Mr. Tate.

Dancing proceeded with such undiminished gaiety that insistent demands were made for an extension, and the hotel management kindly allowed us to carry on until 1.30 a.m.

The same evening a Whist Drive and Dance, organised by the Otley Exchange staff under the able leadership of Miss Trenham, was held at the Liberal Club, Otley. The affair was exceedingly bright and jolly. All branches of the Post Office in Otley and the neighbouring towns sent their contingents, and the 100 or so members of the staff and their friends who were present all entered completely into the spirit of the occasion.

The whist prizes were presented by Mr. Sims (Postmaster, Otley) and Mrs. Sims. Financially the function was also very successful, and as a result Miss Trenham has been able to send a donation of £3 3*s.* 0*d.* to the Leeds Infirmary.

The staff of the Bradford Telephone Exchange held a very successful Dance at the Mayfair Ballroom, Bradford, on Jan. 22. The new Head Postmaster, Mr. P. Ferguson, was present during the evening, and in a happy speech expressed his pleasure at the opportunity of meeting so many telephonists face to face as it were, for, as he explained, he had until that evening been more familiar with the backs of their heads. All enjoyed themselves, and the next dance is already being looked forward to with keen anticipation.

The fifth (revived) Annual Dinner and Social Gathering of the Surveying Branch was held at The Mansion, Roundhay Park, on Feb. 8. Over 40 past and present members of the Leeds Surveying Branch attended, and the party included Lt.-Col. A. A. Jayne, D.S.O., O.B.E., M.C. (Postmaster-Surveyor), Mr. J. Bownass (Assistant Postmaster), and Mr. W. H. Ayrton (Chief Supt. Postal). Mr. J. F. Hunter (Supt. of the Branch) filled the position of chairman in his usual able manner. The catering gave every satisfaction, and the musical items which followed the dinner were of a high order.

Sports Items.—Leeds Post Office Football Club.—In the 1st round of the Lancs and Yorks Football Cup, the team played Bradford P.O. at Roundhay (home ground) on Jan. 29. The visitors won the toss and played with the wind. The first half showed the Bradfordians as the better players, but in the second half the Loiners did very well to make up for lost opportunities. Ten minutes from time, however, when the score was two all, the Leeds centre-forward failed to take the honours for the day by missing a penalty. Result 2—2. In the replay at Bradford the Leeds team had matters better in hand and the result was decisive. Bradford nil, Leeds 2 goals. The second round is at Leeds versus colleagues from Doncaster.

Leeds P.O. Ladies' Swimming Club.—Arrangements are well in hand for the 1930 season. The Club, which is open to all members of the Leeds Civil Service, will have the Meanwood Road Baths reserved for them on Wednesday evenings (8.0 p.m.), commencing on April 23. Season ticket (includes admission to baths), 4*s.* Applications for membership should be made to Mr. S. Burras (Staff), Head Post Office, Leeds.

Leeds Civil Service Golfing Society.—The Golfing Society was successfully inaugurated at a meeting held at the Griffin Hotel, Leeds, on Jan. 20. Representatives of all branches of the Civil Service were present, and under the chairmanship of Col. T. P. Hobbins, C.B.E. (Surveyor, North Eastern District), who was elected the first President of the Society, the constitution was framed with the completeness which one would expect from a body so well versed in the interpretation of rules and regulations.

The smoker which followed disclosed an amount of talent which promises well for the successful negotiation of the 19th hole. Mr. Bownass (Assistant-Postmaster, Leeds), whose stories were a feature of the "Smoker," was appointed joint auditor to the Society. Mr. C. Tisdall (Postal) is the Post Office representative on the Committee, and all intending members should get in touch with him.

The objects of the Society include an annual competition for which each Department may enter as many players as desired, the trophy to be won by the Department returning the four net scores giving the lowest aggregate. An annual social function is also envisaged and, at a later stage, team matches between the various Departments may also be promoted.

Obituary.—We regret to announce the death, on Feb. 14, of Mrs. Waite, at the age of 73, who has held the position of caretaker-operator at Guiseley Exchange for the past 30 years. Mrs. Waite was one of the oldest caretakers in the West Yorks District, and as such had seen many changes in the telephone system. Her death has occurred on the eve of one of the most important changes in the history of the Guiseley Exchange, namely, the forthcoming transfer to C.B. working. During her long career she gained and held the esteem of the Guiseley subscribers, and there is no record that any one of them has ever made a complaint regarding the service which she gave.

LONDON ENGINEERING DISTRICT NOTES.

THE outstanding event during the month of February in the London Engineering District was the opening of Primrose Automatic Exchange with approximately 4,000 subscribers' lines transferred from the old manual exchange. Approximately 700 new junctions were provided for the traffic to and from distant areas. The old exchange will be reconditioned before being commissioned as "Cunningham." The transfer was effected with that high standard of efficiency which is now considered normal for transfers in the London Engineering District.

The actual transfer is, of course, but the conclusion of twelve months or more intensive work and organisation, on external as well as internal plant. During the Primrose transfer, as in the preceding 22 Director Exchange transfers, no mishap even of comparatively trivial importance, occurred. One important and increasingly complex aspect of a Director Exchange opening is to ensure that at the moment of transfer the new exchange is linked with the whole of the London network. This involves simultaneous switching at all existing automatic exchanges and the provision of facilities for routing indirect traffic via Tandem to the new exchange, often via new routes. The success attending the transfers already made justify the detailed organisation by which it is secured, and which, as an instrument of effective control and co-ordination, is constantly under review.

A summary of the automatic exchanges at present existing in the London Telephone area may be of interest:—

Total number of Director Exchanges	20
Satellites on Director Exchanges ... ... (Hendon on Maida Vale.) (Edgware on Maida Vale.)	2
Tandem Exchange	1
Non-Director Exchange (Epsom)	1
Hypothetical Exchanges working on Director Equipments ... ... (Mansion House on Monument and Colindale on Hendon.)	2

The twenty Director Exchanges may be divided as shown below:—

A.T.M.	*Siemens.*	*S.T. & C. Co.*	*Peel Connor.*
Holborn	Western	Sloane	Archway
Bishopsgate	Peckham	Bermondsey	Reliance
Monument	Maida Vale	Welbeck	Flaxman
Metropolitan	Mitcham	Temple Bar	
National	Ilford	Fulham	
Hillside			
Primrose			

The number of *lines* joined up to automatic exchanges is at the moment of writing approximately 75,000 as compared with the number of manual *lines* of, say, 310,000.

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CONTENTS.

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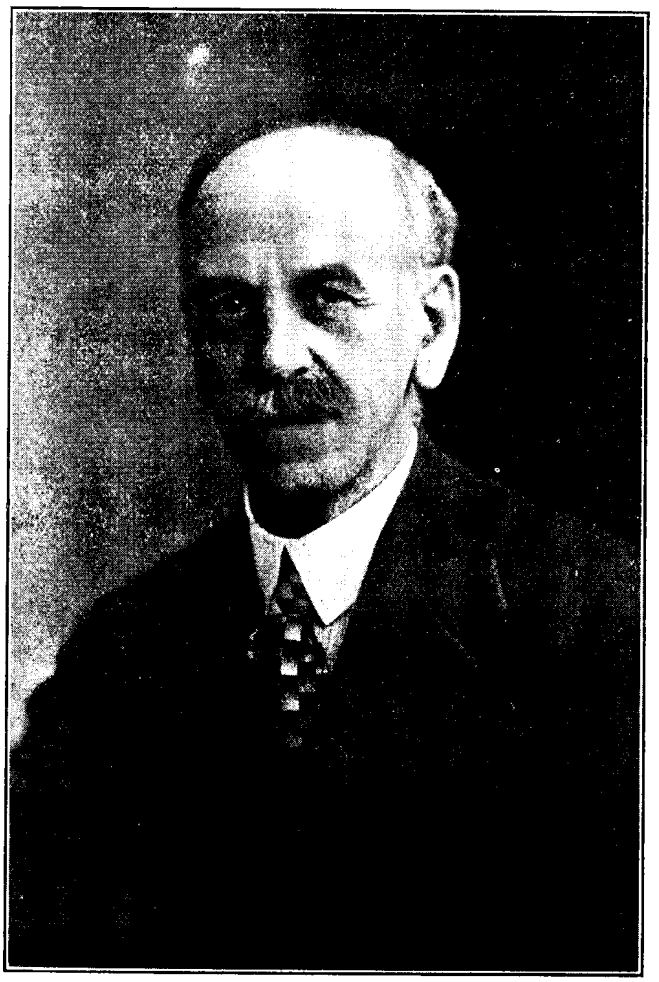
TELEGRAPH AND TELEPHONE MEN AND WOMEN.

LXXIV.

MR. C. H. MANSELL.



THE subject of our portrait and biographical sketch this month is Mr. C. H. Mansell, the Chief Superintendent of Telegraphs at Leeds. Mr. Mansell was born at Glasgow on April 20, 1873, entered the Post Office service in that city in 1889, and became an S.C. & T. in 1889. He reached the position of Overseer in 1915 and went to Plymouth as Assistant Superintendent of Telegraphs in 1916. After promotion to the position of Superintendent at Plymouth in 1921, he was advanced to his present post of Chief Superintendent, Telegraphs (Leeds) in 1925. Mr. Mansell was a member of the Scottish Racing Staff for many years, and thus became well known to telegraph colleagues all over Scotland. His particular bent is towards the technical side of telegraphy, and he has been closely associated with all modern technical developments.

While his sedentary hobbies are literature, music, and chess, his outdoor pursuits are concentrated on motoring, of which he is no mean exponent, as is evident when one endeavours to overtake him on the road.

It is interesting to note that Mr. Mansell's mother was one of the first telegraph operators in the Kingdom, and was the first Matron of the Telegraph School in Moorgate Street (the old T.S.). She was subsequently promoted to Glasgow to take up a similar post.

MANCHESTER AUTOMATIC TELEPHONES AND THE ENCOURAGEMENT OF HOME INDUSTRIES.

THE whole of the equipment has been manufactured in Great Britain by British labour, and the bulk of it has been made in Lancashire. This has only been made possible by the policy consistently pursued by the Post Office over a long series of years in the encouragement of a home industry which has now become one of the important private industries in this country with a substantial export business. About 30 years ago the Post Office commenced the task of extending the telephone service in London, partly in competition and partly in co-operation with the National Telephone Company. Prior to that time the bulk of telephone apparatus was purchased in America and Sweden, and the equipment for the then comparatively new and up-to-date Common Battery Telephone system was exclusively obtainable from the Western Electric Company of America. At the outset the Post Office had to import its equipment, but as a result of pressure to foster home industries, the American Company was induced to establish a factory at Woolwich, so that supplies might be made by British labour, and as far as possible from British materials. At the same time British firms were encouraged to undertake this work, and among the pioneers was a local firm, British Insulated Cables, Ltd. At their instrument works in Helsby, and later, Liverpool, was manufactured the Post Office trunk exchange equipment for London, Manchester, Cardiff, Newcastle, and Birmingham.

This policy of encouraging national industry has been consistently followed by the Post Office ever since, and at the present time exchange equipment is being manufactured and installed by five important companies in this country, viz. :—

Standard Telephones & Cables, Ltd.	Southall.
Siemens Bros. & Co., Ltd.	Woolwich.
The Automatic Telephone Manufacturing Co. ...	Liverpool.
The General Electric Co.	Coventry.
Ericsson Telephones, Ltd.	Beeston.

In addition telephone apparatus is obtained from other British companies which have been established, while very large supplies of cables and other line plant are also obtained from British companies. Lancashire gets a good share of the orders for this subsidiary plant. Underground cables are obtained from W. T. Glover & Co., Ltd., of Trafford Park, Connolly (Blackley) Ltd., and from the British Insulated Cables Ltd., of Prescot : overhead wire from Messrs. Frederick Smith & Sons of Salford : and loading coils for improving the speech transmission of underground cables from Salford Electrical Instruments Ltd. Accumulators and dynamos are also obtained in the Manchester district. Manufactured cotton plays an important part in the make-up of telephone cables and equipment, as well as steel, glass, ebonite, nickel-silver, brass, rubber, copper, and silk. It has been estimated that the raw materials before reaching the telephone construction industry have already provided employment for 20,000 workers in this country.

It was a Lancashire firm which introduced the Strowger system of automatic telephony into Great Britain, and, incidentally, laid the foundation of an industry which, fostered by the Post Office, to-day finds employment for upwards of 16,000 persons in the production of telephones and exchange apparatus. After exhaustive trials the Strowger automatic telephone system was adopted by the Post Office for London and the provinces. Having regard to its county of origin, it is appropriate that the contract for the equipment of the main automatic telephone exchange in Manchester, at Telephone House, should have been allotted to the Automatic Telephone Manufacturing Co., Ltd., Liverpool, the value of the contract being upwards of £400,000. The other Strowger automatic exchanges in the Manchester area are being equipped respectively as follows :—Ardwick by Siemens Brothers & Co., Ltd. ; Collyhurst by Standard Telephones & Cables, Ltd. ; Moss Side by General Electric Co. These firms, together with Ericsson Telephones, Ltd. manufacture Strowger Automatic telephone equipment under licence from the Automatic Telephone Manufacturing Co., Ltd., an agreement having been entered into for the pooling of essential patents, whereby the resources of the entire industry are placed at the disposal of the State, and there is no question of a monopoly in the manufacturing field. By a recent agreement with these firms the Post Office has laid down a programme of telephone construction for a number of years. As a result the contractors have been able to organise their works with the prospect of regular work assured, and the Post Office has reaped the advantage of a considerable reduction in the price of apparatus.

The telephone manufacturing companies not only cater for the Home market, but the main organisations which have been built up largely as a result of encouragement by the Post Office administration, are able to do a thriving export business. It is estimated that only half of the production of telephonic apparatus by the five firms mentioned is used in this country and the other half is exported. When it is remembered that the telephone manufacturing industry, with its supplies and auxiliary services, employs about 100,000 persons, the significance of the fact that half of the product is exported cannot be overlooked in these days when unemployment is widespread.

There is a further benefit, although an indirect and unexpected one, which has accrued from this State encouragement of the telephone industry. The moralists may not approve, but thanks to the ingenuity and flexibility of Strowger Automatic exchange apparatus, it has been possible to adapt it to the requirements of totalisator working, and two of the firms previously mentioned, Automatic Telephone Manufacturing Co., Ltd., and Ericsson Telephones, Ltd., are supplying such equipment to the British Racecourse Betting Control Board. It is probable that the successful functioning of this equipment will result in another outlet for British products overseas. Another application of Strowger Automatic switches (this time quite free from any moral reproach) is for the selective supervisory control of power sub-stations from a central control point, and good foreign business has already resulted. Both these adaptations may justly be said to have sprung from State encouragement of a British telephone industry.

The matter of an augmented export business is all-important ; without the home demand it would have been impossible for British manufacturers to have competed in the world's markets for telephone material, and from negligible figures in 1911, British exports of telephones and associated equipment now rank in a class apart and appear independently in the official returns of the country's foreign trade. One firm alone exported upwards of £500,000 worth of telephone equipment during the past twelve months, and that in direct competition with American and Continental suppliers.

In any review of the telephone industry the production of cable and line equipment must not be overlooked. Under private enterprise most of the telephone circuits of the country were above ground, and the demand for underground telephone cable was negligible. The consistent policy of the Post Office in putting all circuits, as far as practicable, underground, has encouraged the design and development of multi-core air-space cables, many thousands of miles of which have been manufactured and laid by British cable makers.

In the matter of research and development, too, the Post Office, in addition to first-hand activity on a considerable scale in its own laboratories, has consistently encouraged British manufacturers to keep abreast of American and Continental progress, and the fact that we are to-day able to speak literally "around the world," is due primarily to the genius of a British scientist, Dr. Fleming, who invented the thermionic valve, and secondarily in no small measure to the support and encouragement given by the Department to firms interested in the advancement of the science of communications.

THE TELEPRINTER.

A. P. OGILVIE (*Headquarters Traffic Section*).

(*Continued from page* 112.)

(V.)

Circuit Connexions.—The internal connexions of the Teleprinter are shown in Fig. 15. They provide for (*a*) alternate sending and receiving, or (*b*) simultaneous transmission and reception by means of a cam-operated switch (ST) and a link which may be opened or closed. With the link open the switch is brought into circuit for up and down working (*a*): when the link is closed the switch is short circuited for duplex conditions (*b*).

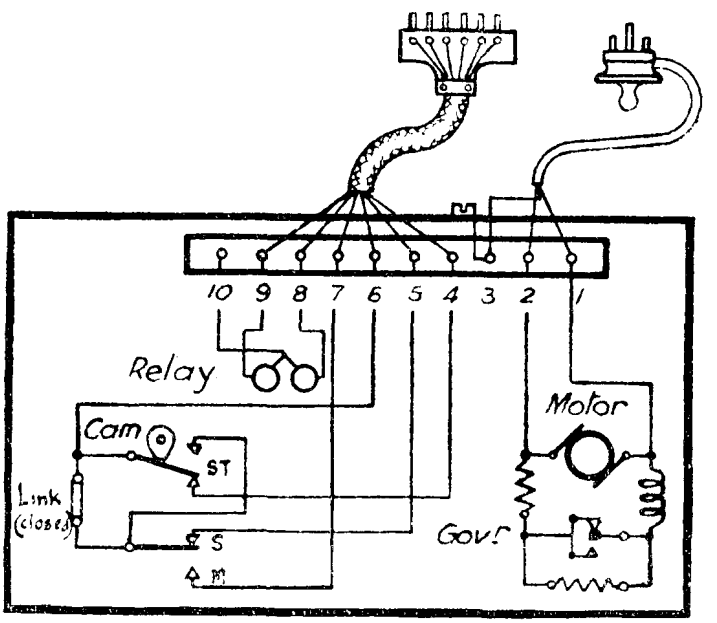


FIG. 15.

The operation of the switch is simple. The cam holds the switch-lever against the lower contact and maintains a connexion between the line and the Creed relay for reception when the local transmitter is idle. As soon, however, as a key is depressed the cam, being fitted on the transmitter spindle, revolves and allows the switch to rise against the upper contact, thereby connecting the transmitter tongue to line. This connexion is maintained during the transmission of a letter, but on the completion of the transmitted combination the lever returns to the lower contact. The switch thus acts as a Send-Receive switch with the advantage of being operated automatically. The arrangement is convenient in certain circumstances, but in Post Office practice it is not resorted to, and the link is always kept closed for simultaneous transmission and reception. Fig. 16 shows the actual position of the mechanism on the transmitter unit.

The circuit connexions for duplex Teleprinter working are similar in principle to those adopted for Morse and other differential duplex circuits. One or two details are, however, of interest. Referring to Fig. 17, it will be seen that a tumbler switch is included in the line circuit. This provides a ready means of disconnecting the line when it is desired to test local adjustments, as, with the line disconnected, the operation of the keyboard actuates the local printer, furnishing a record of the signals passed through the artificial circuit. This test is useful in confirming the existence of a suspected fault, but it is not a completely reliable indication, when perfect local signals are recorded, that the transmitting conditions are suitable for actual line working, and when unsatisfactory results with the distant station persist, further tests should be undertaken before local adjustments are accepted as accurate.

A Morse key with switch and a polarised sounder are included on each Teleprinter set to provide a convenient means for refining

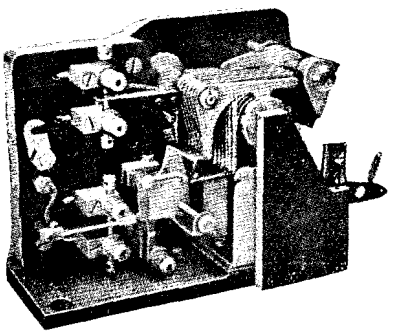


FIG. 16.

the duplex balance and also for use in cases of emergency, the Teleprinter then being withdrawn to provide space for Morse working. The extended use of reserve Teleprinter sets, which are now installed adjacent to working circuits, is modifying the importance of this emergency arrangement.

At small offices a short distance from a large transmitting centre it is usually desirable for maintenance reasons to simplify circuit arrangements as much as possible. Batteries which may require frequent attention, relays and duplex balance equipment, introduce complications liable to cause prolonged stoppages unless skilled personnel is available. To eliminate these items a system of two-line working has been introduced. One line is employed in sending from the Head Office to the Out Office and the other

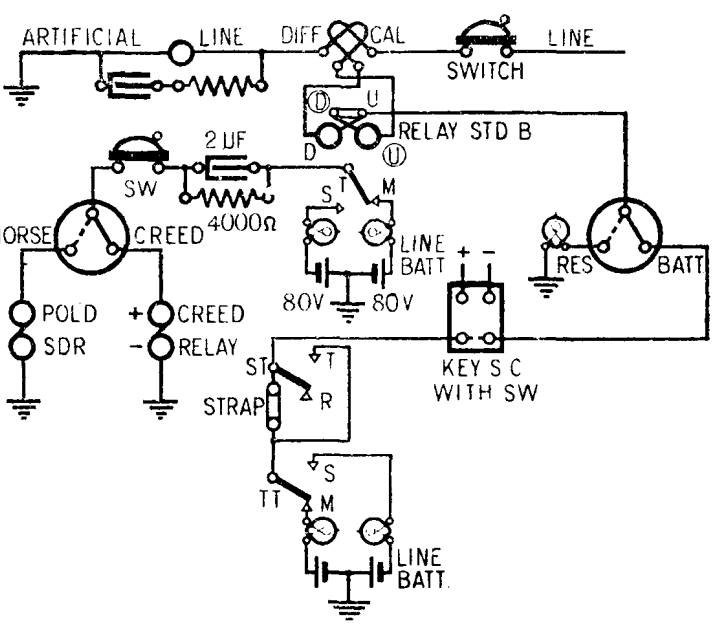


FIG. 17.

line for signalling independently in the reverse direction. Although two lines are in use only one Teleprinter is provided at each office, Line 1 being connected from the transmitter tongue of the machine at the Head Office to the Creed relay of the machine at the Out Office, while Line 2 provides a circuit from the transmitter tongue of the Out Office machine to the Head Office relay which operates the local Teleprinter receiver. A reference to Fig. 18 will show

that double current signalling direct to the Creed relay is employed on Line 1, and Central Battery single current signalling to a P.O. relay on Line 2. By this means the equivalent of duplex working is possible with a minimum of apparatus at the Out Office.

An interesting feature of the arrangement is the provision of a 6-terminal switch which when turned to "Local" makes it possible for the Out Office to test the local Teleprinter by signalling on Line 2 to the Head Office, thence from the P.O. relay tongue to Line 1 and back through the local Creed relay. At the same time the Head Office Teleprinter transmitter signals are short circuited through the switch through the home Creed relay.

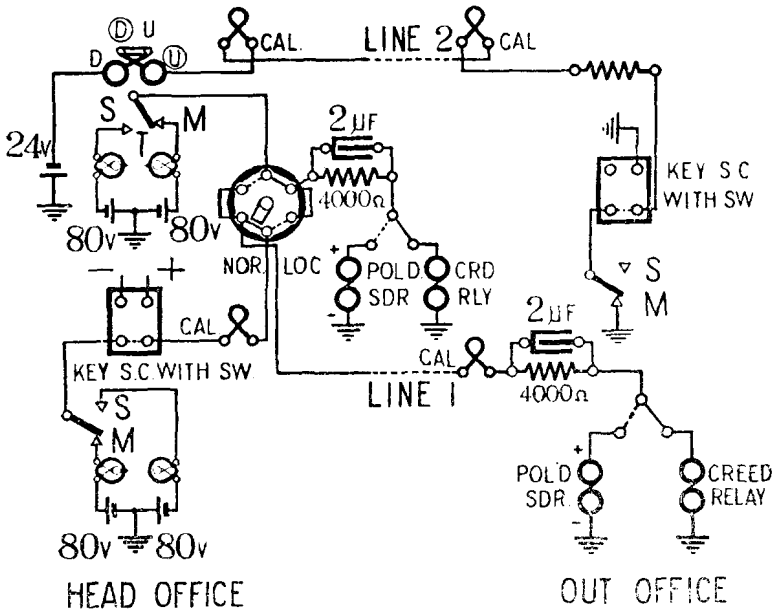


FIG. 18.

Two-line simplex conditions have also been established on the Voice Frequency systems equipped with Teleprinters in operation between London and Manchester, and between London and Glasgow. On each system twelve frequencies, six in each direction are available. By appropriating two frequencies, one for sending and one for receiving, each of the six Teleprinters at the terminal offices are worked as at duplex.

Recent trials of two-line Teleprinter working have also yielded very promising results on "phantom" channels obtained by double superposition on telephone trunk lines between offices over 400 miles apart, and there are reasonable prospects of rapid development in this direction.

(To be concluded.)

FOR OUR ADVERTISERS.

The following contracts are open and all references should be made, unless otherwise stated, to the Department of Overseas Trade, London, S.W.1: *Australia*, Melbourne, Postmaster-General's Department. April 22. Supply of braided switchboard cable (Ref. B.X. 6201). *Victorian Electricity Commission*. May 12. Supply of 22,000 V pin type supporting insulators for year 1930-31 (Specification No. 30 12) (Ref. B.X. 6179). *New Zealand*, Wellington, Posts and Telegraphs Department. Supply of Terminal strips (B.X. 6209).

The following information received from the Madrid branch of Reuter's Agency should prove of interest to English manufacturers: "The new Spanish Government has suspended the examination of tenders for the establishment of broadcasting stations throughout the country and also for the supply of radio material. It will be recalled that it had been intended to grant a monopoly for these services.

J. J. T.

SKYSCRAPERS.

THE man employed on the Contract side of the Telephone Service, one of whose duties is to estimate the telephone possibilities of commercial neighbourhoods, is confronted in these days of enterprising and audacious building development with two difficult questions. First, how far is the tendency to erect higher and higher buildings for commercial purposes going to extend? Secondly, is the present type of lofty steel-framed building, the type adopted for new buildings in the City, Kingsway, and Regent Street and Piccadilly, to be regarded as a more or less stabilised type, or is it merely typical of a phase in a forward movement in building and architecture?

In America, the lofty or skyscraper type of building has been exploited to an extent altogether unknown in this country. In London, at the moment, we have no building of a height sufficient to bring it within even measurable distance of the term of skyscraper. That this is so is obvious if we compare two American skyscrapers with some of our high buildings in London. Consider the Woolworth Building in New York. The main portion of this steel-framed building, we are told, comprises 31 storeys and is 400 feet high, while the tower above has an additional 29 storeys, making 60 storeys in all, and bringing the total height from the pavement level to 800 feet. A still loftier building, reported to be in course of erection in Chicago, will have 75 storeys and reach a height of 845 feet above street level, second in height only to the Eiffel Tower. These are impressive figures, almost staggering, indeed, when we reflect that 800 feet represents an elevation well over twice the height of St. Paul's Cathedral.

Compared with such structures our loftiest buildings fade into insignificance. Take four buildings, erected in London in recent years, which have aroused a good deal of public interest—Adelaide House, Vintry House, the new Grosvenor House, and the Royal London Insurance Building in Finsbury Square. Adelaide House, at the City end of London Bridge, attracted attention, partly because of its bold and striking design but largely because of its height, and certainly, viewed from the river or from London Bridge, it gives an impression of great elevation, an impression which is heightened by the fact that the building starts right off the river bank, far below the bridge level, and also by the strong vertical lines of the design. And yet, although many people—stockbrokers and other City men with artistic leanings—shook their heads at it when crossing the Bridge on their way to the City, and asked what we were coming to and where this sort of thing was going to end, Adelaide House is merely a dwarf structure when compared with a New York or Boston skyscraper. A similar remark applies to Vintry House, in Southwark Street, built last year by the Vintners' Company, which, like Adelaide House, has a main frontage on the river. Vintry House, although a 10-storey building, and a high building for London, does not suggest height so much as Adelaide House, due perhaps to the different treatment of the walls and roof. What, indeed, seems to attract more attention at Vintry House than the size and design, impressive though the building is in these respects, is the entrance doorway, quaintly detached from the main building, and carrying some striking decorative features—a carved goddess crowned with vines, two fluted metallic columns with Ionic capitals, and a pair of carved swans, the last item recalling the fact that the Worshipful Vintners, together with the Worshipful Dyers and the Crown, are owners of the swans on the Thames.

The new Grosvenor House in Park Lane, a steep cliff of service flats, does, on the other hand, give an impression of height, due partly to the flat expanse of Hyde Park opposite, and partly to the fact that the neighbouring buildings are all of modest elevation. And yet the whole height of Grosvenor House, from ground floor to roof, is only 100 feet, the towers contributing an additional 20 feet or so. It is a pigmy in comparison with a modern American hotel or block of flats.

The fourth building, the recently completed Head Office building of the Royal London Mutual Insurance Society, in Finsbury

Square, is loftier than any of the other three, the high tower crowning the structure reaching a height of 230 feet, which makes it the loftiest commercial building in London. But even this height, as we have seen, is only a quarter of the height of the modern American skyscraper.

It would seem from these facts that the time when London will have business buildings even modestly approaching the American skyscraper type is a long way off. There is, however, a marked tendency to permit the erection of higher and higher buildings in commercial neighbourhoods. In discussing this trend, the advantages of lofty buildings, and the objections to them, American experience of the skyscraper is of considerable value.

A New York architect, in a lecture delivered recently in London, claimed certain advantages for the skyscraper type of building. The steel skyscraper was the safest building possible in the case of fire, storm, or earthquake. There was a reduction in the site cost of a building as the number of floors was increased. There was the economic benefit of concentrating large businesses in one building. The first of these advantages applies, of course, to all steel-framed concrete buildings whether skyscrapers or not. The second is clearly debatable. It raises at once the question whether the increased charges made by landlords for sites on which it was proposed to erect skyscraper buildings would not counterbalance very largely the saving due to the provision of a large number of floors, whether too, the artificial impetus given to the value of such sites would not react against the community in the long run. The third advantage claimed—that the housing of all the component parts of a large industry in a high building erected on a comparatively small superficial area leads to efficiency, in the sense that there results an economy in time occupied in consultation and discussion and reference between departments—makes, however, a strong appeal.

On the debit side comes first the question of sunlight, or rather the absence of it. New York, we are told, is fast becoming a sunless city. The buildings have soared steadily in height but the streets have remained the same width or have not been appreciably widened. We hear a good deal about the "zoning" regulations, regulations which restrict the height and form of buildings according to the part of the city concerned. A new building in a "2½ zone," for example, is allowed a height of two and a half times the width of the street, and greater elevation by a series of steps or shallow set-backs of the upper storeys.* This helps matters in the upper reaches but does not prevent the streets flanked by skyscrapers from becoming, as one writer put it, a series of gloomy canyons, into whose depths the sun never penetrates.

The difficulty of providing fresh air for the rooms in the lower portions of buildings in streets filled with skyscraper structures is another objection. Ingenious methods, we are told, have been devised by American engineers to overcome this objection. Fresh air is pumped into the building from the roof, washed and warmed, and driven to the rooms below as required. It is open to doubt whether air treated in such summary fashion will retain its fresh and health-giving qualities.

Lastly, there is the traffic congestion due to the employment of thousands of people in high buildings covering comparatively small superficial areas. In the Woolworth Building in New York 10,000 people are employed. Plant a few buildings of this capacity in a street, and a point is reached when a population approximating to that of a fair-sized town has to fight its way into it and out of it each day. American business men are emphatic on the point that in New York the congestion of traffic is so great that an enormous amount of time is wasted in getting from one point to another. The conclusion reached is that, although, for a time, there is economic advantage to a large firm, or a group of associated firms, in concentrating in a single building, as soon as the example is followed generally it leads to an uneconomic system of carrying on business so far as the community is concerned.

Building engineers tell us that London clay has not the weight carrying capacity of the rocky sub-soil of New York, that it would not support the massive type of steel-framed building permitted in that City. Quite apart, however, from this consideration, which would seem to shut out the erection of the highest type of skyscraper in London, the verdict seems to be against even the moderate skyscraper, the building which would climb to a height of, say, from 300 to 400 feet.

A well-known architectural authority stated recently that American builders themselves are coming to the conclusion that, on practical grounds, the skyscraper is a failure. It is difficult to discern any very definite trend of expert American opinion in that direction. There does, however, seem a tendency—in New York, at least—to halt and consider whether, after all, aggregation and concentration to the extent reached in these huge structures lead to true economy, whether, after all, the erection of buildings of such abnormal size and height is in the best interests of the community.

C. W. M.

* A good example of "zoning" in London is seen in the recently erected building housing the Bank of London & South America in Tokenhouse Yard, a very narrow thoroughfare near the Bank. Another "zoned" building is the new Devonshire House, in Piccadilly, although here the effect is not so complete, the street being much wider.

THE CONTROL OF IMPERIAL WIRELESS TELEPHONY.

The Postmaster-General, in answer to Mr. Bowen's question on this subject in the House of Commons on July 26, said:—

"Yes, Sir, the Government has reached a decision and, with the permission of the House, I will state briefly the main reasons for it.

"Under the late Government the Beam wireless system for overseas *telegraphy* was leased to the Imperial and International Communications Company under conditions and circumstances which are well known. The late Government, however, in conformity with the recommendation of the Imperial Wireless and Cable Conference, reserved to the Post Office the control of overseas *telephony* and deliberately refrained from committing themselves on the question whether they would or would not use the Company's stations for this purpose.

In August last I received a letter from the Communications Company urging that the Government should now decide to work overseas telephony through the Company's stations beginning with four services to Canada, Australia, South Africa, and India. This was one alternative. The other was to concentrate all their wireless telephone services at the Government station at Rugby which has for three years worked the service to the United States on a commercial basis. In deciding between these two alternatives there were two main issues. Firstly, which of the two systems would provide the most efficient service, and, secondly, which would be the more economical. As the first question involved highly technical considerations, the Government decided to consult two independent experts of acknowledged repute who have no connexion with the Post Office, Professor G. W. Howe, Professor of Electrical Engineering at the University of Glasgow, and Dr. F. E. Smith, Secretary of the Royal Society and of the Department of Scientific Research. They reported that apart from future developments both systems are probably equally capable of providing satisfactory telephonic communication between two points for a given number of hours a day, and that, as regards future development, the Rugby system was the more elastic, and therefore in this respect offered decided advantages.

The second main issue is the financial comparison between the two systems. Concentration at Rugby admits of economies in many directions, and, in particular, in the land-line connexions to the London Trunk Exchange. A wireless service requires costly land-line connexions between the London Trunk Exchange and the wireless stations. By grouping of services at one centre, such as Rugby, a smaller number of lines will suffice and the distance of Rugby and Baldock from London is much less than the distance of the Beam stations at Bodmin, Bridgwater, Grimsby, and Skegness. The result is that to work the four services to India and the Dominions through the Beam stations would need 4,190 miles of high grade telephone circuit, while to work them through Rugby and Baldock only 786 miles would be required.

The minimum rental asked by the Company for the use of the Beam telegraph stations for the telephone services in question is (excluding a cheaper scheme which is open to objection on other grounds) £40,000 to £45,000 per annum, according to the type of equipment employed, plus a royalty of 10% on the gross receipts in excess of a certain figure. A detailed estimate of the cost of working the same services from Rugby shows a saving on the above figures of £17,000 per annum and £22,000 per annum respectively, which would be increased when the royalty commenced to operate.

The Government has had to weigh the pros and cons of a number of other questions which cannot be compressed into a Parliamentary answer. As a result of their consideration of all the issues they have decided upon a policy of conducting overseas wireless telephony by concentration at the Post Office station at Rugby with its receiving station at Baldock.

TELEGRAPHIC MEMORABILIA.

THE open debate arranged by the Post Office Telephone and Telegraph Society at the Institution of Electrical Engineers on the 17th ult. was a well-attended gathering. Under the genial chairmanship of Mr. F. W. Phillips, no one could complain of undue constraint either as regards the time occupied, manner of expression or method of dealing with that very live subject "How to Improve the Telegraphs," introduced by Mr. L. Simon, who was a very clear exponent of what, perhaps, may be termed the Departmental aspect. The result was rather a destructive than a constructive one, unless one takes the view that it is necessary to pull down before re-building can possibly commence. From the various cross-currents not only of differences of opinion, but at times differences even as to the facts, there would appear to have emerged the opinion that, (*a*) the Telegraph Service has seen its best days; (*b*) There is no real criticism of the service apart from Press stunts; (*c*) There is considerable avoidable delay; (*d*) There is normally no avoidable delay in the telegraph offices; (*e*) There is delay inside the offices, at the counter, for example; (*f*) The "walk" system of delivery is fatal to fair and expeditious delivery; (*g*) The staff cannot work up any real enthusiasm for a dying industry which offers no prospects; (*h*) The service is not dying, it only needs the closer attention of the engineers; (*i*) If the engineers had left well alone a few years ago there would have been less trouble to-day. There were also other points that emerged but my space has already been overstepped.

Power from the Mains!—Owners of radio receivers who contemplate utilising the local power supply for their sets, and perhaps those who have already installed the necessary apparatus for that purpose, may wish to see what has happened in the Burnley district. It is estimated that out of the 8,000 licenceholders in that district, no less than half this number have equipped their sets with battery eliminators for the present d.c. supply. The Corporation's Electricity Department is about to change over to an a.c. distribution, and four thousand odd licensees are annoyed, to put it mildly. The Mayor is reported to have stated that the Corporation was not consulted when the sets were installed, and it is therefore very unreasonable to attempt to make it responsible for the 4,000 soon to be useless eliminators. The Engineer is said to maintain that there is no precedent for the compulsory replacement of radio apparatus by electrical supply authorities, while it has been estimated that if the Corporation were to compensate every wireless set user it would cost the Corporation something between £12,000 and £15,000, or the ratepayers the equivalent of a sixpenny rate! There does not appear to have been any further move on the part of the plaintiffs!

Round the World.—AUSTRALIA.—Cable *v.* radio. The Australian Postal Department has under consideration, says *The Electrical Review*, the advisability of establishing a telephone service between Melbourne and Tasmania by a telephone cable crossing Bass Strait, the distance across which is 238 miles. Tenders had actually been invited for a wireless method, but recent developments in submarine cable telephony technique have caused the Department to reconsider its decision. CANADA.—*Telegraph developments.*—The improvement and development of its telegraph system is being planned by the Canadian Pacific Railway Co., and to cost £600,000. Reuter's Agency in Ottawa states that 336,792 broadcast licences were already issued up to the end of January, an increase as compared with the same date as last year of 40,046. This may be accounted for by the fact that a recommendation has been made to increase the licence fee from one dollar (4*s.* 2*d.*) to three. *Canada takes the B.B.C. as its model!* The Government Bill to be presented this session proposes to take control of radio out of the hands of private corporations and to control broadcasting through a national company similar to the British Broadcasting Corporation. Efforts will be made to supplant U.S. programmes with others of Canadian or British character. Seven high-power stations are to be built to serve the nine provinces. The present owners will be compensated, says Reuter's Agency. There are actually 81 broadcasting stations at the present time allotted to newspapers (13), to grain brokers (6), to railways (13), and the remainder to religious and scientific societies, universities, commercial houses, &c., &c. CEYLON.—The report of the Colonial auditor on wireless matters in Ceylon for 1927-28, based on figures supplied by the Postmaster-General up to the end of Dec. 31, 1928, shows that the revenue included a sum of Rs. 11,450, being the value of 1,145 listeners' licences at Rs. 10 each, while 20 dealers' licences at Rs. 30 each, brought in Rs. 600. Customs receipts from wireless goods imported amounted to Rs. 10,609, subscriptions for programmes to Rs. 607, and advertisement in programmes to Rs. 875. The loss on working for the year was Rs. 18,861 states *World Radio*. The chief of the Telegraph Department and his staff, says our informant, have had to face much indifference, and only small funds have been placed at their disposal. The Colombo station is only permitted to broadcast for two to three hours per day! EGYPT.—Several Powers have asked the Egyptian Government for a copy of the law on wireless in Egypt and the Government has replied that no legislation exists at present. A representative of the Marconi Co. has met the Minister of Communications to discuss a scheme for broadcasting in Egypt. *The Electrical Review* also furnishes us with the following novelty in wireless communication, probably unique in its application. The Egyptian State Telegraph Department has ordered from the Marconi Company three wireless sets mounted on motor lorries for use when and where required in areas not normally served by land communication systems. Thus communication will be possible on either bank of the Nile when in flood or otherwise, and this mobile system can thus be linked up at short notice with the main Egyptian telegraph and/or telephone systems. Each lorry carries a 70-ft. portable mast. FRANCE.—*Railway Radio.*—The inauguration of the first public wireless service on French trains took place on Feb. 10 on the Le Havre—Paris route. Telegrams can be sent to and received from the general telegraph system of the country while the train is in motion. GERMANY.—There was an increase of nearly 250,000 wireless licenceholders at the end of 1929 in Germany, the total number reaching the record figures of 3,066,682. The North German Lloyd Co.'s 50,000-ton liners, *Bremen* and *Europa*, spoke to each other by wireless telephone last month over a distance of nearly 2,500 miles when the former was a little way out from New York and the latter was undergoing her trials in the North Sea. Communication between the two vessels was good and passengers in the *Europa* also spoke to subscribers in various parts of Germany. Telegraph communication was also established with the *Colombus* (32,000 tons) which was in the neighbourhood of Bombay. GREAT BRITAIN.—The *Electrician*, in a leaderette, thus congratulates the Post Office: "It is much to the credit of the Post Office engineers and of the International Marine Radio Co., that a telephonic communication with the *Majestic* has been achieved so soon after the experimental success obtained with the *Olympic*. It is true that preliminary experiments have been carried out for a number of years, but the difficulty of separating the incoming and outgoing waves on the ship has only been overcome quite lately." A Post Office service of Picture Telegraphy was opened between Great Britain and Denmark on Feb. 20. It is also announced in the technical Press that the Television Society of Great Britain will open the second annual exhibition of television and other kindred apparatus at University College, London, on the 9th of this month. *Licences.*—The Earl of Clarendon recently stated that the steady growth of receipts of the B.B.C. showed that the British public enjoyed the Corporation's programmes. There were 3,000,000 licensed listeners, of which 328,344 were new licenceholders during the year ended 1929. In connexion with this statement, and in any case in connexion with the very satisfactory percentage increase quoted above, it is reported that as the result of a tour in the Manchester district, so it is understood, during the month of January of a Post Office wireless detector van, the function of which is to locate receiving sets that are operated without licences, no less than four thousand new licences were purchased within that particular area—nearly 130 per day! GREECE.—An agreement with Marconi's Wireless

Telegraph Co. granting the company exclusive rights for broadcasting in Greece, is, as we write, before the Greek Chamber by the Minister of Communications. IRISH FREE STATE.—*Training of Maritime Wireless Operators.*—The Dublin Technical Schools have been furnished with a completely new wireless telegraph installation, consisting of two new transmitters and direction-finding apparatus, 1929 models in all cases. The Ministry of Posts and Telegraphs is alone entitled to certify the efficiency of students. INDIA.—As foreshadowed in last month's *T. & T. Journal*, the Indian Broadcasting Company has been voluntarily wound up, and the Government of India has decided to take over the concern from the liquidators. The purchase price, according to *The Times*, is somewhere in the neighbourhood of £22,500. It is proposed to establish a board of control, which will probably comprise eight members, four official members, including the Government member concerned, who will be chairman, two non-official members from Bombay, and two non-official members from Calcutta. There will also be a secretary and a financial adviser. Reuter's Agency reports that the Standing Committee of Assembly approved the Government's proposal to acquire the company for a period of two years. The annual recurring expenditure is estimated at 67,000 rupees, with a net charge against revenue of 41,000 rupees. The Finance Committee agreed to the proposal, subject to the condition that the Government shall do its best to secure the advantage of the latest experience in countries where broadcasting has been a success and that steps be taken to so train Indians that the business will eventually pass into Indian hands. The Government proposes to appoint in the summer of 1931 a representative committee, to examine the position with regard to the taking over of broadcasting and prospects generally, as experience would by then have been gained of the success of the service under Government management. LATVIA.—The Riga radio-telephone broadcasting station (3 k.w. 572 k c/s, 565 m.), says *The Electrical Review*, has warned listeners that its wavelength is being used by the Russian Soviet station at Smolensk (2 k.w. 531 k c/s, 565 m.) for the dissemination of, it is alleged, communistic speeches against the Latvian Government. LUXEMBURG.—A curious report, so it would appear, comes from *World-Radio*, to the effect that a new law has been made in the Grand Duchy which permits the erection of privately-owned wireless *transmitters* as well as those State-owned. It is said that "no control is exercised over them, but certain conditions are imposed for the granting of the special concession from the Postal-Telegraph Authorities, which is necessary." If conditions are *imposed*, one would think that this would infer some sort of control anyway! SWITZERLAND.—Though a small country the Swiss government is compelled to arrange for bi-lingual broadcasting. Thus the new higher-powered station at Sottens, near Moudon, will have an aerial power of 25 kw., and is the main transmitter for French-speaking Switzerland, that at Beromünster (canton of Lucerne), will have an aerial power of 60 kw., and is for German-speaking Switzerland. It is expected that they will be completed in the current year. U.S.A.—Station KDKA of the Westinghouse Electric & Manufacturing Co. will have at its new transmitter, near Saxonburg, Pennsylvania, says *The Electrical Review*, an antenna which is expected to overcome one of the major obstacles to high-power broadcasting. The antenna is said to be so designed that it will not "blanket" the surrounding territory, yet it will send out powerful signals to distant points. The American Telegraph & Telephone Co. announces that a wireless-telephone service between New York and Warsaw was opened on Feb. 1. On Mar. 13 Reuter's agency in New York reported that "While the White Star liner *Majestic* was passing the Statue of Liberty in the upper harbour, the wireless operator held a direct conversation with the officer on duty at the G.P.O. in London." The operator stated that this was the first time that such a conversation had been held so close to New York. Mr. Walter S. Gifford, president of the American Telephone & Telegraph Co., is reported to have informed the Inter-State Commerce Committee that a transatlantic telephone cable would be ready for use in 1931. The cost, it was estimated, would figure out between £2,000,000 and £3,000,000. In the meantime the present transatlantic wireless service with its several wavelengths is working practically throughout the 24 hours of the day, serving as it does at present the whole of Europe and America.

Personal.—It is with regret that we learn through *The Electrical Review* of the death of Mr. Walter Judd, M.I.E.E., late of the Eastern Extension, Australasia & China Telegraph Co., Ltd., on Feb. 20, in his 78th year. *The Times* reports that Mr. Henry William Brookman, formerly Superintendent of the C.T.O., G.P.O. West, died on the 26th of the same month in his 92nd year. Mr. Brookman entered the service of the Magnetic Company as an operator after the Great Exhibition of 1851: he was transferred to the Government service in 1870, when the undertaking was purchased by the State. Mr. Brookman rose through all the various grades to the rank of Superintendent in 1895, and retired in 1902.

The death of Mr. T. Griffith, formerly of the late Submarine Telegraph Co., who transferred to the Post Office Telegraph Service when the company was taken over by the Government in 1889, is also announced. Mr. Griffith was an overseer when he retired from the Service upon reaching the age-limit many years ago, and was one of an entire family the male members of which had chosen telegraphy as their vocation.

It is understood that Commander F. G. Loring, whose place as Inspector of Wireless Telegraphy to the G.P.O. has recently been taken by Lt.-Col. C. G. G. Crawley, has taken up a position with the International Marine Radio Co., Ltd.

Laughter.—The most utterly lost of all days is that in which you have not laughed!—*Anon.* J. J. T.

REVIEWS.

"*Telegraphy, a detailed exposition of the Telegraph System of the British Post Office*," by *T. E. Herbert, M.I.E.E.*, is actually the fifth edition of *Herbert's Telegraphy*, as known by Post Office officials. Published by Sir Isaac Pitman & Sons Ltd.: the production of this volume of 1,200 pages is well up to the highest standard of the printer's art for this type of book, with its 750 clear-cut illustrations, and its bold, well-leaded paragraphs.

Of Mr. Herbert's revision, one may say at once, it is thorough in all respects. The new illustrations are over three hundred in number, and the entire early matter has been overhauled and where necessary extended, for example, a fuller treatment of "the magnetisation of iron" will be noted. The Mendoça governor, now actually on trial in connexion with Baudot working in the British Post Office, is exhaustively dealt with, and the references to Regenerative repeaters, the Teleprinter, the Creed products, are well up to date, as are also those on "Voice-frequency" and "Sub-audiotelegraphy," &c. The price of this volume is £1, but no earnest student would grudge this sum for information so extensive and so reliable.

The author was no doubt well-advised in not attempting to add a chapter on Picture Telegraphy. To have done justice to this latter subject could not but have meant delay of the publication of the present edition (itself actually issued on Feb. 24) until too late for next autumn's classes, besides which Picture Telegraphy did not become a regular public Post Office service until the beginning of the present year.

On a point of fact one may be permitted to add, p. 514, that the London—Rome telegraph circuit, for some considerable time, has been worked on two channels of a split quadruple simplex Baudot in place of the Hughes system.

J. J. T.

EXTRACTS FROM TELEPHONE SERVICE REPORTS.

MANCHESTER.

Telephone Progress.—During the year ended Dec. 31, 1929, the number of telephones increased from 87,390 to 91,968, a growth of 4,578, or 5.2%. The number of new telephones fitted was 9,436, and the cessations 4,858.

The number of telephones has increased from 32,946 in September, 1912, to 90,565 in September, 1929, a growth of 57,619, or 175%, in 17 years.

Since July, 1929, the minimum telephone rental has covered a radial distance of two miles from the exchange instead of 1½ miles. This represents a reduction of £2 per annum for subscribers over 1½ miles from the exchange. In making comparisons with Continental charges, it is interesting to observe that in Sweden, for example, when an exchange is established in a rural area, the subscribers are required to construct their own lines or to pay the telephone administration for doing so. When the system grows to 50 lines the installation is taken over by the telephone administration, with the exception of lines outside a radius of 500 metres. In this country the rental includes the installation of the lines, as well as the apparatus, a principle which is common to all electricity supply undertakers.

The expansion of the telephone services is mainly dependent upon the prosperity of the community at large, and in times of financial stress, or trade depression, there is a tendency for telephone development to slow down. It is not surprising, therefore, to observe that the growth of the telephone service in recent years has not been so great as might have been anticipated under more prosperous conditions. The telephone, however, has come to be recognised generally as an essential tool in the efficient management of business undertakings, as well as for the service of household and social requirements, and it is the earnest desire of the Post Office Administration to make it as useful and helpful as possible. The suggestions and criticisms of the Chamber of Commerce have been of much value to us in this respect.

Telephone Traffic.—During the year ended Dec. 31, 1929, effective trunk calls and telegrams totalled 6,685,426, which represents an increase of 203,292 over last year's figures. Local calls for the twelve months numbered approximately 70,250,000, against 66,000,000 for 1928.

Service.—The average speed of answer was approximately 5.9 seconds, against 5.8 seconds last year. The increase is due to figures of over 6 seconds being obtained during the period February to May, when the staff was seriously depleted owing to the influenza epidemic.

Written complaints average one per 28,000 telephone calls. The figure of one per 41,000 for 1928 was mainly due to an exceptionally low number of plant complaints during the six summer months of that year.

Automatic Telephones.—The new building, Telephone House, Chapel Street, is now occupied by the District Manager and his Accounting, Traffic and Contract staffs.

Rapid progress is being made in the installation of the advance manual switchboard and the necessary automatic apparatus. The equipment is of the very latest type and Manchester has the benefit of the experience gained in London. Early in 1930 the first director automatic exchanges in the Manchester scheme will be opened at Ardwick, Collyhurst and Moss Side, together with a portion of the new manual Toll Exchange in Telephone House, which will work in conjunction with these. The major portion of the plant for these exchanges is already installed and testing and tuning up in readiness for transfer is now in process.

A director demonstration unit is being installed in a room adjoining the Public Office at the Head Post Office, Spring Gardens. It will be ready early in March and is for the purpose of demonstrating the method of making and receiving telephone calls under automatic conditions to subscribers, particularly those connected to the Ardwick, Collyhurst and Moss Side Exchanges, whose installations are to be converted and to members of the public generally.

Preparations have made good progress during the year for the further gradual transfer to automatic working of other exchanges. New buildings for the accommodation of automatic plant are now ready at Heaton Moor and in varying stages of erection at Oldham, Ashton, Gatley, Woodley and Longford. Good progress has been made with the building for housing the new automatic exchange at Stockport.

WEST YORKSHIRE DISTRICT.

During the year ended Dec. 31, 1929, a steady increase in the number of lines and stations has been maintained.

The figures are as follows:—

	Lines.	*Stations.*
At Dec. 31, 1928	42,674	65,540
Added during 1929	4,335	6,877
Cessations during 1929 ...	2,738	4,105
At Dec. 31, 1929	44,271	68,312
Increase on 1928—		
Lines	1,597 or 3.7%	
Stations	2,772 or 4.2%.	

It is interesting to note that, of the orders for new telephones added during 1929, 44% were executed within one week of receipt by the Engineering Department and 70% within two weeks; in many of the remaining cases the circumstances which prevented earlier completion were not within the control of the Post Office.

The distribution of "Lines" and "Stations" between automatic and manual exchanges at the end of each of the two years was as follows:—

Date.	*Lines.*		*Stations.*	
	Auto %	*Manual.* %	*Auto* %	*Manual.* %
Dec. 31, 1928 ...	41.5	58.5	42.5	57.7
Dec. 31, 1929 ...	41.8	58.2	42.6	57.4

Telephone Calls Effected during the Year.—

Trunk calls	6,131,028
Local and junction calls ...	41,679,862

New Exchanges and Premises &c.—Progress has been made throughout the district in the provision of new exchanges and the substitution of modern plant for the older types of equipment.

The following is a summary of work done and projected:—

	Automatic Exchanges.	*Manual Exchanges.*
Opened during 1929 ...	*Lothersdale.	Horbury. Huby. Gargrave.
In progress or projected ...	*Addingham. *Adel. Bolton Abbey. *Denholme. Horsforth. *Horton Green. *Hunslet. *Laisterdyke. *Manningham. *Oakwood. *Queensbury. *Undercliffe.	Guiseley. Hebden Bridge. Kirkburton. Ossett. Rawdon.

* Additional exchange.

The opening of the automatic exchange at Lothersdale is of special interest, as being the first example in this district of the policy of establishing automatic exchanges in rural areas. Until recently, manual exchanges only were installed in such areas, but automatic equipment has now been designed on a basis which promises favourable economic results. The minimum exchange unit provides for 25 lines, and further units can be added up to a maximum of 200 lines. They are accommodated in simple extensible buildings of the "garage" type and are left unattended. A maintenance man normally visits them about once a week for the purpose of attending to the power plant and making a general maintenance inspection. One important advantage of these small automatic exchanges is that they provide an all-night service, both locally and to the outer world via junction lines to the nearest "parent" exchange, whereas the expense of providing night attendance at the village exchanges of the manual type is frequently prohibitive.

The new exchanges at Bolton Abbey and Denholme will be similar to the Lothersdale Exchange.

BIRMINGHAM DISTRICT.

New buildings for the accommodation of automatic exchanges at Harborne, Northern, and Victoria are now completed. Sites have now been acquired at Acocks Green, Blackheath, Great Barr, Halesowen, Oldbury, Priory, Selly Oak, and Tipton.

Negotiations are in progress for the acquisition of sites for new exchanges at Birchfields, Charlemont, Four Oaks, Kings Heath, Quinton, Sheldon, Walmley, and Warstock.

The transfer of over 800 lines from Central to Midland was carried out in May last in conjunction with the issue of the May Directory. Arrangements were carried out at the same time to provide subscribers at several exchanges in the Birmingham area with four-digit telephone numbers as a preliminary to the introduction of the Director Automatic System. Additional exchanges are under consideration and at an opportune time the necessary changes will be effected.

Wolverhampton.

A considerable amount of preliminary work has been done in connexion with the conversion to automatic working in this area which will include he following exchanges:—

Wolverhampton, Bilston, Fallings Park, Finchfield, Tettenhall.

Sites have been acquired and the buildings will be commenced during the year with the exception of Bilston which has been completed.

Walsall.

The conversion of Walsall, Bloxwich, and Aldridge Exchanges to automatic working was carried out on May 4 last. The new automatic plant is of the Strowger type. There is no manual equipment at Bloxwich or Aldridge, and all calls from these places which necessitate manual operation are extended automatically to the new switchboard at Walsall.

Dudley.

The new type of automatic equipment to replace the existing apparatus at Dudley is nearing completion. The provision of automatic apparatus at Brierley Hill, Cradley Heath, and Stourbridge is also approaching completion and it is expected that within two months the last three exchanges will be working on a common system with Dudley.

The growth in telephone stations continues and now totals 73,627, which is an increase of 7.74% during the year.

The subjoined table shows the increase during each of the last six years :—

Year.	*Total at Close of Year.*	*Percentage Increase for Year.*
1924	47,332	13.23
1925	52,704	11.35
1926	57,919	9.89
1927	62,937	8.66
1928	68,333	8.57
1929	73,627	7.74

Calls.—In the local exchanges 58,552,174 calls, including short distance trunk calls, were originated in the district during the year. This constituted an increase over the previous year of 2,490,497, while the long distance calls controlled at the Trunk Exchange increased from 4,086,950 to 4,413,924.

THE G.P.O. PLAYERS.

THE G.P.O. Players excelled themselves in "The Way Things Happen," by Clemence Dane, which they gave at King George's Hall, Caroline Street, on Feb. 27 and 28 and March 1. The performance was the more creditable in that the character of Martin Farrer is not only difficult to portray in itself, but is a source of difficulty to the characters who share the stage with him. Self-centred people are, unhappily, not altogether rare, but there was a kind of exasperating denseness about Martin's selfishness which it required much skill to make convincing. Mr. Gartland handled this exacting part with the greatest credit to himself, and Miss Ursula Hicks (a newcomer, we believe) as Shirley Pryde, carried off her trying scenes with charm and naturalness, crowning a very successful rendering of the part by her acting in the last scene. Miss Margaret Henneker was excellent as the hard and showy Muriel, and Mr. Cyril Leigh gave a delightful and characteristic rendering of Chussie Hare. The villain (if we may so style him), Lomax, was in the capable hands of Mr. Pilkington, and Miss Cowan made us wish we could see more of her. In her brief appearances she gave us the exact portrait of Mrs. Hanbury in a few bold strokes. Miss Emery was tender and sympathetic as Mrs. Farren, and particularly good in the death scene. The play was received with great enthusiasm, the producer, Mr. Hodgson-Bentley, coming in for a full share of the ovation. It remains to be added that Mr. Will Harrison's orchestra provided some interesting music.

RETIREMENT OF MR. H. J. MACLURE.

A LARGE body of colleagues and friends assembled in the Deputation Room, G.P.O. North, on Mar. 19, to say farewell to Mr. H. Julius Maclure. A table, clock, and other presents had been subscribed for as a memento of the occasion, and Mr. F. H. S. Grant, Assistant Secretary, in making the presentation, wished Mr. Maclure, on behalf of his colleagues, long life, success and happiness in his retirement.

Mr. Maclure entered the service of the National Telephone Company far back in the 'nineties, after having had experience of telegraphs with the old London, Chatham & Dover Railway. After some years in the Stores Department he showed an aptitude for organising canvassing work, and was perhaps best known for his successful and untiring efforts as Contract Manager at Brighton, when the National Company was engaged in its struggle with the Brighton Corporation system. At and after the transfer to the Post Office he was Contract Manager at Birmingham. He was promoted to be Inspector of Contract Departments in the Secretary's Office in December, 1913, and in April, 1921, became a Staff Officer. Mr. Maclure, who is a man of unbounded energy and vitality, was an authority on schemes for telephone development.

PROGRESS OF THE TELEPHONE SYTEM.

THE total number of telephone stations in the Post Office system at Jan. 31, 1930, was 1,855,636, representing an increase of 7,168 on the total at the end of the previous month.

The growth for the month of January is summarised below :—

Telephone Stations—	*London.*	*Provinces.*
Total at Jan. 31	665,344	1,190,292
Net increase for month	3,367	3,801
Residence Rate Subscribers—		
Total	163,536	255,721
Net increase	1,296	1,665
Call Office Stations (including Kiosks)—		
Total	5,922	24,396
Net increase	119	275
Kiosks—		
Total	1,625	6,060
Net increase	44	100
Rural Party Line Stations—		
Total	—	10,218
Net increase	—	—
Rural Railway Stations connected with Exchange System—		
Total	17	1,506
Net increase	—	53

The total number of inland trunk calls dealt with in November, 1929 (the latest statistics available) was 9,657,997, representing an increase of 685,605, or 7.6% over the total for the corresponding month of the previous year.

Outgoing international calls in November numbered 47,814 and incoming international calls 52,193, representing increases of 8,140 (20.5%) and 10,959 (26.6%) respectively over November, 1928.

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

LONDON—Shepherds Bush, Primrose (automatic).

PROVINCES—Dudley, Brierley Hill, Cradley Heath, Stourbridge (all automatic); Ashwell, Benburb, Bolton Abbey, Denholme, Hanmer, Hardwick, Long Sutton (Hants), Morham, Normanby-by-Spital, Riccall (all rural automatic),

and among the more important exchanges extended were :—

PROVINCES—Aylesbury, Clydebank, Newport (I. of Wight), Ramsgate.

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

Guildford—Reading (Section of Guildford—Reading—Basingstoke cable);

Bradford—Huddersfield;

while 76 new overhead trunk circuits were completed, and 87 additional circuits were provided by means of spare wires in underground cables.

The
Telegraph and Telephone Journal.

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Editing and Organising Committee - - - Lieut.-Col. A. A. JAYNE. J. STUART JONES. W. D. SHARP. W. H. U. NAPIER. J. W. WISSENDEN.

Managing Editor - - W. H. GUNSTON.

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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TELEPHONE COURTESIES.

IT is singular that while the telephone habit grows daily, and the use of the telephone is now common to hundreds of thousands who not long since regarded it as a privilege or perquisite of their more favoured fellow citizens, telephone manners still leave something to be desired, still afford a text for social sermons, and a theme for justifiable complaint. We hope and believe that the uncouth office boy who greets callers with an aggrieved "Who are you? What do you want?" is fast disappearing as an amateur telephone operator. We know that the employment of trained telephonists by private people is on the increase, and that apart from their professional handling of enquiries, it is becoming the rule rather than the exception for the telephone to be answered with courtesy and intelligence, and, in those cases where a private branch exchange is in use, for someone to be in attendance who can promptly put the caller in communication with the person he requires. This is, no doubt, a great stride forward in improving the amenities of the telephone.

There is, however, a form of discourtesy which seems to die very hard and which is still a source of exasperation to the most patient of telephone users. It is the habit of instructing a subordinate to put a call through, and then keeping the correspondent at the other end of the line waiting until one has leisure to attend to him. A professional man (and his case is typical of many others) complains bitterly in the *Bradford Telegraph & Argus* that he probably loses many hours a week by this kind of discourtesy. "The bell rings. I take up the receiver. 'Hello!' says someone. 'Mr. A wants to speak to you.' Then I wait, and Mr. A may be two or three minutes before he condescends to come to the 'phone to take his own call."

There can be no objection, of course, to a busy man's asking his clerk to get a call through for him, if he is actually beside the telephone and is there to answer it when the number is obtained. But when the other man, having been rung up, has answered the telephone with due promptitude, and is then asked to "Wait a minute" while his correspondent condescends to come to the instrument, he naturally feels aggrieved. He very justly considers that his time may be as valuable as that of his interlocutor, and his annoyance is not lessened by the knowledge that the discourteous practice may not be due so much to business pressure as to a kind of fussy self importance which is fond of displaying itself in the employment of intermediaries through whom correspondence must ceremoniously pass before it reaches the great man himself.

A conscious or unconscious egotism is probably at the root of this habit. This quality or attribute may go far in life but not, we think, in the great business world. You may be in the enviable position of being able to make others take you at your own valuation, but, unless you are, a nice consideration for the susceptibilities of other people will further your interests best, both in your telephonic and other social dealings with others. To put the matter on no higher footing, it is safe to say that petty egotisms simply do not pay.

WINTER'S TALE.

THE winter which has now luckily passed will be long remembered for its gales and the vast damage done to shipping and to the exposed parts of the coast. The statistics for 1929 cover half of the 1929-1930 winter, but they show that the Post Office wireless stations dealt with 128 wireless calls for assistance (S.O.S.), or nearly double the average yearly number for the preceding four years. This number, large though it may be, is really small compared with the number of casualties which would doubtless have occurred if gale warnings had not been sent out by wireless telegraphy long before the first signs of bad weather could have been detected by observations on the ships themselves.

Wireless has undoubtedly done much to ensure greater safety of life at sea by the collection of meteorological information from ships in distant waters, the dissemination of gale warnings and weather forecasts, and the summoning of assistance in the last resource when shipwreck was otherwise inevitable.

AN EPIC OF THE SEA.

WE recently had an opportunity of perusing the log of a ship in distress during the December gales—short, matter-of-fact statements, and questions and answers by wireless-telegraphy exchanged and recorded amidst the turmoil of the waters and the wild shrieking of the winds. Yet when read in cold blood, the

very brevity added intensity to the narration, of which only the bald facts are recorded here.

Our epic began at 8 a.m. on a Saturday and continued uninterruptedly until 11 a.m. on the following Monday morning; and our readers will need no great effort of imagination to recognise the stark, staunch heroism of 51 hours of strenuous endeavour.

We learn that amongst other damage the wireless aerial had been carried away during the previous night, the steering gear broken, No. 2 hatch stove in and the lifeboat damaged. A temporary aerial was rigged, and after many hours the first wireless appeal for assistance became possible. Then the hatch was repaired and an effort made to repair the steering gear. Meantime a British ship was diverted and with the aid of wireless direction-finding apparatus was able to get as near as four miles away. The steering gear could not at first be repaired because it was under water; and as there was a risk of the ship being driven on a lee shore, a tug was asked for. We learn that the ship was rolling excessively and the seas were breaking aboard. The steering gear was at last repaired, but unfortunately was again carried away. At midnight on Sunday the ship in distress and the tug were able to communicate by lamp signalling; and the weather having moderated at daybreak a light line was thrown from ship to tug as the first step towards rescue.

At 11 a.m. on Monday the wireless operator asked the tug to take any traffic for him as he wanted dry clothes and some sleep. And well did he deserve it!

HIC ET UBIQUE.

TELEPHONE service was opened between this country and Kaynas (Kovno) and Klaipeda (Memel) in Lithuania on the 15th of last month. The charge for a 3-minute day call from London is 17*s*. A service to Riga in Latvia is likely to be opened at an early date.

We have received the balance-sheet and statistics of the Guernsey States Telephone Dept. A surplus of £682 5*s*. 6*d*. is shown for the year 1929, during which year the number of telephone lines increased from 4,226 to 4,353 and the number of calls from 2,607,855 to 2,720,336.

A paragraphist in the *Evening News* says *à propos* of the transatlantic service:—

> In any case, I have no intention of exchanging £15 worth of backchat with my rich cousins in Milwaukee because, if I do, the Post Office, when it sends me my bill, will insist on my increasing the deposit which I had to make when I first installed my telephone.

As a humorist it is not his business to know that no deposit is asked for in respect of transatlantic calls, but perhaps it is ours, as realists, to enlighten him. He may become a transatlantic "telephone addict," as he styles it, without additional deposit.

The repercussions of the telephone are many and unforeseen. Sir Ralph Wedgwood, General Manager of the L.N.E.R., speaking to the Halifax Chamber of Commerce, says he has been confronted with the fact that the coming of the telephone has gradually wrought an extraordinary change in the goods traffic with which he has to deal. Much has been heard of late about the need for bigger railway wagons. (A demand for such wagons was the newspaper stunt which preceded that for a United Empire party, if our memory serves us aright, interjects the *Yorkshire Evening Post*. Those stunts are so various and so soon dropped and forgotten, that we may be pardoned for not keeping their exact order of date in mind.) But Sir Ralph shows that, to a great extent, the big wagon is uneconomic nowadays.

The trader who used to keep large stocks in hand to meet the requirements of his customers is now mostly content with samples. When he books an order, he simply rings up the manufacturer on the telephone, and asks him to despatch the goods. Thus it is the manufacturer, not the trader, who has to keep big stocks on hand nowadays; and the manufacturer, instead of having big orders to execute, has to send away his goods in small parcels. Thus speed, not bulk, is the dominating factor in transport now so far as merchandise is concerned. That is where the motor lorry has come in, and taken away so large a proportion of the railway companies' goods traffic. The railways, however, under their new powers, are adapting themselves to the situation.

The annual report of the American Telephone & Telegraph Company for 1929 shows an increase in the number of telephone stations in the "Bell" system and its connecting companies of 899,819. The total number of stations was 20,096,854, of which 15,414,015 belonged to the "Bell" companies, and 4,682,849 to the connecting companies. 4,014,153 of the 15 million were working on the automatic system. The average daily number of toll conversations was upwards of 3 millions, and of local conversations 61 millions.

We are publishing next month an abridged illustrated report of Col. Lee's paper on Transatlantic Telephony read before the Post Office Telephone & Telegraph Society.

RELICS OF THE C.T.O. IN DEVON.

As during the past years one and the other of the old brigade of Telegraph men of the London C.T.O. have disappeared upon reaching the age-limit, the question has been frequently asked: "Where do they all hibernate?" Judging from reports from more than one correspondent in the district, the county of Devon holds not a few of the stalwarts of the past. One report which arrived too late for the December issue gives every evidence that the annual gathering of Post Office retired officials, held in Torquay, proved a veritable galaxy of veteran talent and vitality. One, a *reputed* Scotsman by extraction, but most certainly a loyal Devonian by adoption, took the chair at the gathering, in the person of Mr. J. B. Murray. So very busy are some of these ex-T.S.-ites that three at least of them had to express their regret at being unable to attend owing to prior engagements!

The late Asst. Controller of the Cable Room, Mr. F. T. Wadley, happily enough was able to set all engagements aside and joined the merry party, as did others likewise, notably Mr. C. H. Honeysett, formerly of T.S., but who was actually Postmaster of Henley-on-Thames when he left active service. Music, tales of bygone years, not without a touch of romance and—imagination! Music, perhaps beyond the prime, but music, nevertheless, and then a little quiet game or two at cards to complete a very happy evening.

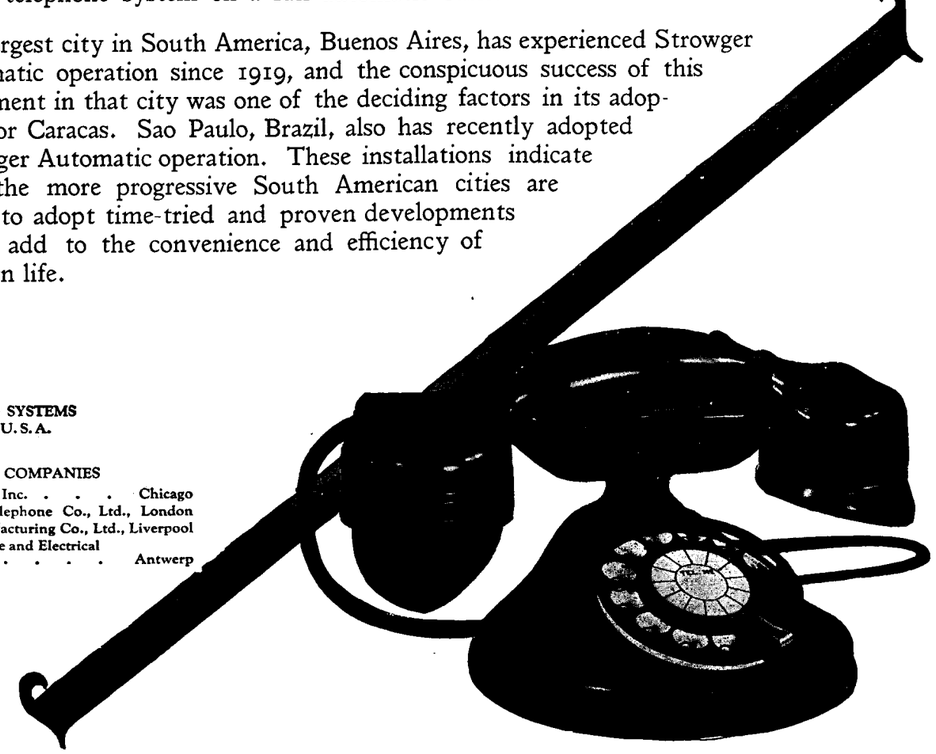
J. J. T.

Caracas, a city of over 100,000 population, is the business and commercial centre of Venezuela as well as its capital, and is one of the most modern and progressive of South American cities.

epeat Orders Confirm Strowger utomatic Success in Caracas

VENEZUELA'S capital city, Caracas, has found in Strowger Automatic telephone equipment the most satisfactory solution to its telephone needs. Beginning with 1,000 lines of Strowger Automatic equipment installed in 1927, the Venezuela Telephone Company has installed and placed in service 3,000 more lines during 1928, bringing the present total up to 4,000 lines of Strowger Automatic equipment in operation. An additional 2,000 lines is now being installed which will give Caracas 6,000 lines of equipment within a short time, and will place the city's entire telephone system on a full automatic basis.

The largest city in South America, Buenos Aires, has experienced Strowger Automatic operation since 1919, and the conspicuous success of this equipment in that city was one of the deciding factors in its adoption for Caracas. Sao Paulo, Brazil, also has recently adopted Strowger Automatic operation. These installations indicate that the more progressive South American cities are quick to adopt time-tried and proven developments which add to the convenience and efficiency of modern life.



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CANVASSING METHODS.

BY J. TURNER, CONTRACT OFFICER, CLASS I, YORK.

WRITING from personal experience, I am of the opinion that there is need from time to time for examination and overhaul of the methods employed in canvassing if we are to reap as great a harvest as possible.

It will, I think, be generally agreed that the expansion of the Telephone Service is most effectively helped by personal canvassing, and it is a prime necessity that there should be an adequate canvassing staff. Publicity of all kinds is to be welcomed, and even the often garbled statements which appear from time to time in the Press tend to keep the subject of telephones before the public mind. The advertising of the T.D.A. in the Press, and the distribution of pamphlets, is all to the good. But it cannot be too strongly stressed that personal canvassing is easily the best possible way of educating the public on the necessity and advantages of the telephone service. Literature can never supersede the personal visit, although literature is a valuable auxiliary, the truth being that man is moved most by contact with his fellows—by the personal touch.

It is an essential qualification of a Contract Officer that he should possess what we call a "good personality," but this alone is not sufficient for success in canvassing. Possible subscribers are influenced very largely by the way the Contract Officer states his case, and the question of the *method of presentation* is therefore one which calls for serious consideration.

The first essential is to *arouse interest* in the mind of the prospective subscriber. It is fatal to step into premises and to announce baldly that one is a representative of the Post Office Telephone Department, and to ask if telephone service is desired. It is a good plan on the occasion of a first visit to ask "Are you on the telephone?" (In many cases during systematic canvassing it is not always known by the Contract Officer if the premises are connected or not.) Or the subject may be introduced by the remark: "I see you are not on the telephone." The vision of a telephone installed in his premises is thus artfully introduced into the mind of the canvassed person without raising the antagonism which unfortunately is so easily aroused by the mere mention of a Government Department, or by the immediate suggestion that your object is to induce him to do something which will touch his pocket. In many such cases it will be found that one is taken for an ordinary member of the public and the way is paved for an easy conversation on the subject of telephones. A wise Contract Officer will not carry an attaché case of any kind which might give the suggestion that he is a commercial traveller, as these frequently receive but scant courtesy and in the case of residence canvassing the chance of entrance is greatly reduced.

The next step is to *impart knowledge of the subject.* Arguments for its use should be carefully stated, taking particular care that those reasons specially appropriate to the business of the prospective subscriber are stressed. If the arguments used have been convincing, a desire to possess has been created, and at this point the appeal to the strong tendency to rivalry which exists in most people should be made: "Don't you think it would be a good thing to have it installed and possess what so many of your competitors have?" (or if residential canvassing, substitute "friends" or "neighbours" for "competitors").

The next stage is the question of cost. This requires to be very carefully stated, and the most effective way is to give the *weekly* cost, i.e., 2*s.* 8*d.* for business; 2*s.* 1½*d.* for residences, rather than to state outright the yearly or quarterly rental.

The final step is, of course, the decision. It is surprising how many persons need to be helped to a decision. And this is where the Contract Officer should bring the whole of his personality into play, and bring his will to bear upon the will of the canvassed person. When it is apparent that an impression has been created by the arguments used, and, by the appeal to the acquisitive tendency, that moment must be seized to press for a decision at once.

It is a common experience to find a likely subscriber resisting stubbornly for quite a while and then suddenly and unexpectedly giving way. Persistence pays, so long as it is carried on tactfully. Of course, in some cases, the decision has to be left in abeyance but a deferment should not be taken too readily, and often a temporary change of subject to something of apparent personal interest to the would-be subscriber and a return to the original theme later will have served the purpose of letting the resistance die away. The wise Contract Officer will, of course, in cases where an immediate decision cannot be got, always leave literature and a tariff postcard, making it as easy as possible for a communication to be sent to the District Office.

Canvassing for additional lines and extensions requires great tact and discretion. The best method of approach in those cases where an application for additional facilities has not been received and pure canvassing is taking place, is usually to open the interview by asking if the installation may be inspected and not merely by inquiring if extensions are desired. Most subscribers readily agree to show the installation, and usually it is very easy to suggest that his service would be much improved by extension lines. It may even in some cases be effective to express surprise at the inadequacy of the installation. By careful questioning it can be ascertained how the subscriber deals with traffic. In those cases where only one instrument exists, it is generally found that the suggestion of an extension to enable him to speak privately or to enable his clerk to deal at the outset with incoming calls, is appreciated. The very small cost should, of course, be stressed.

The question of auxiliary lines can be introduced without waiting for traffic records. The small cost of doubling the service in those cases where only one line exists, i.e., approximately 2*s.* 6*d.* per week, should be urged, and generally it is found that the subscriber is impressed by the comparatively low cost of giving him a double service.

RETIREMENT OF MR. P. EDMOND, DISTRICT MANAGER, ABERDEEN.

MEMBERS of the Post Office telephone staff at Aberdeen honoured Mr. P. Edmond, District Manager, on the occasion of his retirement from the service.

Mr. Archibald Clow, chief clerk, referred to the large extension of the telephone undertaking during the five years of Mr. Edmond's managership at Aberdeen. This development had been specially evident in the rural districts, where a large number of exchanges have been opened in the last few years. Mr. Edmond also saw the introduction of the latest development in telephone exchanges—namely, the "rural automatic"—such exchanges being opened in several places in the Aberdeen district during 1929. A great development had also taken place in trunk communication, as Aberdeen subscribers can now converse with most of the European countries and with America.

Mr. W. S. Coulsell, Contract Manager, on behalf of the Staff, presented Mr. Edmond with an antique grandfather clock, and in doing so made reference to Mr. Edmond's high abilities as a manager, and particularly to his friendly relationship with the staff under his control.

Mr. R. W. Crawford, Head Postmaster, Mr. R. L. Forrester, Traffic Superintendent, and Mr. J. B. Glover, Executive Engineer, also paid tribute to Mr. Edmond's good qualities.

Mr. Edmond, in his reply, thanked the whole staff for their kindness to him and for the enthusiastic support which he had received from all sections of the telephone staff.

GLASGOW TELEPHONE NOTES.

THE subject of our portrait this month is Miss Catherine Jane Fleming. Unlike several of her colleagues, she has not seen service with the Glasgow Corporation Telephones, but was with the National Telephone Company until she was transferred to the Post Office on Jan. 11, 1897, as one of the telephonists required to work the trunk lines which had been taken over by the Department from the Company about this time.

Miss Fleming was made an Assistant Supervisor on July 10, 1905, and Asst. Supervisor, Class II, on Jan. 1, 1908. Promotion to her present rank, Asst. Supervisor, Class I, following on Nov. 7, 1918.

In the course of her career Miss Fleming has had considerable experience of operating under varying conditions of lines and apparatus, and also of Trunk Exchange working in all stages of its development, from the somewhat crude conditions of early days to the more complex and scientifically adjusted circuits of to-day.

At the time of writing, Miss Fleming is in charge of the Western Exchange, which, from the number of lines connected, is the second in size in Glasgow, but as the subscribers are mostly residential, it does not take second place for traffic.

Miss Fleming takes a great interest in her work and while using every effort to give a good service has the interests of her staff at heart.

It cannot be said that the subject of this fragmentary sketch has any particular hobbies. She likes a good holiday, the companionship of her friends, and the actions of a kindly heart, which latter we most cordially endorse.

Glasgow Post Office War Hospitals Entertainments Committee.—The work of the above Committee goes on merrily. The recent entertainment at Erskine Hospital which the staff of Bell Exchange was responsible for was one of the outstanding successes of the season, but when we remember the name of the exchange responsible for the concert it was only to be expected. High tea was provided, beside which sweets, cigarettes and grapes were distributed and were greatly appreciated. At the musical part of the entertainment Mr. Lucas, Contract Manager, presided, and at the start created the right atmosphere for a successful concert. Miss Cissy Pollock (Bell) provided the party of artistes and one and all, including herself, excelled themselves in their own particular line. Mr. Law, Chief Clerk, Mrs. Law, Miss Cameron (Central) Miss Houston (Bell) supported Mr. Lucas in the conducting of the entertainment.

Telephone operators get some strange enquiries in the course of their duties, such as "Which pantomime will Tommy Lorne be playing at this year, and when does it start?" but the limit was reached the other morning at Bearsden Exchange (5 a.m.) when, on answering the door bell, the night operator was confronted by a regular "Knight of the Road," who enquired if he could have a bed.

The Bell Exchange staff held a very successful dance in the Prince of Wales Rooms on the evening of Tuesday, Mar. 11. The rooms were filled to capacity and the happy atmosphere surrounding the proceedings was excelled only by the splendid example of how these things can be done, this especially concerning the charming dresses of the ladies. Miss Houston, Miss Campbell and the committee responsible are to be sincerely congratulated on the results of their efforts. And so say all of us.

On Qualifications and Fine Distinctions.—"Estimate the qualifications of men by the utility of those employments on which they bestow their attention."—(Aurelius.)

"Plato divided the people of his ideal republic into three classes: the philosophers, who did the thinking and ruling; their lieutenants, who executed orders; and the great mass of the people, who were mostly slaves. Montesquieu put in the first class men who were able to think and give ideas; in the second those who cannot do original thinking but can understand the ideas of others; and, finally, those who can neither think nor understand the thinking done by others."—(M.)

"The requisites of a £2,000-a-year man:—

(*a*) Judgment, prudence, enterprise, and fortitude in undertaking and carrying risks;

(*b*) An alert acquaintance with appropriate technique and some power of initiating advance;

(*c*) A high power of organisation, in which system plays a part, but 'always as a servant but never as a master';

(*d*) A power of reading character in subordinates, together with resolution, tact, trust and sympathy in handling them;

(*e*) Prompt diligence in assigning to each the highest work of which he is capable, or can be made capable within a moderate time."—(Anon.)

"A sort of cold dismay—something akin to fear—filled me when I had estimated him. I found a man so perfectly poised, so charming, so deeply learned in the world's rituals, so full of tact, courtesy and hospitality, so endowed with grace and ease and a kind of careless, haughty power, that I almost overstepped the bounds in probing him, in turning him on the spit to find the weak point that I so craved for him to have."—(O. Henry.)

"He is a man of virtue, and comely, and good parts enough—one of the worthyest men and best officers; of the best temper, valour, abilities of mind, integrity, birth, fine person and diligence, and hath come into his place with a great grace, though with a great skip over the heads of a great many."—(Pepys.)

"He was a man so various that he seemed to be,
Not one, but all mankind's epitome;
Stiff in opinion, always in the wrong,
Was everything by starts but nothing long;
Who, in the course of one revolving moon,
Was Chymist, fiddler, statesman and buffoon;
Then all for . . . painting, fiddling, drinking;
Besides a thousand freaks that died in thinking."
(Dryden.)

"Comes Mr. Herbert, Mr. Honiwood's man, and dined with me, a very honest, plain, well-meaning man, I think him to be; and by his discourse and manner of life, the true emblem of an old serving-man."—(Pepys.)

THE LATE ADAM GORDON.

THERE are men who, no matter how humble their position in life, yet stand out by common consent among their fellows. Such an one was Adam Gordon as a member of the rank and file of Government telegraphists, such an one was he to the end of his official career as successively he passed, all too slowly be it said, from Overseer to Asst. Second, and then to Asst. First Class Superintendent of the C.T.O., retiring at the age limit in July 1919. It cannot always be assured of such that they reach the goal of their legitimate worldly aspirations, but it can be said of them that they are captains of their souls. Of this worthy clan was the beloved Adam Gordon, who opened his telegraph service in Dundee in 1875, transferring to Edinburgh in 1878 and to the C.T.O. London in 1882. Intellectually he was head and shoulders above most of his colleagues, but he never used his sharpest sword against the weak or revealed the extent of his knowledge ungraciously to the less well-informed. For years he wrote caustically over the pen-name of "Cynicus," but if he was mordant one cannot recall a case in which the mordancy did not fit the crime, and it was the crime always in preference to the criminal at which he aimed. When it came to a *viva voce* engagement his almost uncanny quickness in picking out the weak spot in his antagonist's defence rarely if ever failed. He parried well, but seldom to wound, and even then it was the rapier rather than the bludgeon, for he would have given his last shilling to friend or foe did the need arise. Injustice, hypocrisy, shams of any kind opened a flood of denunciation, in which the English language could hardly have been better handled by the best of barristers. In bantering mood he was the life and soul of any gathering, and now the place that knew him shall know him no more. It is no unreal phrase to use as between man and man that Adam Gordon will always remain as one of the most beloved men who ever passed out of the C.T.O. London.

He had been ailing for many months, but had apparently taken a real turn for the better when a relapse occurred from which he never recovered, and crossed the Bar on Saturday morning, the 15th ult.

The funeral took place at Streatham Cemetery on the 18th ult. There were many floral tributes from old friends and colleagues and also from the C.T.O. Among the large number present at the graveside were: Messrs. G. Adams, H. E. Adams, J. R. Allwright, C. Bent, E. Bird, C. J. Boulton, J. A. Buffin, W. J. Callow, W. S. Fisher, W. F. G. Hodes, R. E. Kemp, C. J. Minors, R. H. Mulock, F. J. Muller, G. Meyer, G. W. Murdoch, S. F. Pace, H. Pond, E. F. Poole, J. Rees, J. E. Sayers, H. W. Senhenn, S. J. Smith, G. E. Taylor, A. A. Watts, H. B. Winder, and Captain H. R. Young, M.B.E. Mr. C. S. Keen who was also present conveyed to the mourners the regrets of those who, due to indifferent health and other unavoidable circumstances, were unable to pay their tribute in person.

J. J. T.

CORRESPONDENCE.

WIRELESS BROADCAST RECEPTION.

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

SIR,—In reply to the letter in your March issue from Mr. J. W. Willshire asking various questions consequent on my article on "Distant Control of Broadcast Receivers." My distance from Brookmans Park is approximately 20 miles, and for quality reception a trigger circuit is used. This distance is the limit of its effective operation without H.F. amplification. It gives good detection providing the incoming signal is above a certain threshold value, and perfectly straight line L.F. amplification over the whole frequency range.

The details of its operation require considerable explanation, cannot be embodied in a brief letter, and are rather outside the scope of this journal.

Providing I am not charged with starting a fierce controversy I give my own candid opinion about moving coil speakers. For ordinary domestic use there are many speakers that not only hold their own against the moving coil but are in some respects very definitely superior to it.

One of my cabinets contains a reed movement made nearly 20 years ago for an early pattern of telephone relay and this cabinet is invariably accused of harbouring a moving coil, presumably because it reproduces so well the bass violin and pedal notes of the organ.

The exposure of the "works" of this speaker is always greeted with a hearty laugh, for the movement only leans against the diaphragm, which consists of a small paper cone stuck in the middle of a linen handkerchief stretched across the front of the cabinet. By a little sleight of hand when opening the cabinet, the movement is whisked away and there is practically nothing to be seen.

Generally speaking, the moving parts of a moving coil speaker are too large for satisfactory reproduction for domestic purposes. *They lack brilliance.*

A moving coil is only happy with a kilowatt or so behind it, rattling the windows of the Albert Hall.

I do not recommend a pentode. It is too tricky and apt to deliver a shrieking, strident tone. Use a sufficiently large power valve which, when a wide scale milliammeter is placed in its anode circuit, will allow the needle to remain dead steady on all signals. This, however, only ensures even amplification of what the detector passes on; and most detectors are a compromise between various conflicting factors.

The principal causes of distortion are: (1) overloading of output valve, (2) the use of reaction following a grid leak detector, (3) overloading a grid leak detector.—Yours faithfully,

B. S. T. WALLACE.

RETIREMENT OF MISS L. M. DURANDEAU.

(Supervisor, Central Exchange, Liverpool.)

IN April, 1886, Laura M. Durandeau entered the service of the National Telephone Company as an operator, and on Feb. 28, 1930, she retired under the age limit from the position of Supervisor of the Central Exchange, which was nominally the same Exchange she entered, and which she had been in charge of since 1904.

To say that she was popular does not nearly convey the whole truth. There are degrees of popularity. The girls who have worked under her loved her and the men who have from time to time been brought into contact with her had the greatest admiration and respect for her.

Her name will long be remembered in the annals of telephony in Liverpool, and but for her dislike of publicity she might have been better known in a wider field. She was certainly worthy of appearing in the series of "Telephone Women" published from time to time in the *Telegraph and Telephone Journal.*

She had few hobbies, while her main object in life was her business. Her service has been characterised by devotion and enthusiasm. Her personality has made her the friend of all she came in contact with. Though firm in her methods she ruled with justice, tact and kindness, and was able to obtain the maximum of support with the minimum of friction and get the best out of her staff. She is the type of woman wanted and who can ill be spared.

As evidence of her popularity with her staff, her parting testimonial from them was perhaps unique. When it was known that she was going to retire, the girls felt that they must give her something worthy of the occasion and of their feeling for her. They, therefore, it is rumoured, started a hidden fund and contributed their pence weekly for quite a long period and when the day had almost arrived held a Social function at the Central Exchange, confined entirely to operating staff—past and present—in order to mark the occasion, at which Miss Camidge, a contemporary Supervisor, on their behalf handed over to Miss Durandeau a Bank of England Note for £100. She also received many personal gifts.

On the day of her retirement a second function was held when all her Exchange Supervising Officers, the District Manager and the whole of the Traffic Officers were present, and Mr. Gauntlett, in appropriate terms and with expressions of best wishes, on their behalf presented Miss Durandeau with two easy chairs (her own choice). After tea was partaken of the party ended the evening by a visit to the Empire Theatre.

So passed out another pioneer.

LIVERPOOL TELEPHONE NOTES.

WE congratulate Miss A. M. Craig on her promotion to Supervisor, and Miss A. G. McDevitt to Asst. Supervisor, Class I.

We were pleased to see the article on Telegraphs and Telephones in Egypt in the March *Journal* by our old colleague, Mr. F. C. Burstall. He is maintaining the prestige of Liverpool, from whence he emanated, and we congratulate him.

We have just opened our first R.A.X. in the Liverpool District, viz., at Knowsley. The Liverpool district is so well covered by exchanges that a new additional exchange is somewhat exceptional, but we still hope to find a few clear spaces to fill in. Another R.A.X. at Hale is well on the way to completion.

WESTERN TELEPHONE DISTRICT NOTES.

ALTHOUGH geographically nearly off the face of the map, the district is, just now, very much in the centre of activities, both as regards telephone progress and social affairs. It has always occupied an enviable position in respect of percentage increase of new subscribers, and there is every prospect of this continuing for many years to come. Socially the district is not lacking in enthusiasm, although it cannot get together the big gatherings similar to those in the more concentrated districts, as the Western District is of a very scattered nature. On Feb. 26 a social was held at which there was a gathering of 130 members of the staff and their friends. During the evening opportunity was taken to present Captain R. S. Ward, Traffic Superintendent, Class II, who had just retired from the service, having attained the age limit, with two beautiful pictures of Dartmoor and Exmoor scenes, also a fountain pen, and to Mrs. Ward a silver mirror. Captain Ward left the London Telephone Service for the provinces in 1913 and was stationed in Exeter from that time right up to his retirement, the only break being during the war, when he was on active service. Captain Ward will be well remembered in London as Exchange Manager at Kensington Exchange for some years. Mr. T. A. Beck, the District Manager, made the presentation, to which Captain Ward suitably responded. The Surveyor, Mr. A. O. Spafford, O.B.E., was present, as were representatives of the Engineering Staff.

Prizes were given during the evening in connexion with the dance.

On Feb. 10 Mr. Beck inaugurated a series of meetings designed to afford members of the staff an opportunity of becoming acquainted with the whole range of activities of a district office. The meeting on that date was devoted to papers appertaining to the Contract Branch, read by Mr. Hornsby on Development Studies, Mr. Hamer on Canvassing and Mr. Baglow on Contract Office Clerical organisation. The Chair on this occasion was taken by Mr. C. W. Beauchamp, Contract Manager. An appreciative gathering of over 50 members of the staff was present. The second meeting was on Mar. 3, when papers were read dealing with the Accounting Section; by Messrs. Skinner and Green and Miss Paynter—the Chair was taken by Mr. W. S. Kay, Chief Clerk. Nearly 70% of the whole staff were present, which is evidence of the popularity of these meetings. The next meeting is to be devoted to the reading of papers by members of the Traffic Staff.

Having broken the ice in the matter of journalism the Western District hopes to record events regularly in future.

SOUTHAMPTON NOTES.

ON Dec. 14 a large number of her colleagues gathered to say good-bye to Miss A. Rolls, Clerical Officer, who was resigning on account of marriage. Mr. C. G. Weston, Staff Clerk, presided in the absence on business of the District Manager.

Mr. Weston, in a short speech, extended congratulations and best wishes to Miss Rolls, and asked her to accept a silver dressing-table set as a tangible expression of the regard with which she was held by her associates in the telephone service.

In reply, Miss Rolls thanked Mr. Weston and the staff for their gift and kind wishes and recalled the very happy times that she had spent with them.

Her friends throughout the country will hear with much pleasure that Miss C. S. Moore has been promoted to Higher Clerical Officer, and remains at Southampton. We know how she deserves promotion, and she carries with her the congratulations and best wishes of her colleagues.

Our annual Whist Drive and Dance arranged for Jan. 31 was a great success. The District Manager, Mr. O. G. Lee, was there as usual, and shared the pleasure of the evening with his staff.

When presenting the dance and whist drive prizes at the end of the evening our chief made it clear that he did not think much of modern dance tunes. Among the musical numbers of the evening was the old familiar "Daisy." True, it was given a great reception, but some of the dance enthusiasts could not agree when Mr. Lee suggested that "Daisy" would outlive such triumphs as "The Fairy on the Clock."

WE feel sure that those of our readers who, at a recent meeting of the London Telephonists' Society, had the pleasure of hearing Miss Ellt, of Selfridge's, deliver her paper on "My Service" from the viewpoint of a Saleswoman, will welcome the opportunity of reading it here; and those who were not present on this occasion will doubtless welcome it, too, although they will not be able to associate the reading of the paper with the recollection of the delightful personality of the author, which added so much to its rendering.

"MY SERVICE."

The word "Service" has acquired an inferiority complex because we—in our usual careless handling of our language—have misapplied it so often that we have given it a sort of class distinction.

This is all wrong. Service is one of the most generous words we possess—in its broadest sense it represents a quality which, in the rush of the present day, is as pleasing a contact as a friendly handshake. People are too apt to forget that Service is linked inseparably with all our finest traditions—with the Army and the Navy and the merchant ships which have upheld and maintained those traditions, and with the highest awards of merit with which we honour deeds of distinction.

There are degrees of Service but there is no question of one social class being left to demonstrate it more than another. The King of a country, for example, often devotes a greater proportion of his life to real Service than 90% of his subjects.

It is a grand quality, for if we can interpret it in its bigness it can attain more for us as a nation and as individuals than almost anything else.

Thinking of Service, I wonder how much British public service has done to win and build up the confidence which is afforded anything and anyone British in other countries.

I was talking the other day to an Englishman newly returned to London after a long absence abroad. I asked him what struck him most about London after being away so long. "The courtesy," he said, "and pleasant helpfulness of those engaged in public service—policemen, bus-conductors, people in shops, porters, newspaper-men—all these people you just ask something of—perhaps never to see again. It may only be "ships that pass in the night and signal each other in passing"—but there is a pleasant glow in their courtesy no matter how rough, which goes to make up a welcome. You Londoners are so used to it that you don't notice it, but you miss it when you are away and you see it when you come back. I think that is one of the first things which make foreigners' hearts melt towards London as a city."

The Chinese have a saying: "The good heart does a little extra," and it is just in carrying out that maxim that real Service is achieved. Putting into your job more than you are asked to put into it—thinking of the other fellow's point of view—giving him the sort of Service you would look for yourself.

As a Saleswoman, I should like to talk to you about Service as I see it, for I am in contact with it, all and every day, both in the way of receiving it from others, and in endeavouring to distribute it as a department and as an individual saleswoman. Salesmanship in all its branches is, of course, Service. The art of Salesmanship I would sum up briefly as "Believing something and convincing others." This can only be achieved through Service. In the first case by the service of studying your job all the time, and, secondly, by demonstrating that knowledge to the very best of your ability.

Both these require Intelligence, Sound Judgment, Reliability, Perseverance, as their four corner stones. Then you can begin to build. Next comes a knowledge of Human Nature, a liking for people, and an ability to work late and long—for if you are to make a mark in your job you must learn to love it as an engineer loves a bridge he is building. Men say women can't love their work—that they do it either because they have to, or, because they like making money. We know that is not true. A man once pronounced—after long and profitless study of the subject: "You never know what a woman is going to do until she does it—and then you're not quite certain!" They haven't really quite got used to 75% of the women doing jobs, and it will take half a century or more to convince them that we do it for the fun of the game.

But we were talking about salesmanship—and knowing your job. In my particular branch of salesmanship that means knowing your merchandise. The merchandise in this instance is perfumery, toilet preparations, and equipment, cosmetics, in all their thousand sub-divisions—things for which most women have a natural interest which makes study of the subject easy to begin with and all the more fascinating as the first difficult ground is broken. Inevitably, the sale of this type of merchandise draws innumerable questions and requests for advice. This makes a sure knowledge of the merchandise an imperative factor, a knowledge, too, of its properties and how it is made; a knowledge of which cream or lotion would be best for this or that customer and why; which type of perfume would appeal to the taste of this woman and which tint of powder best becomes that. One could talk on the subject for hours, for it is all a concentrated essence of consideration, natural and acquired knowledge, enthusiasm, perseverance and tact.

You learn all this as you learn your job—so don't look down on routine jobs. They're part of your equipment and ultimate ability and, after all, you're learning the way the wheels go round at your employer's expense. Learn as much as you can, as quickly as you can, suiting yourself to your employer all the time. Keep your mind tidy and your stock tidy—be a good housekeeper of both—for if you are not you will never be a good saleswoman. Cultivate judgment—real judgment which does not stop at the prices of things but gets down to fundamentals; *and* which understands values. It spells a trained mind, which applies what the eyes see and links it up with knowledge and demonstration of that knowledge. Remember, clear judgment with medium intelligence will go further than brilliant intelligence without judgment.

Remember, too, that tact and imagination are qualities to be fostered as invaluable assets. They help one to grasp the customer's point of view and to be able to see the buying and the selling side of the counter together in a mirror.

Never force a sale—a customer who buys something against her own judgment is a bad advertiser for your house. A woman who makes one bad purchaser will, subconsciously almost, condemn the whole of your organisation on that one count.

One of the most important things in salesmanship is manner and manners, and foremost in these—a smile. Centuries ago a wise old man from the East said, "A man who has not a smiling face should not open a shop." We know he was right. That smile isn't always easy but it is infectious. The grumpiest, most difficult customer cannot keep up that attitude easily if the person who is serving her is consistently pleasant.

It is imperative to study customers as individuals—if they are of the decisive type, never offer advice—they know what they want, and it is your job to see that they get it quickly and with good Service. If you have anything to say or anything special to offer as likely to be of interest, do so and comment on its advantages. With such customers, showing knowledge of your merchandise is your strong suit. On the other hand, there is the customer who seeks advice and then doesn't take it. She is a difficult proposition requiring very careful handling. It never does to show this type of customer too many kinds of merchandise. It is like a person with no bump of locality being set down at a cross-roads—the longer they look in each direction the more bewildered they become. I find that, perhaps, three items at once are enough and then, if these do not please, the first should be put away and replaced by one other. In such cases it never does to bestrew the counter with merchandise. The very fact that you are taking some away will lead towards a decision.

That brings me to another point: the counter should be cleared after each sale is completed. We all know how uninviting it is to come up to an untidy counter—it is as displeasing as going into a restaurant and finding your table has not been cleared of the glasses and ash-trays of your predecessors. So much depends on display and handling. I have seen a good saleswoman handle the cheapest merchandise in so delightful a manner that the little woman with not a large amount to spend has gone her ways hugging her purchase as if it were above price. Think of the pleasure that saleswoman has given—and of the advertisement for the house. We all love to sell beautiful merchandise but, equally, if we approach it in the right spirit, we can get as much fun out of selling a half-crown article as a £10 one. After all, a simple thing well sold is much more credit to the saleswoman—for beautiful things sell themselves. Salesmanship is fun—and the more aspects you learn of it the better you realise it. Salesmanship—beginning with exchange and barter—is as old as the world and just as fascinating. So many opportunities stretch before the good saleswoman—the usual steps are section head, then under-buyer, and from that, if she has vision and concentration, buyer, with all the responsibilities attached to that position. A position which lets her have her head, and which brings in its train probably foreign travel—an education in itself—giving a better understanding of people and a keener perception of points of view.

(To be concluded.)

Our Portrait Gallery.

No. 7.—MISS B. REDMOND.

It is typical of Miss Redmond that, when interviewed for details of her career and any items of special interest, she requested that there should be no flattery. An assurance on this point was easily given as Miss Redmond's outstanding characteristics are naturalness and sincerity.

Miss Redmond was born in Ireland but came to England to complete her education. She joined the Telephone Service in 1902 at Central and was promoted to take charge of Richmond Exchange in 1905. Subsequent transfers to Kingston and Putney—a period spent in interviewing candidates for admission to the Service—further moves to Streatham, Gerrard, Western, and finally to her present position as Chief Supervisor of the Holborn Automatic Exchange, have given her a very varied and useful experience.

Miss Redmond's hobbies are the study of architecture and history, and she confesses to a weakness for Continental travel.

Angus Macdonald.

(New Version.)

Oh ! blank were our switchboards and desolate when
The new automatics marched off with our men !
Oh, sad were our hearts as we bade them good-bye,
And they started to dial (maybe to die !).

Oh, stern automatics ! your rule is severe—
And helpless your victims when trouble is near.
We dial with care, tho' we feel quite at sea,
And often get 4 when we "clock" 2 or 3 !

For manual mercies humbly we pray—
And grieve for the girls who have now passed away.
If only our anguish of mind they could see,
They'd gloat o'er the blighters who "grousèd" at C.B. !

But stay !—there's a ring, a ring on my line,
And a face in the ether quite clear
As I answer the call, television is here !
The face of my broker confronts me afar,
And I know by his phiz that my stock's below par !

C. A. S.

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.1.

MANCHESTER NOTES.

IT was not surprising that the opening of "Telephone House" and the resulting transfer of the District Manager's Offices to a more central position in the City should give a considerable stimulus to the awakening interest in social events which was noticeable last year, but the results have exceeded all expectations. The approach of the automatic transfer has made the winter one of unparalleled activity during working hours and it is remarkable, and all the more creditable to the organisers of the various events that the social season should also have been the busiest and most successful on record.

The winter's programme reached an appropriate climax during February, when the Social Committee presented four performances of a complete evening's entertainment, the first which has ever been given by Manchester telephone staffs. The first show was timed to commence at 7 p.m., but interest, or maybe curiosity, had reached such a pitch that large numbers were arriving at 6 o'clock, and at 6.30 all seats were filled. By 7 o'clock the audience was in a state of eager anticipation, almost of tension.

A very fine overture by a trio of telephonists from the City Exchange —Miss A. Gillett (Piano), Miss M. Sheeran (Cello), Miss H. Martin (Violin)— opened the proceedings. The audience was soothed and sat back to enjoy itself. The curtain then rose (unlike most amateur curtains it made its first journey without a hitch) and the first item of the programme was presented. This was a one-act play, "A Mere Man" (by Herbert Swears), acted by eight City telephonists—Miss H. Brockbank, Miss M. Wilson, Miss M. Skermer, Miss I. McKean, Miss G. Totten, Miss N. James, Miss H. Fernhead and Miss V. Logue.

As an amateur and not impartial reporter I will not attempt to describe the play. Here are the views of two professional gentlemen upon whose potted criticisms I would not dare to improve.

Daily Mail.—"A Mere Man" ends quite definitely with a "Number engaged" for the characters, members of the Emancipated Ladies' Club, all accept proposals of marriage, and all from the same man.

The President of the Club then calls a meeting and says, in effect: "Sorry you have been troubled, I'll marry the man myself."

Daily Dispatch.—All the girls, fresh from the switchboard, acted admirably in making the farce highly amusing, but the gem of the piece was Miss H. Brockbank, who produced "A Mere Man" as well as acted the principal part.

A SCENE FROM "A MERE MAN." REPRODUCED BY KIND PERMISSION OF THE "DAILY NEWS."

Following the play Miss A. Talbot, of the District Manager's Office, gave a very charming rendering of two songs from her repertoire. The audience was by this time quite warmed up, and as a welcome and appropriate surprise ices were served, while further musical selections were played by the trio.

After the interval came the big surprise. The Central telephonists presented "Sinbad the Sailor," a most ambitious four-act Pantomime, which lasted for two hours and certainly held the audience spellbound. The principal parts were played by Miss C. Jenkins, Miss E. Lobley, Miss G. Eadsforth, Miss D. Ferguson, Miss E. Sweeney, Miss R. Mayers, Miss M. Crawford and Miss F. Braddock. They were supported by a hard-working chorus of Sailors, Hawaian Girls and Fairies.

Again I will make way for impartial and expert opinion.

Daily Dispatch.—I saw them dance the tricky stuff as well as reels and hornpipes. I heard them sing like trained soubrettes. They acted and burlesqued in a manner worthy of the Hippodrome—"Sinbad" was a pantomime without a wrong number—Mrs. Sinbad (Miss C. Jenkins) was sparkling. The staging was a work of art.

SOME OF THE CHORUS OF "SINBAD." REPRODUCED BY KIND PERMISSION OF THE "DAILY EXPRESS."

The high standard of the whole production owed a great deal to the excellence of the scenery and stage lighting effects. A fortnight before the production it was discovered that a 16-year-old Boy Messenger, A. Oldham, had a remarkable talent as a scenic artist. He designed and painted a palatial marble stage front, and his "Desert Island" scene, which formed the background of the third and fourth acts of the pantomime, was a beautiful piece of work. Three enthusiastic Traffic Officers built the stage, made the footlights, spotlights and curtain, and manipulated them during the performances. They achieved some very ambitious lighting and sound effects and it was a great testimony to their work that all the numerous effects occurred at the appropriate and precise psychological moments.

The three subsequent productions were equally successful, each one being more enthusiastically received. Altogether 1,300 tickets were sold.

The whole production was a revelation of remarkable and unsuspected talent. It is difficult to imagine how the high standard which has been set at the first attempt can be surpassed, but we hope that future years will see a succession of equally brilliant shows.

C.T.O. NOTES.

Promotions.—Mr. W. R. G. James, Overseer to Asst. superintendent; Mr. G. S. Richards, Telegraphist to Overseer; Mr. G. R. Hoghan, Telegraphist to Overseer; Miss E. L. Wilson, Asst. Supervisor to Supervisor.

Retirements.—Messrs. H. M. Robinson, Asst. Superintendent, F. J. Miller, Overseer, W. F. Lait and W. D. B. Samuel, Telegraphists, Misses E. A. Bolton and M. F. Phillips, Supervisors, E. A. Hibberd, Asst. Supervisor, and M. M. Goldspink and A. E. Wingfield, Telegraphists.

Obituary.—The death of Mr. Joseph Downing, in the 80th year of age, is the breaking of another link with the far-off days of the old Electric and International Telegraph Co. To Mrs. Downing and family we tender our sincere condolence.

We regret to have to record the death of Mr. E. T. Chapman, a former Asst. Superintendent, and also the Rev. J. L. Howie, who, after being superannuated owing to ill-health, took office in the Catholic Apostolic Church, Dundee.

Special Section Dinner and Reunion.—A very happy gathering also well attended by retired officers assembled in the Queen's Room at the London Tavern and enjoyed a splendid dinner, followed by a musical programme.

"F" Division Reunion.—The Old Bell Restaurant was the happy rendezvous of the "F" Division dinner, which was well attended and thoroughly enjoyed.

LEEDS DISTRICT NOTES.

RAMBLERS among the beautiful Yorkshire Dales will find in the quaint old-world village of Airton a modern telephone exchange in a setting which is entirely in keeping with its surroundings.

As the photograph shows, the call office sign and the pole with its leading-in cable are in peculiar contrast to the date over the doorway, viz., 1666. To the right of the doorway is a strangely shaped fossil found in the neighbourhood many years ago. The fossil stands on what was in olden days a mounting block, complete with step, for mounting and dismounting from horseback.

A pleasant function took place in Leeds on Feb. 22, when the local branch of the U.P.W. held their Annual Dinner. Invitations were extended to the Postmaster-Surveyor, the Asst. Postmaster, the District Manager and other departmental heads. Under the influence of a good dinner, eloquent oratory and the contribution of a first-class concert party, a most enjoyable evening was spent.

The establishment of rural automatic exchanges is so recent a feature of telephone activity that it was not surprising to find a large attendance, including many Traffic Officers, at the meeting of the local branch of the Institution of P.O. Electrical Engineers, to hear Mr. H. E. Francis, of the N.E. Engineering District, discourse on that subject. Mr. Francis dealt with rural automatic exchanges in the complete and lucid manner expected of one who has specialised in their installation throughout the district, and illustrated his points with several interesting lantern slides. The discussion which followed was indicative of the keen interest which both the subject and the speaker had aroused, and was specially noteworthy for contributions from Mr. T. B. Johnson (late Superintending Engineer) and Mr. G. S. Wallace (late Asst. S.E.).

We cull the following, with appreciation, from a recent issue of the *Yorkshire Evening Post*:—

"Long-distance telephony has been improved vastly in recent years, but so gradually that we are apt to lack appreciation. Nowadays one "gets through" to, say, London, Bristol or Manchester in quarter the time it used to take, and it is rare the line is not as good as on a local call.

"There are odd times, however, even now, when the telephone can be most exasperating, as an *Evening Post* reporter found to-day, and I just refer to the incident to pay tribute to the resource and initiative of an operator at the exchange.

"The call was to a well-known public man in the East Riding, who, by previous arrangement, had ready a rather important statement for publication in the *Evening Post*. Apparently he could hear all right, but his voice, as heard vaguely over the 'phone, was not of this world. 'Well, that's hopeless, isn't it?' said the operator, adding 'Wait on and I'll see what I can do.' Trying round about circuits was of no avail, and, finally, the operator went outside her official duties by offering to try and take down the statement herself, but unfortunately this proved impossible. It was the transmitter at the other end that was at fault.

"Anyhow, here's tribute to that 'Hello' girl for her efforts."

Our most interesting "Personal Call" to date was one completed from Ilkley to a passenger on board the S.S. *Viceroy of India*, which was berthed at Marseilles.

Sports Item.—Leeds Post Office Football Club.—In the second round of the Lancs and Yorks Football Cup, Leeds entertained Doncaster at Roundhay. After 29 minutes' play, when Leeds were two goals up and showing superiority in all departments, an unusual incident occurred. The ball burst on railings, and through an unfortunate oversight another ball was not available. The referee had no alternative to suspending play, and the match will be replayed on a date which has not yet been fixed.

LONDON TELEPHONE SERVICE NOTES.

Contract Branch Notes.—The business done by the Contract Branch during the month of February resulted in a net gain of 4,378 stations, as compared with 5,013 stations in the corresponding month last year.

The decrease in net gain is largely due to an excess of ceasements this year, as the gross new business is practically the same this year as last year.

It is evident that conditions in the City have not yet recovered from the series of shocks recently experienced, and this is apparent from an examination of the results to hand.

The number of circuits provided this year in connexion with the British Industries Fair was 312. This figure is not so high as last year, but the number of Exhibitors was nearly 300 below the figure for 1929 owing to restricted accommodation during building alterations. The percentage of lines provided to Exhibitors was higher this year than last however.

Further progress is reported in the provision of kiosks. The number in use on Mar. 1, 1930, was 1,663, and there were Advice Notes outstanding for a further 140.

Obituary.—It is with regret that we record the death of Mr. G. C. Wood, Contract Officer, formerly attached to the City Contract Office, at the early age of 27. Mr. Wood had been in the Service only a short time. The funeral took place at Lewisham Cemetery on Mar. 3, and the office was represented by Mr. A. E. Culpin.

London Telephone Service Sports Association.—The Annual General Meeting will be held at Cornwall House at 5.30 p.m. on Monday, April 28. It is anticipated that a representative of the Civil Service Sports Council will attend the meeting.

Football Section.—Considerable progress has been made in the last few weeks concerning the destination of the League Championship. The match against the Ministry of Health "C" resulted in an overwhelming victory by 18 goals to 1, this materially improved our goal average, which was not so good as that of the team pressing us closely in the league.

The match with the Land Registry on Mar. 1 was, of course, the tit-bit of the season. Each club had forfeited only 3 points during the season, and a win for either team practically assured the destination of the championship.

The result, a 3-1 victory for L.T.S., was welcome, but the game was unfortunately marred by a sad accident to the Land Registry's goalkeeper, who was taken to hospital early in the game with a fractured leg. This handicap had no doubt much to do with the result of the game, and it was very distressing to both sets of players.

The game against Board of Education on Mar. 8 ended in a draw of 1 goal each.

The result was unexpected, and on the run of the play L.T.S. should have won comfortably.

Webdale and Casey, two of our players, played for the Civil Service League against the Postal League in a Charity match, and acquitted themselves creditably.

Bowls Section.—Members are reminded that the season opens at Chiswick on April 28, when a match between two teams selected by the Captain and Vice-Captain will be played. This opening game will be followed by an important league match against "Headquarters" on May 1. Headquarters are one of the promoted teams from Division "B," and they are able to turn out a very strong team. It is important, therefore, that we should get in as much practice as possible before May 1, as points won at the beginning of the season will be invaluable in our struggle to retain possession of the Bunbury Cup.

Ladies' Lawn Tennis Section.—"*Agnes Cox*" *Cup.*—Entries close on Saturday, April 5. The final will be played at Chiswick (C.S.S.C. Ground) on Saturday, Sept. 20.

"*Pink*" *Cup Singles.*—Open to all lady members of the L.T.S. Clubs. Entries close on Saturday, April 5. The dates of competitions will be announced as soon as the number of entries is known.

All entries and communications for both competitions should be forwarded to Miss Osler, Holborn Exchange.

London Telephonists' Society.—In the past the reading of the Prize Competition papers has always proved a popular item in the programme of the London Telephonists' Society, and the large and enthusiastic audience which assembled on Friday, Mar. 7, on the occasion of the Fifth Meeting of the 1929-30 session, showed that the item in question has lost none of its old attraction.

The proceedings opened with a novelty—an Elocution Competition—the test piece being Charles Kingsley's poem "The River," chosen on account of its known technical difficulties. By a series of eliminating trials the contestants had been reduced to six, Miss E. N. Braid (Richmond Exchange), Miss C. Francis (London Wall Exchange), Miss P. W. Gustine (Mill Hill Exchange), Miss M. C. Hawkridge (Gerrard Exchange), Miss G. S. Short (Flaxman Exchange) and Miss V. F.Wood (Buckhurst Exchange); these ladies competing in the presence of the judges and of the audience for the Society's Elocution Prize. The high standard maintained by all the competitors set the judges no light task. Mrs. Corner, in announcing Miss Francis as the winner, paid handsome tributes to the abilities of all the finalists—tributes which were heartily endorsed by the audience.

The subject of the Essay Competition, "A Day in My Official Life," provided excellent papers by Miss B. M. McDonald (Telephonists' Class), Miss D. Bott and Miss M. J. Clement (Supervisors' Class) and Mr. W. H. Pratt (other grades). A strong vein of humour ran through all the papers, to the manifest approval of the audience, which appreciated to the full the many sly "hits" at this or that mirth-provoking feature of our daily work.

The prizes were distributed by the Controller, who, in a happily -phrased and humorous speech, congratulated those present on their employment in a work which, on the testimony of the papers, seemed to provide not only interest but a never-ending source of joyous entertainment!

A hearty vote of thanks to the Controller and to Mrs. Corner—on the motion of Mr. Dive—brought to an end (except for the Telephone Play) Mr. Mantle's year of office, and a session which by common consent has been one of the most successful in the history of the Society.

As announced by Mr. Mantle, next year's President will be Mr. F. B. Nichols, of the Service Division.

Personalia.

Promotions to Assistant Supervisor, Class II.

Miss F. I Smith, of New Cross.	Miss W. G. Willis, of Hampstead.
„ A. Pattenden, of Hop.	„ E. Turnage, of Museum.
„ A. M. Jackson, of Langham.	„ D. S. Borrett, of Gerrard.
„ M. E. McCall, of Clerkenwell.	„ E. A. Hall, of Gerrard.
„ N. W. Crabb, of Chiswick.	„ A. V. Dyer, of London Wall.
„ V. B. Fensham, of Speedwell.	„ G. I Harber, of Victoria.

Resignations on Account of Marriage.

Assistant Supervisors, Class II.

Miss E. L. Fullelove, of Gerrard.

Telephonists.

Miss F. B. L. Cole, of Clerkenwell.	Miss A. M. Simpson, of Sidcup.
„ K. Cavender, of Erith.	„ Y. M. Brasier, of Toll "A."
„ J Matthews, of Greenwich.	„ D. M. Crick, of Victoria.
„ M. L. Kent, of Hop.	„ G. Cornford, of Trunks.
„ M. Perridge, of Kingston.	„ I. F. Day, of Temple Bar.
„ E. F. Mullinger, of Western.	„ M. C. Fisher, of Toll "B."
„ W. Walters, of New Cross.	„ E. H. Weller, of National.

NORTH-WESTERN DISTRICT.

RETIREMENT OF MISS E. SLATER.

A VERY enjoyable social evening was held at the Savoy Cafe, Burnley, on Jan. 31, to mark the retirement of Miss E. Slater, Supervisor, Burnley Exchange.

A company of 72 assembled, comprising telephonists who have served under Miss Slater, and representatives of the Postal, Engineering and Traffic Departments.

An hour's whist was followed by a conversazione and a presentation to Miss Slater. Mr. R. Morgan, Traffic Superintendent, was in the chair, supported by Mr. T. A. Cooley, the Head Postmaster, Burnley.

Mr. Morgan, in the course of an able performance of the duties of Chairman, voiced the feelings of the company in his expressions of appreciation of Miss Slater's personality and service.

When called upon to make the presentation of a portable gramophone, records, and record case, Mr. Cooley, in a humorous and appreciative speech, compared the gift with an automatic telephone, as the nearest approach thereto which could be obtained in Burnley. He also expressed a devout hope that the records presented to her would prove more enjoyable than the records with which she had dealt in the past.

Despite his brief period of service in Burnley of six months, he had found Miss Slater an able and reliable supervisor, and endorsed the wishes already expressed for a long and comfortable retirement. Miss Slater responded in happy vein, and, expressing thanks for the gifts and kind wishes tendered to her, she spoke of the pleasure she had felt in the work and associations of the telephone service. Her dealings with the staffs whom she had had to control had been the source of much joy, and, carrying with her into retirement sentiments of affection from and towards the Burnley staff she hoped to have the pleasure of meeting them again.

Miss Slater entered the service of the National Telephone Company in 1896 at the old Accrington Exchange. She was then living on the exchange premises. Three operators were then employed there, two of whom were transferred elsewhere. On the day following their transfer relief failed to appear and the remaining one fell sick. Miss Slater, though not employed by the National Telephone Company, "took over," in consequence of which she was offered, and accepted, employment. Following severe illness she was obliged to use a bath chair continually for 12 years, and the company, retaining her services, allowed her to be carried into the switchroom and to be transferred from the bath chair to the switchboard. Fortunately, a remarkable operation resulted in almost complete restoration. During her service at Accrington she served in three exchanges there. On conversion to automatic working she was appointed Assistant Supervisor, Class II, and after the transfer of the manual work to Blackburn she was transferred to Burnley. Her period of 34 years' service has thus covered the changes from the "primitive" types of switchboard equipment to the most modern.

COMMUNICATION WITH OTHER PLANETS.

IT was either Sir W. H. Preece or Sir Oliver Lodge who, more than 30 years ago, envisaged communication between this earth and another planet.

Within the last few years attempts have been made to get into touch with Mars. In passing, it may be of interest to note that an old T.S.-ite was a most prominent figure on each occasion; although, of course, he might just as well have come from a class III office. A specially constructed set of 18 valves was used, which produced a repetition of the letter "M" in Morse.

The writer is intensely interested in scientific progress, and would therefore hesitate to criticise, especially if the Martians (assuming that they do exist) can render any assistance in solving the world's most urgent problems.

Although it is highly improbable that the millenium has arrived, we are given to understand that the civilisation of this hypothetical folk possibly dates back a million years or more. If it is actually so it is more than probable that telegraphy, telephony, telephotography and television, &c., as we know the systems, have been consigned to the Martian equivalent of Farringdon Road junk market many many decades ago and their functioning entirely forgotten—did they ever function at all!

On this earth variety is the spice of life, and no two things are exactly alike; so that to presume that the inhabitants of another planet use, or have used, identical instruments of communication—let alone a similar Morse alphabet—is surely stretching the imagination too far.

Again, why the Martians should transmit the letter "M" passes my comprehension. Their planet might, to them, be known as XYZ for all we are aware. Their intelligence is presumed to be of a very high order, and one does not suppose that they are prepared to name the sphere on which they live to suit the purpose of such inferior beings as ourselves. I do not mean nations or individuals. It must be remembered that we are referring to two planets, each as a whole.

It might be said that, by reason of their more advanced knowledge, the Martians are possibly aware of our efforts to "raise" them. In fact, the writer offers the supposition that they might even be watching our everyday movements, and discussing this world's latest news. Should that actually be a fact, then the people of the red planet know us better than we know ourselves.

Our most up-to-date apparatus, however, would probably be as "old as Adam" compared with that in use on Mars, or, what is more likely, never used at all. Our most modern ideas would be too crude for them to adopt. In any case, if they had a knowledge of the Morse code, surely a great opportunity of making our acquaintance, by limiting their signals to a single letter, was lost.

But perhaps the acquaintance is not desired. Who knows?

There is, however, an instrument which, even though not in use on Mars, may pave the way to opening up enormous possibilities.

It is a phantasy, but in conjunction with telescopes, and valves which project rays at the same speed as those of light (this latter is very near accomplishment), the noctovisor should provide a basis upon which confirmation or refutation of scientific conjecture can be decided.

W. T. L. (C.T.O.).

RETIREMENT OF MR. H. G. McFARLANE, DISTRICT MANAGER, MIDDLESBROUGH.

MEMBERS of all sections assembled at the Middlesbrough District Telephone Office on Feb. 28 to bid farewell to Mr. H. G. McFarlane, the District Manager, who, owing to his reaching the age limit, retired from the Service on Mar. 2, and to present to him a mahogany telescopic dining table with table runner.

The chair was taken by Mr. R. C. Rae, Contract Manager, who spoke in high esteem of Mr. McFarlane and described him as a chief who possessed a "happy knack" of obtaining the highest co-operation amongst all ranks under his control, and whose work reflected in the steady and satisfactory progress which had been made in the development of the Middlesbrough Telephone District.

The gift was presented, on behalf of all Mr. McFarlane's official associates in the Middlesbrough Telephone District, by Mr. A. Burdett, Chief Clerk.

Tributes to Mr. McFarlane's services were paid by Mr. W. J. Cabeldu, the Head Postmaster of Middlesbrough, and Mr. S. B. Townsend, who represented Mr. J. I. Smith, the Sectional Engineer, owing to the latter's unfortunate absence on sick leave. A letter, in high appreciation of Mr. McFarlane, from the Traffic Superintendent, Mr. Bateman (who at the time was absent on leave preparatory to returning to his former district—the Western) was read by Mr. Rae. Members of other sections also extended to Mr. McFarlane their good wishes for his continued enjoyment of good health and prosperity during his well-earned rest.

Mr. McFarlane, in responding, thanked the staff for their kind expressions of esteem, and after giving an interesting account of his experiences in telephone work, which began with the National Telephone Company some 46 years ago, paid tributes to the loyalty he had received from his own staff and to the hearty co-operation from all other sections of the service.

The District Managers of Great Britain and Northern Ireland have very kindly presented Mr. McFarlane with a cheque which has gone towards the purchase of a wireless set.

Mr. McFarlane will shortly leave Middlesbrough and take up residence in Aberdeen.

LONDON TELEPHONE SERVICE: POST OFFICE AMBULANCE CENTRE.

AN interesting event took place in the Refreshment Club at Cornwall House on Wednesday evening, Feb. 26. It was the occasion of the distribution of some of the awards gained by the London Telephone Service Branch of the Post Office Ambulance Centre, when some 50 certificates, vouchers, medallions and labels were presented to the various successful members, together with eight gold medals won by the London Telephone Service men's and women's teams which competed in the annual competitions.

The presentation was made by Mr. Viant, the Assistant Postmaster-General, and the Controller, Mr. Napier, was in the Chair, supported by the heads of the various departments. In his introductory remarks the Controller read a letter from the Postmaster-General, who, while congratulating the London Telephone Service on its successes, regretted his inability to be present owing to the pressure of Parliamentary duties. The Controller expressed his appreciation of the work done, and mentioned the value of quick and ready assistance in cases of need.

Mr. Viant, in replying to the vote of thanks given by Mr. Pink, Deputy Controller, and seconded by Mr. Dive, Assistant Controller, Traffic Branch, stated the pleasure he had in making the presentations, but warned the London Telephone Service that, having so distinguished itself, it will have to make greater efforts to retain its position, because sustained defence requires more effort than attack.

The meeting was very representative of the various branches and about 250 members of the staff and friends were present.

(Signed) S. J. SMITH,
Hon. Secretary, L.T.S. Branch, P.O. Ambulance Centre.

A BRIEF CHRONOLOGY FOR STUDENTS OF TELEGRAPHS, TELEPHONES AND POSTS.

BY HARRY G. SELLARS.

(*Continued from page* 104.)

1892, Sept. 1... Coast Communication System and connexions with Lighthouses and Lightships (by telephone or telegraph) inaugurated.

Free delivery of telegrams for outlying parts of large provincial towns granted.

Various telephone companies in the United Kingdom amalgamated.

F. C. Allsop published an exhaustive treatise on telephonic matters.

1892, Nov. 3 ... Strowger's Automatic telephone system tried at Laporte, Indiana.

British Treasury agreed to free re-direction of *letters* only.

Stamped letter cards introduced.

1892, Dec. 1 ... Limits of compensation for registered letters and parcels raised to £50. Tariff ranged from 2*d*. for £5 to 11*d*. for £50.

Ernst Werner von Siemens died.

Free telegram facilities previously enjoyed by railway companies substituted by the right to send a fixed number of telegrams containing a fixed number of words.

1893, Jan. ... Hughes duplex telegraph installed between London and Paris and Rotterdam.

Syndicate formed by H. S. J. Booth to work patents for the telephonic transmission of theatrical and other performances.

Telephones in Austria taken over by the State.

L. B. Marks introduced enclosed electric arc lamps.

J. J. O'Connell suggested electric lamps for signalling purposes in connexion with telephone systems.

1893, April 5... Glasgow-Belfast telephone communication opened for public use. Submarine cable running from Port Patrick to Donaghadee.

1893, July 4 ... S. P. Thompson patented a method of sectional and continuous "loading" for telegraph and telephone cables.

1893, July 24... Special delivery of Inland packets arriving by a particular mail arranged.

McCaskey patented a means of adopting a starting impulse in telegraph multiplex distributors.

Henniker Heaton quoted the capital of Submarine Telegraph Companies as £40,000,000; miles of cable, 120,000; revenue, including subsidies, £3,204,060; reserves and sinking funds, £3,610,000; and dividends ranging from one to $14\frac{3}{4}$%.

Eastern and South African Company subsidised (£28,000 per annum for 20 years) by the British Government for a cable from Zanzibar to Mauritius via Seychelles.

1893, Dec. ... Annual limit of deposit in Post Office Savings Bank raised to £50. Deposits could be withdrawn by telegraph on payment of appropriate charges.

J. S. Stone invented a common-battery system for telephone working.

Nikola Tesla proposed to transmit electrical oscillations to any distance through space.

1894, Jan. 1 ... Heinrich Rudolf Hertz died at Bonn.

1894, Jan. 2 ... Romaine Callender, of Canada, patented an automatic telephone system.

1894, Feb. ... Insured parcels exchanged with certain European countries for the first time. Tariff ranging from 5*d*. for £12 up to 1*s*. 3*d*. for £50.

J. and C. J. Erikson developed an automatic telephone system which was installed at La Porte, Indiana. Three lines were necessary for each subscriber.

Sir Oliver Lodge demonstrated that the conductivity of iron filings in a glass tube increased when acted upon by electric radiation. He called the tube he devised a "coherer."

(Muirhead, Ducretet, Popoff, Castelli, Tommasina, Branly, Righi, Blake, and S. R. Bottone also designed wireless "coherers.")

Eric Rathenau, Rubens, and Strecker also made investigations in wireless phenomena.

Syndicate formed in 1893 for transmission of theatrical performances became the Electrophone Limited.

1894, July 12 Electric Units Bill, legalising electric standards, passed U.S.A. Congress.

Scale of insurance fixed for foreign parcels in February was extended to British Colonies.

1894, Aug. ... Postmaster-General (Arnold Morley) submitted to the House of Commons a draft agreement for the purchase of the telephone trunk lines.

"Morley" revision of pay, &c., in the Post Office took place.

1894, Sept. 8... Hermann von Helmholtz died.

Intercolonial Postal Conference met at Ottawa and Canadian Government invited tenders for construction of Canada-Australia cable.

Atlantic cable laid for Commercial Cable Company.

Terrin, of France, devised a telegraph keyboard perforator, with a differential feed, in which six white and five black keys were arranged in piano style. It worked well in connexion with the Marseilles-Algiers cables.

Abbé L. Michel found that he could transmit signals for short distances by using various strata of the earth as the outward and return paths of the current.

Number of Inland Telegraph Money Orders issued, 78,000, value £277,000.

1895, Jan. 1 ... Treasury sanctioned the free re-direction of all postal packets except parcels. Official re-direction undertaken for a period of twelve months.

Postal Union limit of compensation for foreign and colonial parcels adopted, viz., parcels up to 7 lbs., 12*s*.; over 7 and under 11 lbs., 20*s*.

Marconi passed wireless signals from one room to another at Pontecchio, near Bologna.

Murray automatic typeprinting telegraph invented.

Mercadier invented a Harmonic multiplex system of telegraphy.

1895, Mar. 1 ... Draft Telephone Agreement referred to a Select Committee to consider whether the provisions made for local services were adequate.

1895, Mar. 19 First meeting of Telephone Select Committee held, Arnold Morley as Chairman.

Mark A. Edison, of Chicago, invented the "knife-edge" relay for telephone signalling lamps.

Popoff, in St. Petersburg, experimented in wireless communication.

1895, May 8 ... Walking distance for messenger in Express Delivery Service extended from 2 to 3 miles.

1895, June 12 Trunk telephone lines erected by the Post Office opened by the Lord Mayor of London in the Cable Room, General Post Office, London. He spoke with municipal representatives in Glasgow, Edinburgh, Belfast, and Dublin.

1895, June 19 Apostoloff, of Russia, patented an automatic telephone system.

1895, June 25 Telephone Select Committee reported the evidence they had taken and recommended that a committee be appointed in the next session to continue the work.

1895, July 16 Post Office trunk telephone system opened to the public.

1895, Aug. 1 ... Compensation up to £2 payable on any article sent by express letter service. Number of registered letters about 12,000,000.

1895, Aug. 20 Express Delivery Service accepted living animals and liquids for "throughout" delivery.

Wireless communication established between Crookhaven Post Office and Fastnet Lighthouse by a system introduced by Willoughby Smith.

Wireless telegraphy used between island of Mull and the mainland.

Profits on Post Office Savings Bank since commencement totalled £1,598,767.

78,839,600 telegrams dealt with in the United Kingdom.

60,000,000 parcels passed through the Post Office.

Siemens and Halske introduced a governor for the Hughes with flat leaf spring suspensions on which are fixed two balls which can be raised or lowered as desired.

1896, Jan. 1 ... Trunk telephone call tariff ranged from 3*d.* for 25 miles to 1*s.* for 100 miles.

Fernand Bucrelet demonstrated röntgen rays to French Academy of Sciences.

1896, Feb. ... New Post Office life insurance tables came into operation with reduced annual rates.

1896, Mar. 25 Detailed agreement between Postmaster-General and National Telephone Company re sale of trunk telephone lines signed. About 29,000 miles of wire taken over.

1896, April 4 ... 33 telephone trunk lines transferred from the National Telephone Company to the Post Office.

Telephone cables containing over 150 pairs of wires produced.

1896, June ... Common battery system brought into use at Worcester, Massachusetts, telephone exchange.

1896, June 2 ... Guglielmo Marconi took out a patent for wireless telegraphy and transmitted signals for a distance of nearly two miles.

Rutherford and Rev. F. Jervis-Smith constructed detectors for wireless communication.

Joseph Chamberlain appointed Royal Commission (Chairman, Lord Selborne) to discuss Canada-Australia Cable. Reported in favour of All-British route to Australia via the Pacific. Admiralty reported against it.

1896, Aug. 14 Government authorised to raise further £300,000 for trunk telephone wire purposes.

Post Office permitted Marconi to experiment on Salisbury Plain and in other places with wireless apparatus.

F. G. Creed arrived in Scotland from South America with his newly invented typewriter keyboard perforator.

Gibson invented a differential stop device in connexion with the paper feed of keyboard tape perforators.

Lebedew devised a method of controlling the speed of a motor in which acceleration of the motor puts in resistance.

Direct West India Cable Company obtained a subsidy (£9,000 per annum for 20 years) from the British Government for a cable between Bermuda and Jamaica.

S. A. Polleck applied the duplex balance to the Delany multiplex using the reed driving arrangement suggested by Law in 1888.

International Telegraph Conference in Budapest. Fifteen letters adopted as the limit for one word in plain language.

Compagnie International des Wagons lits proposed a mail service via Siberia to Vladivostock. Not supported by British Government.

Number of letters passing through the Post Office, 1,796,000,000.

Value of property found in letters opened in the Returned Letter Office amounted to £580,000.

9,000,000 Money Orders issued.

1897, Jan. 5 ... Report of the Imperial Pacific Cable Committee signed. State ownership was recommended and a route proposed.

1897, Feb. 1 ... Money Order rates changed to 3*d.* for £3 and 4*d.* for £10. Rates for Colonial and Foreign Money Orders reduced to a scale ranging from 6*d.* for £2 to 1*s.* 6*d.* for £10.

Poundage for telegraph Money Orders reduced to 4*d.* for £3 and 6*d.* for £10.

Compulsory registration of letters found to contain coin, jewellery, or watches reduced to fourpence. Packets found open, or opened at the Returned Letter Office, containing articles of value, other than those quoted above, compulsorily registered at a fee of 2*d.*

1897, Feb. 6 ... Transfer of telephone trunk lines from the National Telephone Company to the Post Office completed.

Hughes duplex telegraph installed on London wires to Berlin and Hamburg.

Walther Nernst studied the origin of electric currents, and invented an electric lamp.

In response to public complaints Money Order rates reduced to a scale from 2*d.* for £1 to 4*d.* for £10.

1897, June 1 ... Postage rates on parcels reduced. Tariff ranging from 3*d.* for 1 lb. to 1*s.* for 11 lb.

(To be continued.)

THE

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CONTENTS.

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TELEGRAPH AND TELEPHONE MEN AND WOMEN.

LXXV.

MR. T. A. BATES.

MR. BATES was born in a Lancashire vicarage in Dec., 1869. An old Uppinghamian, he subsequently passed through the shops of S.Z. de Ferranti in Charterhouse Square, London, and thence to the staff of the London Electric Supply Corporation.

In November, 1891, he accepted an offer from the Northern District of the late N. T. Co. and after a few months became Assistant Local Manager at South Shields. A year or two later he was appointed Local Manager at Middlesbrough, and after a brief stay there was selected for pioneer work to build up a telephone service where hitherto none had existed, viz., the Channel Islands. The Isle of Wight, the development of which had more than once been attempted without success, was his next post.

In February, 1901, he was appointed District Manager at Luton, but was no sooner married and house set up than a further call came, and the next four years were spent fighting, at Portsmouth, the keenest Municipal competition in the country. Then followed periods of charge at Chester, Scotland S.W., and Bristol, prior to his present appointment to the Leeds District in November, 1921, where he has spent some of the happiest years of a telephone career.

Mr. Bates, whose tact and unfailing courtesy in all circumstances are proverbial with those who have any dealings with him, finds his recreations in wireless and music, and, when opportunity offers, in tasting the salt sea air while handling the tiller of a sailing boat.

THE TELEPRINTER.

A. P. OGILVIE (*Headquarters Traffic Section*).

(*Continued from page* 128.)

(VI.)

THE rapid development of the tape Teleprinter has to some extent overshadowed the parallel development of Teleprinters arranged for column printing. Early trials with the latter type of machine on circuits carrying ordinary commercial and social traffic did not yield results sufficiently convincing to warrant the adoption of column printing in preference to tape printing, and so, within recent years, attention has been concentrated on Teleprinters No. 3A.

Column printers are essentially more complicated than tape printers. Instead of a simple revolving tape-printing platen it is necessary to provide somewhat more elaborate arrangements for controlling the movements of a paper carriage similar to that of a typewriter. Prime and maintenance costs are higher. Operating is not so simple and straightforward, the number of "column" and "carriage-return" signals required to set out a telegram in an attractive display at the receiving station being disproportionate as compared with the number of equivalent signals necessary in tape printing. Neither is the appearance of the completed message impressive in some cases, and as all telegrams are printed on the same continuous paper roll, the facility is lost of using distinctive forms for special services. Another weakness is the absence of an invisible correction of errors; operating mistakes and corrections are reproduced on the printed copy and entail the repetition of imperfectly printed telegrams. It is also necessary for traffic convenience at duplex to construct the transmitter and receiver in two separate units.

While these limitations prejudice the use of the column Teleprinter on commercial circuits, there is a definite field in which it possesses undoubted advantages. For press traffic and for certain forms of private wire work a copy delivered complete from the printer is much more convenient than a printed tape which has to be gummed to a form. The Central News Agency has, for example, successfully exploited column Teleprinters for the distribution of news over a wide area, and their experience is of considerable value. In dealing with press work, the British Post Office has hitherto remained faithful to the Wheatstone system, but the established claims of the Teleprinter are now being considered. Two YQ news circuits from the Central Telegraph Office to Birmingham, Manchester, and Liverpool, previously equipped with Wheatstone Creed apparatus, have been converted to Teleprinter working. On each circuit a transmitter unit (Teleprinter No. 5A) is installed at the Central Telegraph Office and a column printer unit (Teleprinter No. 4A) is fitted at each of the receiving offices. One or more of the receiving offices may be called into circuit at will, as in Wheatstone YQ working, and in the case of an item for several stations simultaneous reception is available. As the Central Telegraph Office copy is transmitted direct to line from the keyboard, no perforated slip is employed. In the reverse direction acknowledgments are transmitted by Morse key. The system has yielded excellent results. Hourly totals of from 20 to 30 pages of press of a varied description are being dealt with regularly, and the stability of the circuit and apparatus is satisfactory. It will be recognised that many of the drawbacks of column printing experienced in dealing with commercial telegrams do not apply, or have little weight, on press traffic circuits. Fortunately, the amount of multiple address work received at any one station is small, and the single copy printed is ready for delivery after scrutiny. The question of a ready means for manifolding copies is, however, being considered in case of future need.

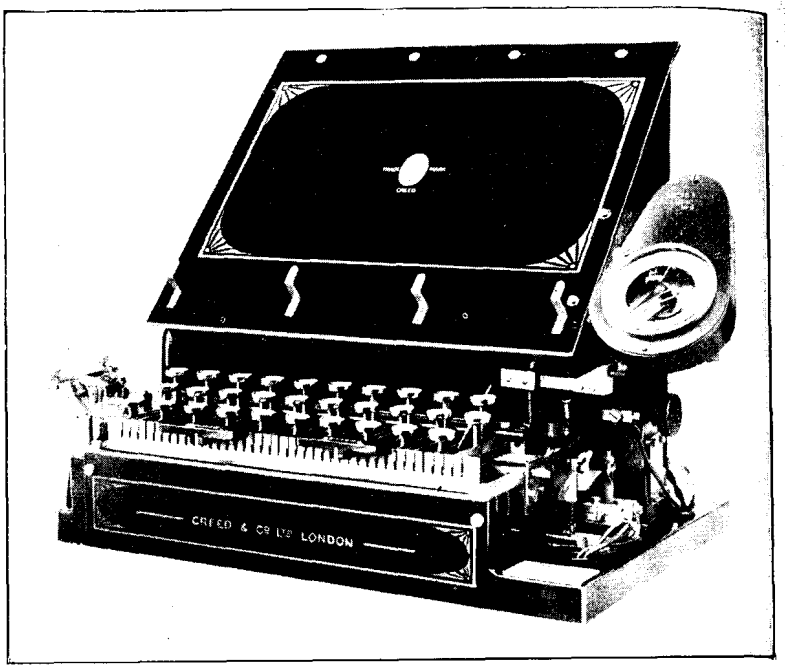


FIG. 19.

Fig. 19 is an illustration of the transmitter unit. The selecting and transmitting mechanism is similar in principle to that of the Teleprinter No. 3A although it is arranged differently. A separate motor is employed. The distinctive features of the keyboard are, of course, those necessary for the operation of the distant column printer. Prominent is the letter counter on the right of the unit. The depression of a key drives a pointer one unit round the letter counter dial until a sufficient number of characters has been transmitted to almost fill a line of print on the distant copy. A warning lamp behind the keyboard is then lighted and the pointer indicates the number of letters it is still possible to transmit without overprinting. The depression of the line-page key (see Fig. 20) restores the pointer to zero, extinguishes the lamp, and at the same time signals a combination to line which moves the receiver copy up one line and returns the carriage to the beginning of a fresh line. The "column" key is used when it is desired to move the paper upwards without returning the carriage to the left margin. A perforating unit is embodied in the machine shown in Fig. 19 which permits of the keyboard being employed as a five-unit perforator. This part has been detached from Post Office apparatus and is, it is understood, being redesigned.

FIVE – UNIT KEYBOARD.

(BRITISH POST OFFICE STANDARD)
FOR USE WITH PAGE PRINTERS.

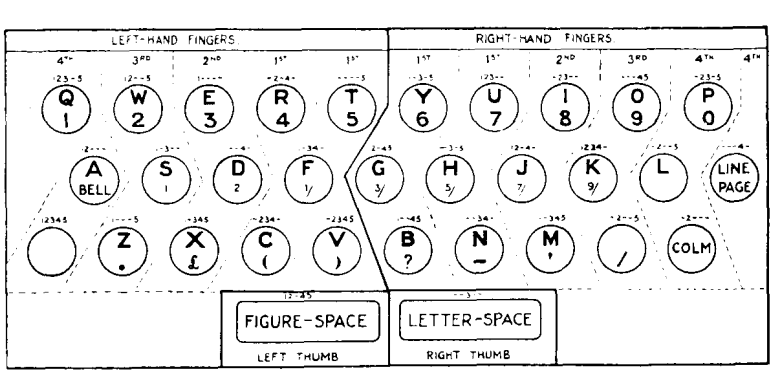


FIG. 20.

The column printer unit, Teleprinter No. 4A, is shown at Fig. 21. As in the case of the transmitter unit the printer action is similar to that of the Teleprinter No. 3A, the different lay-out of the parts being determined by the positioning of the more elaborate paper carriage mechanism and the altered printing position. The motor is accommodated underneath the unit.

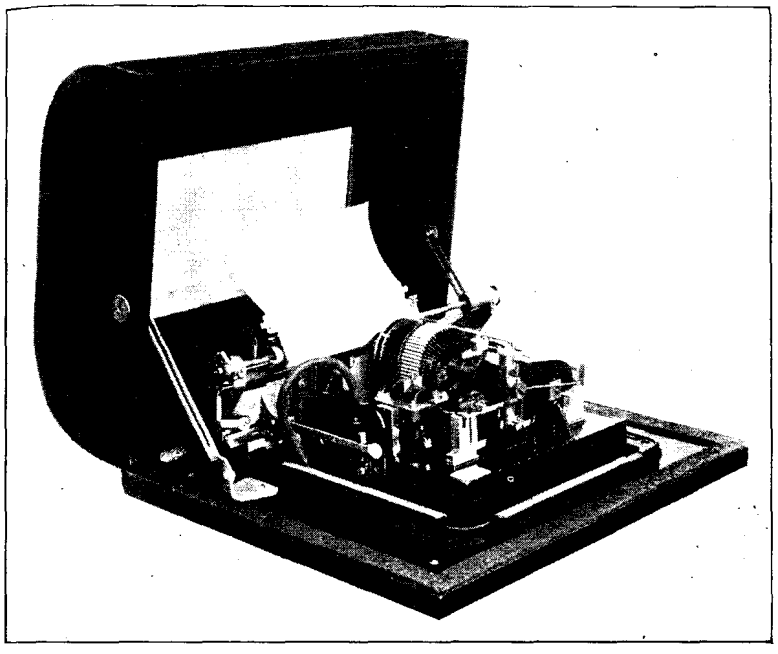


FIG. 21.

While direct keyboard transmission at a maximum speed of 60 words a minute appears to meet satisfactorily the present traffic conditions, it may be desirable ultimately to exploit a system of automatic transmission and reperforation at a higher speed. Appropriate units are available for the purpose should the need arise to use them.

In concluding these notes I may, perhaps, be allowed a personal reference. It has been difficult to avoid being prolix in attempting to describe, in popular terms, mechanism and methods of a technical nature, but the evidence I have received of widespread interest and enthusiasm has encouraged me to continue. It is not too much to claim that the advent of the Teleprinter has brought new life into the senior service and may in time revolutionise our conception of Telegraphy.

[THE END.]

MR. PEARSON KNOWLES, YORK DISTRICT.

MR. PEARSON KNOWLES who has been promoted to Contract Officer, Class 1, Birmingham, was the recipient of a handsome present—case of Sheffield stainless cutlery and fountain pen—on Mar. 29, when members of the District Manager's Staff assembled to bid him farewell. Mr. F. E. Adams, in making the presentation, assured Mr. Knowles that he left York with the good wishes and congratulations of all the staff on his well-deserved promotion. Representatives of the various sections also paid tribute to Mr. Knowles.

In thanking the staff for their tangible expression of goodwill, Mr. Knowles said that the few years during which he had been in the York District had been very happy ones, and in many ways he regretted his departure.

DEVELOPMENTS IN MACHINE TELEGRAPH SYSTEMS AND METHODS OF OPERATION.

THE above was the title of a paper by H. H. Harrison, M.I.E.E., which this well-known telegraph and telephone engineer read before the Institution of Electrical Engineers in London on Mar. 27 last, at which gathering the writer of these few lines was an interested and privileged listener. The paper itself is the result of two years intensive collation and segregation and printed, contains no less than one hundred and thirty-nine illustrations. As one of the commentators subsequently stated, this last effort of Mr. Harrison's will no doubt be considered as a classic in the field of machine telegraphy. Divided into eight sections the headings of each one of these in themselves suggest sufficient material for as many separate evenings for useful discussion. Thus, for example, (1) *Speed and phase control*, with local and main-line synchronism, phase swing. Motor speed control: classification of motors. Governors. Baudot, D.M.O., electro-mechanical, tuning-fork, phonic wheel, clock control of fork or reed vibration, gang-control and inter-office speed control.

Phase control.— Baudot's method, Picard's Baudot epi-cyclic correction gear, Rothermel's corrector, Creed's mechanism, Wood's corrector, Toll and Muirhead's corrector. Omitting much from the contents of Section number one let us pass to No. 2, which deals with *Transmitters or composing machines*, and deals with Siemens transmitters and alternatives, all-electric keyboard transmitter, tape-controlled transmitter, Wheatstone and 5-unit code transmitters, Baudot's, Morkrum's, Cardwell's and Potts' transmitters, single-revolution clutches, start-stop transmitters, sending distributors, over-lap on keyboards, &c., &c.

Section 5, on *Regenerative Repeaters*, together with the very specially informed comments by Mr. Wood, of the Eastern Telegraph Company, was particularly instructive as to the labour-saving effects of the most modern developments of the telegraph industry, and the gradual reduction of telegraph operators, at times to their almost complete supersession by one or two young engineers.

It was interesting to learn that Mr. Harrison agrees that regenerative repeaters are, after all, "due to modern adaptations of the regenerative repeater invented by Baudot."

Mr. Harrison laid down the following dicta, which should prove more than ordinarily significant at the present moment, when the staff of our Inland Telegraphs is quite naturally passing through an anxious cross-examination of events and policies as to the effect of this, apparently, sudden rush of machine telegraphy developments. The lecturer, speaking of the proposed supersession of multiplex by single channel working, said that in the first case this was simply an account of "the perfection of the single-channel start-stop telegraph machine, and (2) the co-ordination of the line plant," but maintained, nevertheless, that if all the inland multiplex apparatus were scrapped to-morrow and equivalent channels obtained by single-channel start-stop apparatus, the problem of making telegraphy pay would still be there.

In view of the present effort on the part of the Post Office administration to investigate the potentialities of a telegraph exchange, the undeniable assertion that the principal factor in operating costs is that of re-transmission, this latter opinion is especially engaging.

Mr. T. E. Herbert opened the discussion with the apposite remark that "it was worthy of note that the period of adversity through which telegraphy had been passing had coincided with *an amount of progress unparalleled* during any corresponding period of the history of the art." Mr. F. G. Creed aptly pointed out that the British Post Office had to contend with conditions that did not exist in the U.S.A. He referred to the work of Donald Murray in the development of machine telegraphy and added that as regards international communication the absence of an international

language was a handicap. The written message was frequently to be preferred to the spoken word. Lieut.-Col. A. G. Lee remarked that *valve*-maintained tuning fork methods were used in controlling the frequency of the Government radio-telegraph station at Rugby, and hinted at other experiments which were being carried out in order to assure exactitude and to increase the working value of existing lines for telegraphy with teleprinters. Mr. K. L. Wood asserted that by means of the gang control of motors, synchronisation in the Eastern Company had been brought to so fine a point that changing speed and restarting traffic in 0.5 minute was a *routine* operation.

One was pleased to hear that the "Cook" Baudot governor, submitted as far back as 1926 to the British Post Office, was again being tried on certain international circuits.

Mr. Harrison promised studied replies to a couple of queries raised, but truth to tell, so fruitful was the discussion there was little enough time in which to do more than acknowledge the comments and criticisms of an interested and sympathetic audience. Few of the lecturer's listeners knew that he had returned from Düsseldorf that very morning on purpose to keep his engagement, and was due in Germany again during the next twenty-four hours!

J. J. T.

LIGHT FROM MANILA.

IN places far removed from the common round and the beaten path we may at times chance upon profitable and refreshing reading which, like the stories in the "Arabian Nights," "serves for instruction and warning to whoso shall read them." I may instance the *Post and Telegraph Review* of Manila, a "scientific and literary magazine published every month for the furtherance of the interests of the Bureau of Posts, and devoted to the moral and intellectual advancement of employees." This is a journal which must be seen to be believed and read from cover to cover to be adequately savoured. To the postal neophyte of the Philippines it furnishes instruction in official matters, in history, and in science; it regales him with news, with poetry, and with humour, and affords him also social and moral guidance. To the citizen of the world as also to the insular Briton it is not without its message. At this distance away in London I am able to learn from it what I did not know before, to wit: the Nine Wonders of the British Business World. They are (1) the Midland Bank; (2) the Stock Exchange; (3) Lloyd's; (4) the *Daily Mail*; (5) Despatching Room of the Midland Railroad at Derby; (6) Shipyards at Glasgow, Newcastle, and Belfast; (7) Carrera's Factory; (8) Cadbury Factory: (9) Underground Station at Piccadilly. I feel that they might have found room in the sacred nine for the London Trunk Exchange, or (since the recreation and hygiene of staff are a feature of modern business efficiency) that celebrated open-air bath where a green costume is held to be immodest and a black, though scantier one, decorous. But rejection is the mother of selection, as the proverb ought to say, and all works of inclusion and exclusion are extremely thorny and delicate.

News is gathered from all sources. It is interesting to learn *via* a Burmese paper that a postman at Barnet got £50 damages for a dog-bite. Medical articles inculcate a proper care of health. Dr. Morgan tells us that "hands cause infection," Dr. Lulu Peters recommends plenty of milk, while from Prof. Uginelli we learn that women are one-tenth less susceptible to pain than men, "that in the skin territories of the body the outer arm is far the toughtest. This thoughness can be explained by centuries of wear and tear to which the arms have been subjected in maintaining defences." Moral reserves are strengthened by twelve hints to postmen, warning them not to be "clock-watchers" and to avoid the spirit of "I don't give a damn," and by an exordium on loyalty. Frivolous clippings from American journals are more than counterbalanced by pithy apophthegms by Plato, Bernard Shaw, Descartes, Beaumont and Fletcher, Disraeli, and Turganiev. You can turn from a report of the Postal Congress in London or from the Five Fundamental Bases of American Prosperity to a succinct article on Science through the Ages, or better still to the poetry of "Young Fat" Regoberto A. Aguirre (for so he is affectionately described). This is his "Vesper Song":—

> Mellow and sweet are the prevailing rays in floral way,
> Where found the blooming flowers with grand fantastic array.
> In rapture they open their petals in frolic dance,
> And suffused with perfume the ambient air around my manse;
> The advent of the dew do thrill the young buds in delight,
> And joyfully my lonely soul has drunk the beautiful sight.

There is no space to quote the "chorous." Suffice it to say that it exhibits the same freedom of metre as the foregoing, and contrives to rhyme "flower" with "forever." But to achieve English rhyme of any sort when English is not one's mother-tongue is a feat which commands my unfeigned admiration and amazement.

Passing by reports of new Air Lines, new picture telegraph services, and lives of Edison, I linger with unbounded delight on Miss Holt on "Social Etiquette." The elaborate provision she prescribes for the care and comfort of the chaperone to the lady who honours us with her company at a dance, and the rites connected with introductions and programmes, carry the mind back to days when, if life was not ampler, one's partners were—or at least they did not seek to suppress those distinctive and disturbing curves which the present rage for slimness proscribes. I offer the following hints, culled from this article, to the numerous organisers of staff dances in the service:—

> "The members of committees are obligated, furthermore, to escort the patronesses to the supper room, to introduce guests of importance to them and to accompany each lady who serves in this capacity to her carriage door when she rises to depart. If the balls opens with a grand march, the matrons who assist in receiving are led out on the floor and through the mazes of the promenade, each leaning upon the right arm of some prominent member of one or another of the different committees in charge."

In this year of grace, I feel sure that I have not reproduced these directions to no purpose.

W. H. G.

OBITUARY.

IT is with profound regret that we announce the death of Mr. A. L. May, Traffic Superintendent, Class I, Southampton, on the night of Mar. 19.

His passing was indeed tragic, for he succumbed to a heart attack in the street while walking home alone after a visit to the doctor. There was a severe snowstorm at the time.

Mr. May would have been 51 years of age in May next. He was very widely known and had experience in many parts of the country. He joined the National Telephone Company in 1899 and when that organisation was taken over by the Post Office in January, 1912, he held the position of Traffic Superintendent at Bradford. He was later transferred to Nottingham, and in 1922 he was promoted to Blackburn. After a short period at Gloucester, he was transferred to Southampton in April, 1926.

His stay in Southampton was a very happy one and his removal to the south seemed to result in much improved health. His cordial, genial disposition endeared him to all with whom he came into contact, not only those in his own branch but also the head postmasters and engineering officers. He was an enthusiastic worker and was particularly happy in imparting his knowledge and experience to the junior members of the staff.

The interment took place in Birmingham on Mar. 24, and was attended by Mr. O. G. Lee, District Manager, and Mr. H. R. C. Hickish, Asst. Traffic Supt. representing the Southampton district, and Mr. H. Bristow, Head Postmaster, Winchester, representing the head postmasters, and many of his friends and colleagues in Birmingham.

TRANSATLANTIC TELEPHONY.

(Abstract of an Address by Lt.-Col. A. G. LEE, O.B.E., M.C., M.I.E.E. (Asst. Engineer-in-Chief, G.P.O.) at a Meeting of the Post Office Telephone & Telegraph Society).

THE first transatlantic circuit was opened in January, 1927, on what is known as the long-wave 5,000 metres. Since that date we have opened three short-wave circuits with three waves each, one in June, 1928, another in June, 1929, and a third in December, 1929. The short-wave lengths used are of the order of 32 metres, 24 metres, and 16 metres. They are used at different times of the day in order to overcome the difficulty of fading.

We find that the long wavelength gives the most solid and reliable communication, except during or about the sunset period each day. The short waves can be made effective over the greater portion of the day by changing from one wavelength to another, but they are liable to disturbances from magnetic storms. The long wave, therefore, while being far more expensive than the short wave, is a much more reliable circuit, and we could not give a completely satisfactory service unless we had it. The long-wave and short-wave circuits are dealt with separately, as the principles are different.

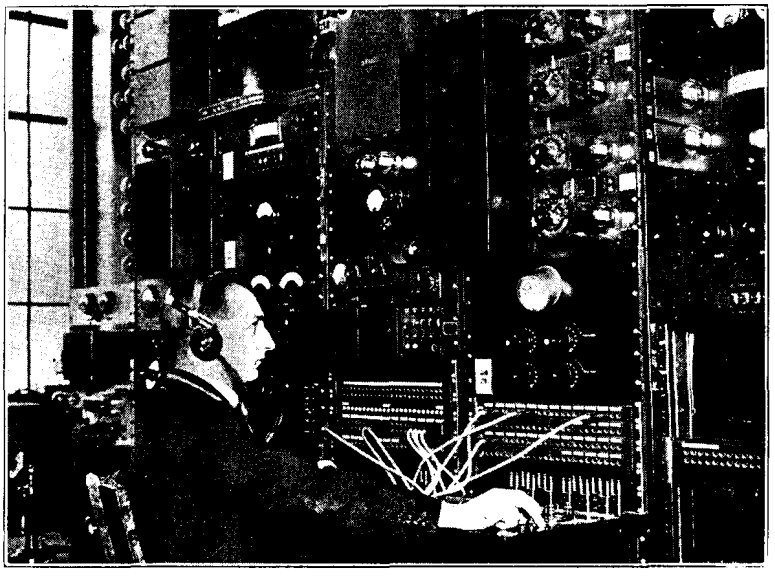


FIG. 1.—TECHNICAL OPERATOR'S POSITION, TRUNK EXCHANGE, LONDON.

Fig. 1 is the technical operator's position, which is situated in the Trunk Exchange, London. The necessity for this position arises from several causes, the principal of which is that the output of a transmitter at Rugby is a certain limited quantity, and in order to load it up to its full output on each wave, it is necessary that the technical operator shall adjust the amount of amplification on each subscriber's talk, so that the talk going out to Rugby can fully load the transmitter. He also controls the amplification at different points of the circuit, which requires adjustment from time to time to allow for changing radio conditions. One of the pieces of apparatus on the technical operator's position is known as the Voice-switching Equipment. Its function is as follows :—On the long-wave circuit both countries, England and America, have to work on the same wavelength, so that it becomes necessary to switch from transmission to reception. When the subscriber at this end is talking he must have access to the transmitter, and while the New York man is talking he must be switched on to the receiver. This switching is done automatically by the speech currents from the subscriber. There are two types of voice-switching equipment, one developed by the Post Office, and the other by the Americans. The voice-switching equipment is also used on the short-wave services, because it enables a higher degree of amplification to be employed.

Fig. 2 is a photograph of the Rugby long-wave transmitter. The speech comes in from the land line, goes through a filter, and then into a modulator where it is converted first into a frequency of about 30,000 cycles, then to a final frequency of 60,000 cycles. The object of this scheme is the use of only one side-band. Perhaps I ought to say what a side-band is. When you modulate a high frequency, like a wireless frequency, with speech, it produces a sort of fringe around the main frequency. The energy is no longer confined on one frequency but fills a band on each side of that frequency. These bands are known as side-bands. The two bands both contain the same information as in the original speech, and it is only necessary to transmit one of them. Also it has been found that the carrier is unnecessary in the actual transmitting process, i.e. it may be cut out at the transmitter, thus saving a very considerable amount of power, and can be restored at the receiving station. It has to be restored to within 10 to 50 cycles frequency of the original frequency, otherwise distortion is produced. After the speech

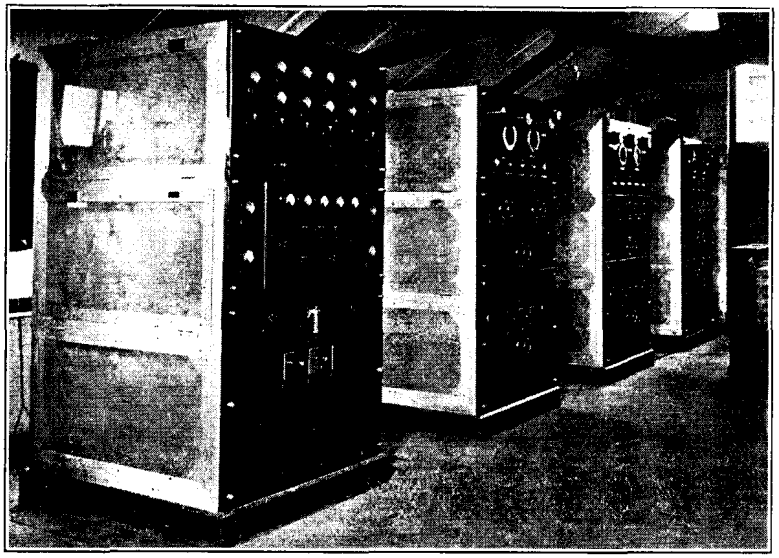


FIG. 2.—LONG-WAVE TELEPHONE TRANSMITTER, RUGBY.

has been converted into a band of wireless frequencies around 60,000 cycles per second, it has to be amplified to a high power for transmission from the aerial. The photograph shows the main power amplifiers, which consist of thirty 10-kilowatt valves in parallel. The control table from which the operator controls and adjusts the amplifier can be seen at the left-hand side of the picture. The valves used are metal glass water-cooled valves, the metal forming the anode of the valve is also the outside surface, so that it may be readily cooled by enclosing it in a water jacket.

Now with regard to short-wave telephony ; we have three short-wave services, but before starting the transmitting portion of the short waves, I want to tell you something about our means of generating oscillations.

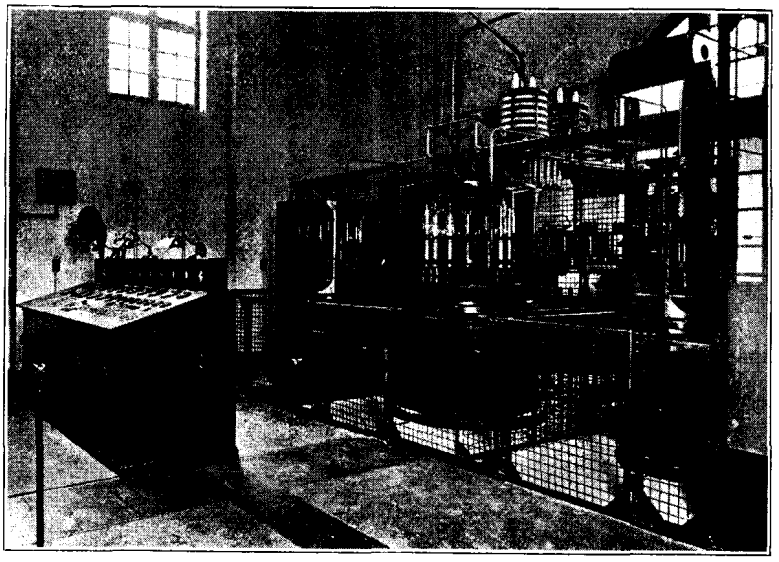


FIG. 3.—SHORT-WAVE TRANSMITTER AT RUGBY.

It was very soon found that it was necessary to obtain as near as possible constant frequency for these short waves. As it happened, means were at hand for generating these constant frequencies in a substance known as piezo electric quartz. It is a particular variety of quartz crystal which is sliced in a particular way to obtain one which will oscillate. (The speaker produced a sample and held it up.) This looks like an ordinary eyeglass, rather a large one ; the one we usually employ is small, half this size, which is a 500-metre crystal. If you apply an alternating electric force to two

places the crystal will expand and contract. Conversely, if you press the crystal it will generate an electrical potential. If you connect the crystal to a valve in a certain way it will develop continuous oscillations, and as they are controlled by the quartz they are as constant in frequency as quartz is in its properties. The chief inconstancy is owing to temperature changes, so that it is necessary to have an arrangement whereby the temperature is kept constant. With the thermostatic controls we have at Rugby the temperature can be kept to 1 10th degree Centigrade.

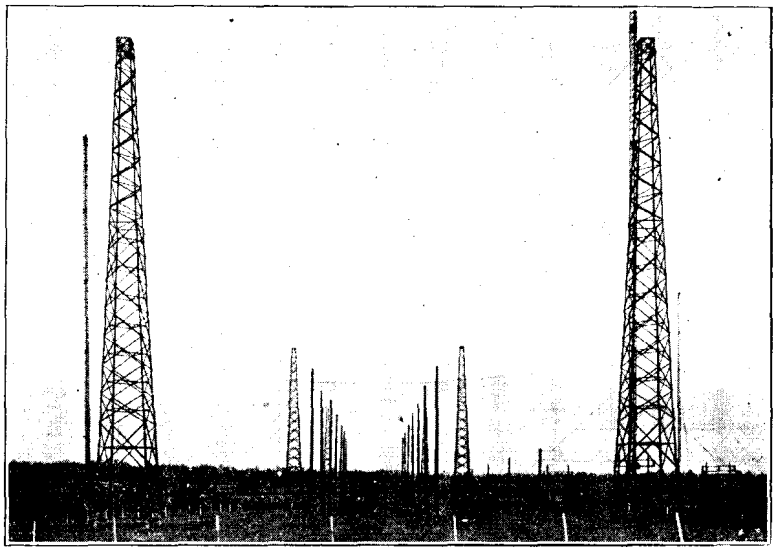


FIG. 4.—"T.W." SHORT-WAVE ANTENNA ARRAY, RUGBY.

We have one of these quartz oscillators for each frequency we generate. They are ground for oscillation on different frequencies, and I will merely give you one sample case for illustration.

We start off, say, with a crystal ground to oscillate at 128 metres. This is applied to a valve which is so regulated as to distort the frequency, thus producing harmonics. From the 128 metres we get in the output circuit of the valve an oscillation of 64 metres; that again is applied to a valve frequency distorting device, and the second harmonic of that frequency is

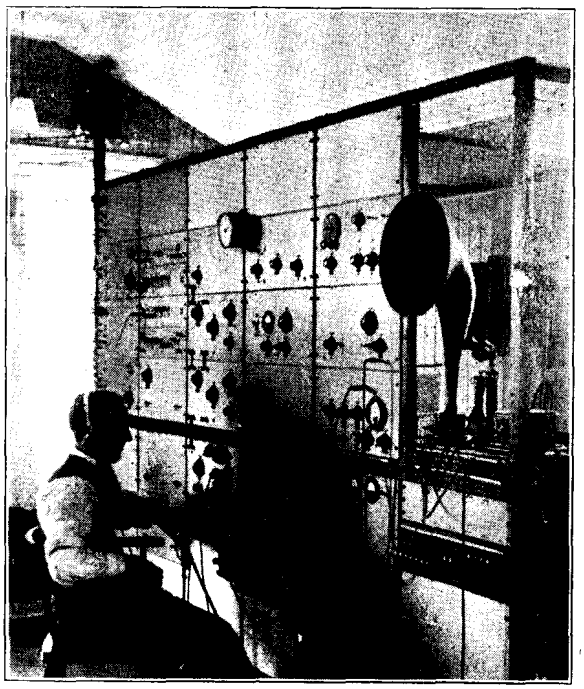


FIG. 5.—LONG-WAVE RECEIVER, CUPAR.

again selected, producing 32 metres. Again going on we get the second harmonic from 32 metres, which gives 16 metres. At this stage the harmonic is filtered and amplified to produce high power on 16 metres, which is transmitted from the aerial.

Fig. 3 is a picture of one of the short-wave transmitters at Rugby which amplifies the relatively small harmonics received from the distorting valves up to a point where four 15 kw. valves are employed for amplification. The stages of amplification are all carefully screened from each other to avoid reaction. From this point the power goes out on to transmission lines, which lead to the aerial. The aerial is situated anything up to half-a-mile away from the transmitter. The aerials demand a large amount of space, and therefore have to be arranged some distance apart.

Fig. 4 is a photograph showing one of the "arrays" as they are called.

The purpose of these antenna arrays, or beams, is to radiate energy in the forward direction towards the station that has to receive it, instead of having the radiation directed to all points of the compass.

The advantage of concentrating the energy in this way is principally in saving of power. We find by experiment that our best type of aerial at Rugby gives us a gain of about 300 times over what we should have to supply if we had a single aerial radiating in all directions.

The masts supporting the antenna array are 120 feet in height. The mast in the background is 820 feet high and is one of the masts on which the long-wave telephony antenna is supported. We have tried out a number of types of aerial. This is the latest, known as the "T.W." (from the initials of Mr. Walmsley, the Engineer who invented it). It concentrates the radiation in both the horizontal and vertical planes. Normally, an aerial will emit radiation in all directions, vertical as well as horizontal, but with this particular type of construction the object is to reduce the amount of both vertical and horizontal radiation.

I have shown you the transmitters. We now make a jump to the Receiving Station. The long-wave Receiving Station is at Cupar, in Scotland.

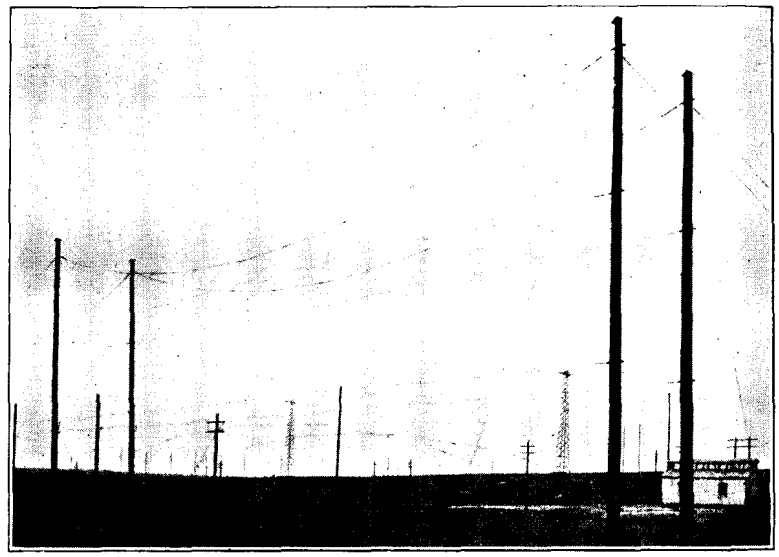


FIG. 6.—RECEIVING ANTENNA ARRAYS, BALDOCK.

The reason we went so far North was that we found atmospherics were so much weaker in Scotland than in the South; also Scotland is slightly nearer America! The improvement by going to Scotland for reception is of the order of between three and four times better than reception in the South.

We started the work in Scotland on what is known as the Beverage Antenna system. Its properties depend to a large extent upon having a dry soil. In this country the soil is never dry, and for that reason it is not so good from a wireless point of view. We were fairly successful with it, but decided to go in for something else, and we developed a combination of frame aerial and vertical aerial which we found distinctly better.

The object of any receiving antenna system is to get a system which will receive only from a forward direction and reject any signals or atmospherics which come from behind or from any other direction.

The radiation received by our frame and vertical aerial combination is largely confined to the forward direction within an angle of 40 degrees. There is very little coming in at the sides. We find that atmospherics trouble us principally in summer time and come from North Germany and Siberia practically at the back of our aerial, so that with this aerial system these particular atmospherics are cut out to a large extent.

Fig. 5 is a photograph of the long-wave receiver at Cupar.

Cupar is the long-wave receiving station. We have, however, a small short-wave receiving arrangement there, but it is only used as a standby and our main short-wave receiving plant is at Baldock. Fig. 6 is a photograph of the Baldock site. It is not very clear but will give you some idea of what Baldock looks like—a site of 900 acres—which we wanted in order to lay out these antenna schemes. Normally, they are mounted on telegraph poles

and suspended on wires. We have three or four types of antenna array here and are still engaged in investigating the properties of these arrays—it will probably be some time before we reach a final conclusion.

One of the difficulties about reception of short-waves is "fading." Short-waves are propagated in the air at a height of over 60 miles above the earth in what is known as the Heaviside Layer, which is a conducting layer named after the famous mathematician. This layer retracts or bends the waves down again towards the earth, and in this way they can make a zigzag path between the transmitting station or the receiving station, or some of the waves may be bent just sufficiently in a trajectory to come down at the receiving station. We are not certain about the exact process of transmission in the Heaviside Layer, but there are irregularities which cause fading of the waves.

Fig. 7 is one of the receivers at Baldock. Transmission lines come in from the antenna array, pass through two high-frequency stages where there is an oscillator to beat the frequency down to an intermediate frequency at about 1,000 metres. At this point there are three amplifying stages, a rectifier, and there are two more low frequency stages.

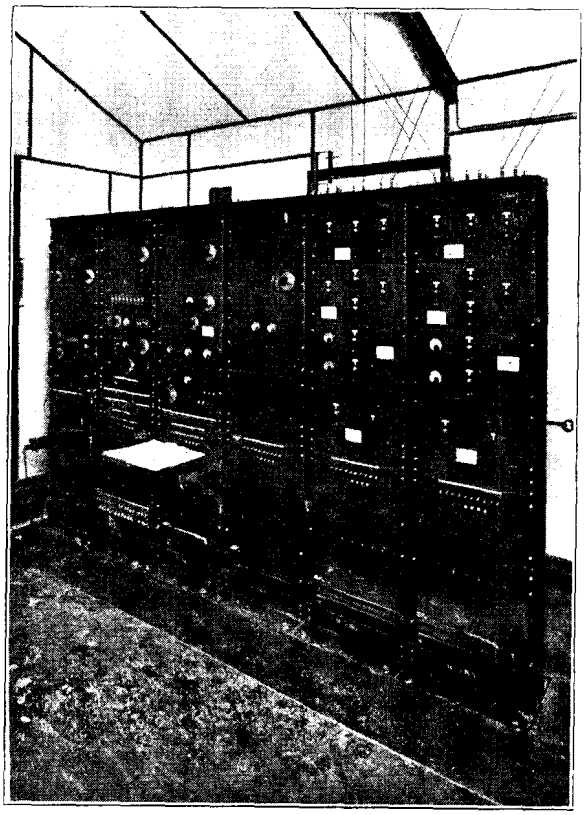


FIG. 7.—SHORT-WAVE RECEIVER, BALDOCK.

The receiver has an amplification of 120 decibels, which is one billion times; we can send out to the Trunk Exchange one billion times the energy we receive from the antenna.

On one of the panels there is an automatic gain control. Owing to the fact that signals fluctuate up and down, due to fading, we have to control the amplification. This can be done automatically. The automatic gain control will produce a practically constant output even when the input signal varies in power 100,000 times.

The prospects for transatlantic telephony at the present time look fairly bright. The technical possibilities as to communication with New York are very good. Also there are possibilities of opening up similar communication with the Colonies and distant parts of the earth. One of the difficulties we shall have in the near future is the fact that the total number of wavelengths is now fairly limited and will apparently soon be exhausted. So far we do not know any other means of transmission, so that we can see within sight a complete blockage when we shall have no more wavelengths available. One must not, however, give up hope—other wavelengths may be found. In view of this difficulty the A. T. & T. Co. have projected a Telephone Submarine Cable which will probably be ready in two years and which will form a very solid and reliable means of communication between here and New York. It will also open the way to means of communication to distant parts of the earth, in case we are blocked in the wavelength situation. Naturally, as a radio man, I do not give up hope on the radio side, but it is pleasant to think that in 20 or 50 years' time communications can still be increased if desired by the telephone submarine cable.

PROGRESS OF THE TELEPHONE SYSTEM.

THE total number of telephone stations in the Post Office system at Feb. 28, 1930, was 1,867,500, representing an increase of 11,864 on the total at the end of the previous month.

The growth for the month of February is summarised below:—

	London.	*Provinces.*
Telephone Stations—		
Total at Feb. 28	669,455	1,198,045
Net increase for month	4,111	7,753
Residence Rate Subscribers—		
Total	165,226	258,181
Net increase	1,690	2,460
Call Office Stations (including Kiosks)		
Total	5,960	24,688
Net increase	38	292
Kiosks		
Total	1,662	6,175
Net increase	38	115
Rural Party Line Stations—		
Total		10,155
Net increase		
Rural Railway Stations connected with Exchange System—		
Total	17	1,557
Net increase	—	53

The number of inland trunk calls dealt with in December, 1929 (the latest statistics available) was 9,454,861, bringing the total number for the year up to 116,488,568; this figure represents an increase of 8,896,199, or 8.3%, on the total for the year ended December, 1929. Outgoing international calls in December numbered 39,980, and incoming international calls 44,353, making the totals for the year 527,896 and 570,085 respectively. The increase over the total for the twelve months ended December, 1928 was 105,982 (25.1%) in respect of outgoing calls, and 114,709 (25.2%) in respect of incoming calls.

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

LONDON—Ingrebourne.

PROVINCES—Aldeby, Ash (Whitchurch), Bawdeswell, Boarhills, Dunlop, Hartington, Homersfield, Knowsley, Luss, Luthrie, Manston, Marshbrook, Maze, Morham, Rillington, Rockbourne, Strachur, Twinstead, Upton Grey, Whiterashes, Yardley Gobion (all rural automatic);

and among the more important exchanges extended were:—

LONDON—Chingford.

PROVINCES—Arbroath, Banbury, Bell (Glasgow), Clitheroe, Dorchester, Falkirk, Gt. Yarmouth, Ibrox, Minehead, Rutherglen, Victoria (Birmingham), Welwyn Garden.

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

Bristol—Chipping Sodbury.
Leicester—Hinckley.
Portsmouth—Chichester,
Basingstoke—Reading (section of Guildford—Basingstoke—Reading cable),
Manchester—Liverpool (additional cable),
London—Maidenhead.
Sunderland—Sheraton,

while 75 new overhead trunk circuits were completed, and 88 additional circuits were provided by means of spare wires in underground cables.

TELEGRAPHIC MEMORABILIA.

SINCE scribbling last month's Memorabilia the writer has had no less than three interesting experiences. One of these was listening to Mr. H. H. Harrison, M.I.E.E. on "The Developments of Machine Telegraphy," to which more complete reference will be found in another part of the present issue of the *Journal*.

The second was a visit to the Trunk Exchange, Carter Lane, thanks to the kind courtesy of the Controller of the Telephones. It is many years since my daily duties were very extensively connected with the testing and fault-locating of telephone circuits, long and short. By the very fact of this time-gap one could, however, the better obtain a first class conception of the progress made in telephone technique and the advance in standards of speech. Gone was the Selective Night Ringing with Chelmsford, Colchester, &c. ! Gone, too, were the heavy gauge lines which, like copper rods, extended overhead from London to Glasgow ! Valves had appeared on the scene and melted those rods into mere threads which could be packed away into lead sheathing by the score ! Could I speak to Glasgow ? "Certainly," and once again with excellent clarity came the Scottish accent. "Would I care to speak to New York ? " Through to the American capital in 20 seconds—all but bewildered by the miracle of it, yet recover quickly enough to get good speech, and am heard equally well. Asked to compare between the speech values of the Glasgow trunk and the American circuit one was bound to say that, "making allowances for the Scotch accent on the first circuit and the Yankee drawl on the latter, there does not appear much to choose between them."

The third thrill was the paper by Mr. E. S. Ritter, D.F.H., M.I.E.E. on "Picture Transmission," the last of a very successful session of the Post Office Telephone and Telegraph Society. The lecturer was clear and concise in his explanations and painstaking to a fault. Mr. Ritter is not one to over-rate the value present or prospective of this new phase of telegraphy. One very special feature and a none too common one was his open-mindedness upon the subject with which he is so well acquainted. It was a gracious, though admittedly a useful courtesy to invite an officer of a private company to the meeting, who, by the latter's exhibition of his own slides, was able to show some of the difficulties under which the Marconi Company are labouring in their experiments with the ether as a medium for the transmission of still-life pictures, documents, &c. Examples of the work of the different systems were displayed round the hall—American, French, and German—the latter being that at present in use by the British Post Office.

On the way home there came yet another gentle shock, for the newspapers announced that a television set of apparatus had been installed at No. 10, Downing Street ! Truly we are progressing, but whether the installation comprises both receiver and transmitter there is no evidence to say, and there is therefore no clue to the use to which the apparatus is to be put. Is it for the head of the Government to watch what is going on in the House of Commons, and/or for the members of the House of Commons to keep an eye on the Premier of the moment ? Anyway, it is worthy of note that the B.B.C.'s dual-wave transmitters at Brookman's Park were utilised on Mar. 31 to broadcast simultaneously vision, speech, and song. The sound broadcast was on 356 metres and the visual on 261 metres. The dual broadcasts are at present conducted from the Baird Television Company's studios through the agency of the B.B.C., as above, from 11 a.m. to 11.30 a.m. except Saturdays and Sundays, and also from midnight to 12.30 a.m. on Tuesdays and Fridays. British Summer times in all cases.

Round the World !—ALGERIA.—It is reported, says *The Electrical Review*, that the French P.T.T. station at Algiers is to be provided with a relaying installation this summer. The new plant will be situated at Oran and will be of 6-k.w. power. AUSTRALIA.—A sum of £750,000 is to be spent on the broadcasting service and its reorganisation. The scheme includes the erection of at least a dozen subsidiary stations in different parts of the Commonwealth, and, when completed in about three years, says my informant, is expected to provide a good service for about 95% of the population. AUSTRIA.—There has been some considerable dissatisfaction in Austria regarding alleged interference with broadcasting due to H.F. apparatus used by the medical and other professions. It is understood that matters went so far as to prohibit the use of H.F. apparatus after 10 p.m. without special permission from the authorities. The medical fraternity have not, however, permitted the grass to grow under their feet, for at a recent meeting held in Vienna, one of the chief surgeons of that city, Dr. Kowatschik by name, has himself exhibited a special wave-filter invented by two Viennese physicists—the Drs. Kobler and Razdowitz, which, when tested in conjunction with diathermic apparatus and a loud-speaker, had the effect of destroying all radio reception. Immediately upon introducing the filter, hey presto ! The intruder was absolutely inaudible ! ARGENTINA.—No less than 22 stations within the city limits of Buenos Aires have, says *World Radio*, been deviating from their assigned wavelengths. The Government, since taking control, has taken the drastic step of ordering *all* broadcasting stations to move their transmitters out of the city limits during the next nine months. BELGIUM.—An association called the Institut International de Télévision has lately been formed in Belgium with its headquarters at 87, Chaussée de Tervueren, Brussels. The first issue of the society's journal, *Bulletin de l'Institut International de Télévision*, appeared in January. The *Bulletin* is devoted to the scientific study of the new science. CHINA.—The situation as regards communication in China does not clarify itself very quickly, and to add to the apparent confusion mentioned in the March number of these notes there comes the information from Reuter's Agency in Nankin that a contract has now actually been signed between the Central Government and the Telefunken Company, Berlin, for the erection of a powerful station there. FRANCE.—A new radio transmitter is to be erected in a suburb of Nice, where the studio will be located. It is said that the power will be at least 25 k.w., and is expected to be working before the end of the summer, and will replace the Juan-les-Pins station. GERMANY.—The German P.O. is installing public telephone kiosks from which not only can trunk calls be made, but telegrams may also be dictated for transmission forward. The apparatus, which has proved popular in towns the size of Cologne, can be operated by coins of the value of 1 mark and 5, 10, and 50 pfennig in any combination. GREECE.—The Grecian islands are to be linked with Athens and the mainland by wireless-telephone and telegraph services, for which the equipment has been ordered from Marconi's Wireless Telegraph Co. Three duplex telephony and high-speed telegraphy stations are to be erected, one near Athens, one on Crete, and the third on Chios. A radio telegraph ship-to-shore installation is also in course of construction. HOLLAND.—Telephone "subs." at the Hague can now listen to broadcasting stations by attaching a loudspeaker or head-phone to their telephone instruments and pressing a button. Already over 400 telephones have been fitted with the necessary attachments for listening in. HUNGARY.—The power of the Budapest (Lakihegy) station is shortly to be raised from 12 to 120 k.w., while Roumanian news reports that Bucharest is so completely outclassed in power by the Moscow station, which has for some time been using 100 k.w. energy, says *World Radio*, and is still being further increased, that it is intended to raise the power of the former at whatever cost. INDIA.—The following additional particulars to those which appeared last month, regarding the transfer of the Indian Broadcasting Co. by the Government of India, and supplied by Reuter's Bombay agency, may prove interesting. Broadcasting is now added as a function of the Posts and Telegraphs Department with Mr. P. J. Edmunds, Director of Wireless, at the head of the Broadcasting Branch. [*Memo.*—The statement regarding an alleged telephone conversation between Karachi and London which appeared in some of the daily press, &c. in London in January, has now been definitely contradicted by the Deputy D.-G. of the Indian Posts and Telegraphs. As we could find no trace of the "event" at this end, nor obtain any particulars which would confirm this feat, the information was treated as unconfirmed and was not published.—ED., *T. & T. J.*] NEW ZEALAND.—Wireless stations in the Pacific under the control of the New Zealand Government are being modernised. Raratonga is the next station for which a new transmitter has been ordered

to replace one of older type. This station will then link up Wellington (N.Z.) and Apia, thus forming an important link in the wireless network of the Pacific. PANAMA.—A curious situation has arisen in this area, according to the following paragraph published by *The Electrical Review*:—"The American State Department and the Panama Government have exchanged official communications in connexion with the latest concessions that Panama has granted to the British Alves Company in the vicinity of the canal, giving the company the right to erect and use wireless stations. The *Financial Times* states that Panama has assured the U.S.A. that Panama does not intend to violate the decree of Aug. 29, 1914, granting the United States control of wireless within the Republic, and that the British concessionaires cannot use wireless without the consent of the United States. It is understood that Panama has explained that the wireless rights clause was overlooked when the concession was granted. ROUMANIA.—*See above* Bucharest, &c., under HUNGARY. U.S.A.—It is claimed by the *Daily Express* that the new broadcasting station in Mohawk Valley which now transmits with a power of 200 k.w., with its call sign of W2KAG is more powerful than the most powerful European station which that authority places as low as 60 k.w. The general statement is likely to be correct, but it is known that Moscow's power runs into three figures.

Companies.—The dividend of the Direct Spanish Telegraph Co., Ltd., for 1929 on the ordinary shares is 8%, free of tax, as against 10% in 1928. A dividend of the Indian Radio Telegraph Co. is recommended of 12½% on the ordinary shares for the past year.

Personal.—If somewhat belated, none the less sincere are congratulations extended to Mr. A. H. Read upon his promotion to the post of Deputy-Inspector, Wireless Telegraph Establishment, Secretary's Office. Personal contact on official matters with Mr. Read have always proved a most pleasant experience to those in the C.T.O. Foreign, who until the changes of last year, were in very frequent touch on questions relating to radio matters.

The *Daily Telegraph* announces that the late Mr. Henry W. Brookman, a former Superintendent of the C.T.O., London, left estate valued at £1,215 (£1,182 net personalty).

Mr. J. B. Ryall, sectional engineer, Gloucester, has recently retired from the Government Service. He joined the United Telephone Co. in 1883, and has therefore about 47 years' active service to his credit.

It is understood that the retirement of Mr. W. J. Medlyn from the post of Superintending Engineer, South Lancs, is likely to take place early next month. Mr. Medlyn has occupied that position since 1913 and commenced service with the Post Office as a Cardiff telegraphist in 1888, transferring to the Engineering Department as Junior Clerk in 1891.

News of Retired Officers.—A copy of a Torquay newspaper shows Mr. Honeysett well to the fore at the new club-house of the Dundee-Hooper Rover Scouts and looking young as ever. Mr. Bradley, formerly of the Cable Room, appears to be travelling on the North African Coast, judging by the Arabesque postcards which have reached our prosaic city! A photograph of Mr. Alec MacEwan bathing in the Thames shows that his seventy-four years (on the 12th ult.) sit lightly upon him, for he still maintains that the morning plunge in April at 6.30, "is like tumbling into a feather bed."

The C.O.D.O.C.—The criticisms of the *C.T.O. Chronicle* on the performance of "The Last of Mrs. Cheyney" were, as should be the case, more inclined to severity than those of the Daily Press critics. H.M.W., in the *Daily Telegraph*, was good enough to assure us that "The club seems firmly established," and terminated with "the cast were appreciatively handled and altogether the applause after each act was faithfully earned." Thus it is really good at times to, "see ourselves as others see us"!

Economy.—"Economy does not consist in the reckless reduction of estimates. On the contrary there can be no economy where there is no efficiency."—Lord Beaconsfield, 1868.

J. J. T.

CORRESPONDENCE.

HOW TO IMPROVE THE TELEGRAPH SERVICE.

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

SIR,—The experimental open discussion which took place at the March meeting of the Post Office Telephone and Telegraph Society of London was a great success, and there is no doubt that the majority of the audience regretted that time would not allow a larger number of speakers to voice their views on such an interesting topic as the Inland Telegraph service. After the exhaustive opening speech of Mr. L. Simon, however, it seemed difficult to suggest a remedial avenue which might be explored, or an aspect which had not been considered. The Secretariat, ever thorough, thinks of everything. It is alleged that there is plenty of scope for improvement in the Telegraph Service, and yet, on examination, one finds that in no direction is it possible to make revolutionary changes which will have the desired effect. One can only look round for opportunities of making small alterations which, taken in the aggregate, might result in a substantial saving, or a marked increase in efficiency.

The telephone service, in my opinion, has two advantageous phases which its sister organisation does not possess, viz., the zone system of charges and the rent charged for the facility of being able to utilise certain services from one's own premises.

It is unfortunate, at this late date, it does not seem practicable to introduce a zone system of charges for telegrams, although such an arrangement would very probably mean the financial salvation of the Telegraph Service. If it is possible at any time to persuade the British public to submit to zone telegraphic rates, the method of charging suggested by Mr. F. J. Binder in the March issue of the *Telegraph and Telephone Journal*, appears to furnish an excellent basis, avoiding intricate calculation of mileage.

As regards the second advantage to which I have referred, it may be said *en passant* that a reduction in the rental charges for telephones might land the Telephone Service in a financial position no more satisfactory than that of the Telegraphs. I want to point out, however, that this rent is charged for the advantage of being able to speak to a friend, send an express letter, or send a telegram, without walking to the Post Office. The charges for these items are additional to the rental, and each renter is a potential user of any of these methods of communication. Why then should not the Telegraph Service be credited with a proportion of the rental, or at least with a certain proportion on each occasion of using the installation to send a telegram?

Among the disadvantageous features of the Telegraph Service are non-manipulative duties and clerical work. There are circulation "finished" and book duties, and the passing backwards and forwards of official papers fixing responsibility for errors, &c. An appreciable aggregate economy might be effected by examining local circumstances carefully to see what operations could be eliminated.

The Post Office is at present educating certain elements of its junior staff. This expenditure seems unnecessary when so many boys and girls of sound elementary or secondary education are available for the public service. Incidentally, if the Post Office tried to obtain, at the outset, the best human material for its outlay, the general efficiency of the Telegraph Service might be enhanced.

The "walk" system of delivery has received a considerable measure of criticism and, when the large number of cases of delay after reaching the office of destination are considered, it would appear that fresh methods must be tried, even if more expense is involved. The complaints of the telegraphing public concerning delay in delivery bring more discredit on the Service, and have a greater effect on the volume of traffic, than those formulated by parliamentary critics. In cases of delay "*qui s'excuse s'accuse*." The "walk" plan has its advantages, but for practical purposes the American hotel "bellhop" system would be hard to beat, particularly if a commission for the delivery of each telegram in excess of a certain number were credited to the delivery messengers. In many occupations the "salary and commission" idea has a distinct bearing on output, and there is no reason to suppose that delivery rooms and instrument galleries would prove exceptions to the theory. The difficulties of formulating a suitable scheme cannot be insuperable and the consequent reduction in transit time between originating and delivery offices would have beneficial results in every direction.

It is gratifying to know that the policy of outside representation is to be pursued. The canvassing staff is a useful medium between the Post Office and the public for dealing with complaints, but officers with a commercial instinct must be selected, who will not forget that every person encountered is a potential customer. Savings Certificates and the Savings Bank are being "boosted" and similar methods should be employed in connexion with telegrams. Canvassers should never forget the American verse:—

"He who whispers down a well
About the goods he has to sell,
Will never make so many dollars
As he who climbs a tree and hollers."

The Inland Telegraph Service occupied the attention of the meeting of the Telephone and Telegraph Society, but perhaps a few remarks from one employed in the Foreign Telegraph Service, which is also involved in some respects, will not be declined.—Yours faithfully,

Cable Room, G.P.O. (W), Mar. 28, 1930.

H. G. SELLARS.

LONDON TELEPHONISTS' SOCIETY MUSICAL PLAY, "THE MIXTURE AS BEFORE."

To those who had seen or heard the annual Telephone Musical Play of the London Telephonists' Society the title of this year's play promised all that could be desired: and the record audiences which assembled at King George's Hall on April 9 and 10 to see and hear the latest item of the ever-popular series by Miss McMillan, showed by their manifest delight that the promise had been abundantly fulfilled. "The Mixture as Before"—whimsically humorous lines, settings, and topical allusions: pretty music, pretty girls, and admirable singing by both principals and chorus. What better prescription could be desired?

The story is this. A Superintendent of Traffic, on a recruiting mission bent, appears before a school class and paints for the assembled scholars a glowing picture of the London Telephone Service. The missionary's rose-coloured statements are at first received with more or less polite incredulity, until the arrival of the Mistress of the Operating School, with whom the Headmaster instantly falls in love. Then the tide turns in favour of the L.T.S.: and despite the somewhat disconcerting reappearance of an "old boy" of the School who has waited in the L.T.S. for promotion for some 79 years, the whole Class—including the Headmaster—fall victims to the blandishments of the Superintendent of Traffic and announce their intention of joining the L.T.S. In the words of one of their number:—

"I've always had a fancy to join the L.T.S.,
And answer Lords and Dukes and p'raps a Sheik.
The work, I hear, is easy,
And one's colleagues bright and breezy,
And the salary is fifteen pounds a week!"

In due course all the recruits meet again in the Operating School. The Headmaster, by his proficiency in the abstruse sciences, has succeeded in qualifying as an Assistant Superintendent of Traffic, Class II! while the erstwhile Superintendent of Traffic has forsaken telephones for Scotland Yard and has become a Detective. He again interrupts School procedure by an unexpected visit, this time to investigate the mysterious disappearance of a valuable jewelled dialling top belonging to the President of the Telephone Company. After patient investigation and much tribulation for the five pairs of lovers whose fortunes are involved in this story, it is found that the missing dialling top has been returned to Store by a too-punctilious Supervisor! All ends happily as a Musical Play should; and the Superintendent-Detective returns to the "glorious uncertainty" of the L.T.S.!

The cast was substantially that of last year and all gave of their best. Miss Blair-Street, whose services the Society was again so fortunate as to secure, sang brilliantly in the principal soprano part. Miss Peggy Murray, whose work in a small part of last year's play revealed marked artistic gifts, more than fulfilled the promise of her earlier appearance, while Miss Tilling, another of the schoolgirls, took her part with her usual charm. Miss Lattimer made a fascinating School Mistress; while the familiar rôle of Supervisor again gave Miss Price an opportunity to express in her inimitable way the humour of dignity. As always, Capt. Hemsley delighted the audience alike with his masterly singing and excellent fooling. His singing of the dialling song will long be the subject of merriment in the London Telephone Service. Mr. Whiffen and Mr. Williams also sang brilliantly, while Mr. Neal was an excellent Schoolmaster. Miss Lilian Jones and her dancers again ably provided an indispensable feature of a Musical Play, while Miss Garvey accompanied with her usual skill. As on previous occasions, a capable band of stewards under the direction of Mr. E. S. Abbott, ably superintended the seating arrangements.

On both evenings the close of the play was marked by enthusiastic tributes of appreciation of the work of the author, cast, and producer (Mr. Pounds), and at the last performance the Society expressed by a special gift to Miss McMillan its appreciation of the splendid work she has done for the Society in providing a Telephone Play for the past six years.

It was a happy thought of the London Telephonists' Society to choose for its Musical Plays the end of the Session, when the breath of Spring is in the air and at its world-old summons Youth calls to Youth for music, laughter and love:—

"For what is so sweet as a golden song,
That rings in your heart for a whole life long,
A music of laughter, a sigh of love,
That makes us like angels in Heaven above,
A kiss in the rhyme of it,
Joy in the chime of it,
Hearts to the time of it, beating strong."

And this, in essence, is "The Mixture as Before."

THE MAINTENANCE OF TELEPHONE PLANT.

H. G. S. PECK, B.Sc. (HONS.), M.I.E.E.

THE maintenance of telephone plant implies the keeping of the plant in such a condition that it will give a satisfactory service. Renewals of obsolescent or of decayed plant may properly be regarded as part of maintenance but this article will be restricted to the means adopted for the prevention or anticipation of faults, to the methods of handling faults and to the general conditions that affect the carrying out of maintenance. Maintenance has in the past been regarded often as synonymous with fault clearing, but nowadays it aims at preventing an increase in the occurrence of faults with increasing age of plant, or it may even go further and reduce the number of faults by removing their causes.

Faults in the abstract, however, are unavoidable, and a brief discussion of the method of handling fault complaints may be of interest. At the outset a "docket" for the complaint is entered up by the Supervisor of the Exchange concerned and this docket is the basis of the fault recording system. If the fault is obviously in the exchange, the docket is passed directly to the exchange maintenance staff for attention; for a junction fault the docket is passed direct to the Test Room and if a subscriber's circuit is concerned the docket is passed to the "testing operator." This operator is provided with a simple test set for making preliminary tests on subscribers' lines, with circuits for plugging up lines that are unuseable, and with a howler for producing a sufficiently loud noise in the receiver to attract the attention of a subscriber who has left his telephone off the hook. Should the testing operator be satisfied that the subscriber's circuit is faulty the docket is passed to the test room. (In automatic and other exchanges where there is no testing operator, subscribers' dockets, like junction dockets, are passed direct to the test room.)

Cards, known as "fault cards," are kept for every circuit and on receipt of a docket in the test room the appropriate card is extracted from the file and the report entered thereon. The card is then kept in front of the test clerk until the fault has been cleared and is not returned to the file until all records have been completed.

Each fault card contains a complete fault history of the circuit to which it refers and this history is of the very greatest assistance to the test clerk in the making of his tests and in the subsequent handling of the fault. Attention is thereby drawn to intermittent faults which have been reported on previous occasions and tested O.K., also to cases of excessive trouble on a circuit or to repeated faults of a similar nature or on the same piece of apparatus. The

attention of a Supervising Officer is drawn by the test clerk when any circuit has been reported faulty more than once in a week or more than twice in four weeks or when a fault is not cleared within 48 hours, and in any other cases where it appears that an indifferent service is being given. Investigations are made when necessary.

The test clerk makes all necessary tests in connexion with a fault. He passes on the fault to the line fault-finder or the apparatus maintenance man or to the distant exchange as the case may be, and is responsible for seeing that the fault is cleared. Careful and accurate work by the test clerk leads to rapid clearance of faults, and by intelligent interpretation of the results of his tests he can avoid much waste of labour by faultsmen.

A battery having a PD of from 20 to 30 volts greater than that of the exchange battery and a galvanometer in the shape of a moving coil voltmeter having a resistance of 2,500 ohms per volt are fitted on the test desk. On the voltmeter is a second scale one-tenth of the first and a second battery of this voltage is also provided. Resistances are measured by using the meter as a milliammeter and a one-tenth shunt can be connected across the low-scale winding. Tables are provided showing the resistances corresponding to the various deflections on the high and low and shunted scales. With 8- and 80-volt batteries the range of measurements thus covered is from 25 ohms to 15½ megohms. The voltmeter is also used for making ballistic tests to verify the condition of condensers. Artificial cables having the transmission equivalents of 34 miles and 45 miles of standard cable can be introduced into the circuit for making checks of the transmission conditions. A dial speed tester and impulse counter are added in automatic areas.

Exchange Equipment (Manual).

Exchange equipment is assembled in large quantities in special buildings under the continuous supervision of the telephone staff and is therefore particularly adapted to the application of anticipative or preventive maintenance.

Routine tests of all circuits on manual switchboards, and inspections of such items as plugs, cords, key handles, &c., are carried out at regular intervals by the operating staff outside the busy period of the day, whilst more detailed and rigorous tests and inspections are made by the engineering staff. Where apparatus is called upon to operate under varying conditions, tests are made through resistances in excess of the maximum that will be encountered in practice. The resistances, relays, lamps and meters necessary for the making of functional tests on the various circuits are made up in the form of portable testers, each class of circuit having its appropriate tester. The general principle underlying the frequency of the routine tests in manual exchanges is that all common equipment such as cord circuits, junctions and operators' telephones is tested daily, whilst equipment peculiar to individual circuits is tested at less frequent intervals.

It is essential to the proper maintenance of switching equipment that extreme cleanliness shall be observed. It is not only necessary that the switching equipment shall be kept free from dust, but the floors, walls, cable runs, cables and wiring must also receive attention. Such cleanliness has not only a direct effect on the operation of the plant, but its psychological effect on the staff is also helpful.

The most frequent faults in manual exchanges occur on cords, keys, plugs and jacks. These are the parts of the equipment subject to the greatest movement and to direct handling by the operators.

Exchange Equipment (Automatic).

The method of maintaining equipment in automatic exchanges is essentially similar to that in manual exchanges, but owing to the greater complexity of the automatic switching equipment and its segregation into groups of common apparatus, it is necessary to devote a greater amount of attention to the prevention and anticipation of faults.

The detachment of the greater part of the automatic equipment from direct association with any circuit connected to the manual switchboard renders it impossible to make use of the spare time of the operators for routine testing. This work on such equipment is, therefore, done by engineering staff.

The adjustment of the automatic switches and relays is based on a system of gauging of clearances and on the measuring of spring tensions. Every maintenance man is provided with feeler gauges ranging from 2 mils to 16 mils and with tension meters for measuring tensions between 2 and 200 grammes.

The one new and outstanding feature in the maintenance of the automatic equipment is the importance of the operating and release lags of relays and even of the transit times of relay contacts. So far, the accuracy of these times (which are measured in milliseconds) has been sufficiently ensured by the gauging methods, but the growth of the automatic system, the consequent increase in the complexity of the circuits and the need for interconnexion between the automatic equipments in many different exchanges have all magnified the ill effects of inaccurate timing, and it seems inevitable that means for measuring times must be added to the list of "tools."

Proper lubrication of automatic switches is essential. The frequency of this lubrication depends upon the type of switch and the load which it carries. The most frequent lubrications are carried out monthly and the least frequent six-monthly.

The various inspections, overhauls, checks and tests to be carried out at regular intervals are known as "routines," and as many as 60 different routines are scheduled for application to the equipment in director exchanges. Manual testing of the most complicated circuits would be extremely costly, even if humanly possible. Automatic testers have most fortunately been designed, and these are undoubtedly the nearest approach to robots so far introduced into the telephone system.

It is even more important with automatic equipment than with manual equipment that the highest possible standard of cleanliness shall be observed in the switchrooms. The greatest enemy of the automatic maintenance engineers is dust. Elaborate precautions are taken for its exclusion from exchanges by means of the ventilating system, and all relays are fitted under covers, but, in spite of these steps, the occurrence of dirty contact troubles is one of the most frequent causes of failure and misoperation. Other outstanding troubles are sticking or slow releasing of relays, intermittent or disconnected wiper cords on selectors and wipers out of adjustment.

Subscribers' Apparatus.

For several reasons subscribers' apparatus is perhaps the most difficult part of the system to maintain efficiently. The apparatus to be dealt with by one workman may be of so many different types and may include circuits as complicated as those met with in public exchanges. Primary batteries of the wet type are used, and these are a bugbear: secondary cells are installed at private branch exchanges, and the charging of these must be controlled. The workman has available only such tools, stores and testing equipment as he can carry day by day; generally he works alone, and cannot readily obtain the assistance of another. It is the subscribers' apparatus maintenance man who encounters personally the irate subscriber, or, perhaps even worse, who must try to satisfy the inveterate complainant. Repeat visits become frequent if the work is not efficiently carried out, and immediate supervision is difficult, although very considerable assistance in this can be obtained from the fault recording system.

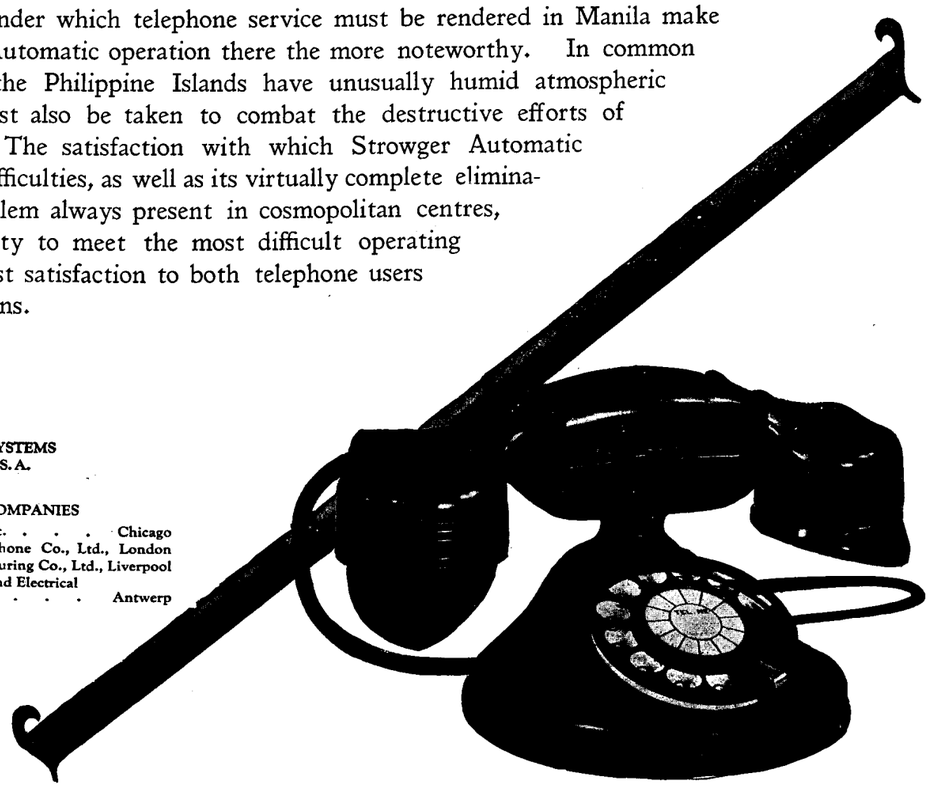
(*To be continued.*)

A typical street scene in Manila, Philippine Islands. The modernness of Manila's telephone system is indicated by the fact that of its 12,700 telephones now in operation, approximately 70% are being served by Strowger Automatic telephone equipment.

rowger Automatic Brings Unexcelled ervice to Philippine Islands

HE Philippine Islands Telephone and Telegraph Company first began the use of Strowger Automatic equipment in 1919, when the Binondo office in Manila was rted to this mode of operation. Since that time this equipment has also been installed lain, South and Santa Mesa offices, until to-day Manila has 8,700 lines of Strowger matic apparatus in operation.

difficult conditions under which telephone service must be rendered in Manila make uccess of Strowger Automatic operation there the more noteworthy. In common Hawaii and Cuba, the Philippine Islands have unusually humid atmospheric tions. Measures must also be taken to combat the destructive efforts of cal boring insects. The satisfaction with which Strowger Automatic tion has met these difficulties, as well as its virtually complete elimina- of the language problem always present in cosmopolitan centres, es decisively its ability to meet the most difficult operating itions with the highest satisfaction to both telephone users operating organisations.



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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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LIFE-SAVING AND HOAXING.

THE telephone, as seen from two widely different angles, was much in evidence in the Press on two successive days at the beginning of last month. In the first instance it appeared as a "life-saver," in consequence of a statement of the chairman of the Montgomeryshire National Health Insurance Committee, that in the rural district of that county, where the telephone facilities were scantiest, the death rate for the last nine years was 16.1 compared with 13.7 in the rest of the county. The *Manchester Guardian*, whilst remarking that it would be a bold proposition to argue that the lower death rate of our own era is due to better communications rather than to greater knowledge and healthier conditions of life, adds "it is tempting to speculate on how many lives are saved in the course of a modern year by the ease with which a telephone call can be made." No one will venture to gainsay, and we ourselves least of anyone, the value of the telephone's assistance in all cases of emergency, but a doctor cannot adequately diagnose by telephone; he needs to reach his patient, and when the latter is fifteen miles from the nearest doctor, and dies from lack of proper medical attention, it might seem equally proper to describe him as "killed by lack of train service," or "killed by lack of motors," as "killed by lack of telephones." There will always, we conjecture, be degrees of remoteness from urban amenities at which the resources of science necessarily become less and less available, and at which the combined lack of them must be a serious drawback in cases of gravity.

The other aspect of the telephone was its employment in hoaxing—*apropos* of the first of April. We read accounts of messages left in the desks of unsuspecting people in London, asking them to ring up a number (which turns out to be the "Zoo") and ask for Mr. Wolf, Mr. C. Lyon, Mr. Fox, or Mr. L. E. Fant. Special steps to intercept these calls were taken at Primrose Exchange on April 1, and we imagine the joke was shorn of some of its beauty from the joker's point of view by this means. Probably this feat which, like most puerilities, is by no means original, had its genesis in a joke which raged like an epidemic in New York in the 'nineties. Messages would be left for a man who was absent at lunch, bidding him ring up such and such a number on his return and ask for Mr. Fish. On his doing so, he would get the reply: "Which Fish do you want?—This is the Aquarium." The joke attained to such proportions that there also a special operator had to be detailed to inform enquirers what the telephone number in question represented and to ask whether the caller really wanted the Aquarium. Hoaxes of this order are, of course, not peculiar to or dependent on the telephone: long before it was invented the practical joker employed the post or other means of communication for the annoyance of his victim. It is probable that the first jokes of primitive man, before the dawn of true wit and humour, found expression in a practical form. At a much later stage of his development he still found especial pleasure in stories of personal discomfiture and of assault and battery, the magnitude of the joke being in direct proportion to the number of ribs broken in a beating, and even now the stout gentleman performing on a banana-skin is not without his admirers. Annoyance inflicted by anonymous channels, whilst it marks an advance on the breaking of ribs, is essentially mean, and we are glad to find does not always escape detection. Calling a maid away from a house with a story that her mistress is lying somewhere injured and requires her aid, and then taking advantage of the girl's absence to rob the house, is possibly something more than a practical joke, though in the same line of descent. But the reiterated employment of this device places people on their guard, and on a recent occasion a thief was smartly captured whilst employing this ruse. As the advertisement of abuses of the telephone encourages their continuance, so we may hope by proclaiming their failure to discourage them; for the telephone is too good a friend to be invested undeservedly with the false appearance of an enemy.

HIC ET UBIQUE.

WE commend to all telegraph men and women the report of the Telegraph Conference of the Union of Post Office Workers which has appeared in the last few numbers of *The Post*. No satisfactory solution can be found for the problems that confront official and staff sides alike unless each side appreciates the other's point of view. The report helps all who read it to realise the difficulties of the staff, and shows that the staff themselves are very far from blind to the difficulties of the Administration. We wish all success to the policy of co-operation that has now been inaugurated.

We learn as we go to press that it is expected to open a radio-telephone service between this country and Australia, available between all subscribers in Great Britain and subscribers in Sydney and Melbourne on April 30. The charge for a 3-minutes' call will be £6.

Telephonic communication between Moscow and Berlin was opened last month. It is not available for the purposes of the Press, says the *Morning Post*, since the Kremlin fears that it would be impossible to impose a sufficiently rigorous censorship.

According to the *Exchange Telegraph* Bucharest papers report that the Roumania telephone monopoly is to be leased to the Swedish Ericcson Co.

An American magazine devoted to "efficiency" publishes a short anecdote, containing the following sentence :—

A hotel chambermaid was tipped half-a-crown not to give away the fact that a couple just arrived were newly married, following upon her having looked in their room and found them disposing of the confetti.

They might with advantage extend their efficiency to the writing of English. Or were the couple not married until after the maid looked into their room ?

The *Daily Mail* has discovered a new game in America. It says :—

Now that the dial system of telephoning has been pretty generally established in London, perhaps the latest New York drawing-room game of composing your own or your neighbour's telephone code number will be taken up here.

The game consists in making up the most striking or applicable or easily remembered "word" from the letters which correspond on the dial to the name of the exchange and the telephone numbers. If a good code word is composed it is far easier to memorise than the actual number. For instance, the telephone number Sloane 7549 can make the code name SLOPJHX.

Of course, there are about six alternative code words from which the final choice can be made, since any one of three letters can be chosen to represent each single letter or number. For A or 2, for instance, one can take one's choice between A, B, and C, all of which occupy the same dial hole. This makes the game protracted and amusing.

From the Western Union Telegraph Company's annual report for 1929 we note that gross operating revenues for 1929 exceeded those of the previous record year, 1928, by $9,217,682, or 6.8%. Cable revenues increased 9.6% ; the volume of traffic transmitted over the Company's ocean cables in 1929 exceeded that of any other year.

Operating expenses for 1929 were greater by $9,054,640. As a result of the reductions in overnight and week-end cable letter rates, there has been a substantial increase in the volume of deferred service over the North Atlantic system, and all classes of deferred services to and from U.S.A. have now been extended to Germany and Belgium.

In November a series of earthquakes in the ocean bed south-east of Nova Scotia caused unprecedented damage to ocean cables. By the use of other routes, the Company was soon able to restore satisfactory service pending the repair of the damaged cables.

Duplexing experiments were successfully carried out in connexion with the Company's high-speed cable laid in 1928 between Newfoundland and Horta, Azores Islands.

Direct cable operation was established in January, 1929, between New York and Berlin via London, effectively supporting the permalloy cable from New York to Emden, Germany. In September, a direct circuit from Broad Street, New York, to Shorters Court, London, was established, thus bringing the New York and London stock exchanges into almost instantaneous connexion.

PRIZE FOR DESIGN FOR THE COVER.

THE Editing Committee offer a prize of Three Guineas for a new design for the cover of the *Journal*. It should be of comparatively simple character and contain the words "The Telegraph and Telephone Journal." It should be reducible to the size of about 8 inches by 4.

Designs are invited from all members of the Post Office staff and should be submitted by July 25.

HOW TO IMPROVE THE TELEGRAPH SERVICE.

(Discussion held at Meeting of the Telephone and Telegraph Society of London.)

Mr. L. SIMON, Assistant Secretary (Inland Telegraphs), in opening the discussion, said :—

The subject of this discussion, as we have heard, is "How to Improve the Telegraph Service." I take it that what is meant is the Inland Telegraph Service. I am going to assume that I may ignore the sister service altogether, in spite of the fact that Mr. Phillips is in the chair. We had a discussion on this very subject—a printed discussion in the *Telegraph and Telephone Journal* last year, and I wrote what I called an epilogue to that discussion. A member of the service writing a criticism in another journal headed it "Epilogue or Epitaph ?" Well the only comment is—Epigram !

There is no call for pessimism in relation to the Inland Telegraph Service. It is true that the traffic is declining and may go on declining for some time, but in spite of that the Inland Telegraph Service obviously performs an indispensable function in the national economy and from the point of view of its usefulness there is no need to think of its epitaph.

Nor from its internal condition does there arise any need for an epitaph, because even at this advanced stage of the life of the telegraph service, after 60 years of its control by the State, we are in the middle of changes in apparatus and methods which are certainly far-reaching and which the historian of the future, looking back upon them, may describe as revolutionary. So I don't think the Telegraph Service is anywhere near its death.

Having written an epilogue last year, this time I am called upon to pronounce a prologue. I call my contribution a prologue designedly, because I don't want it to form any integral part of the discussion, i.e., I am not here to disclose to you my views, if any, on how to improve the Telegraph Service. I have been associated with the formulation of proposals which are designed to improve the Telegraph Service in certain aspects. These are embodied in the recommendations of the Commission which I had the honour to take out to America 18 months ago. They are at present under discussion, in process of being modified and re-moulded, so that they may turn out something appreciably different from the form in which the American Commission put them forward. For that reason alone I should not dream of repeating them here this afternoon. Also, apart from that, those recommendations touch only the internal organisation and methods of the service they don't deal with important aspects such as public facilities and rates, and so forth.

Then I think I should incur another danger if I put forward definite proposals myself on this occasion. You remember Mr. Squeers of Dotheboys Hall telling the boy to spell "window." He spelt it "w-i-n-d-e-r." "Now," said Mr. Squeers, "go and clean it." ! If I put forward any suggestions, you might be disposed to say "Carry them out." Not that I could do so, but I might be regarded as committing the administrative heads of the Telegraph Service to some extent to the views I put forward. I shall therefore confine myself to an attempt to analyse what is meant by improving the Telegraph Service, pointing out some of the difficulties that must arise in any attempt to do it along a particular line.

If you want to know what is meant by improving the Telegraph Service you obviously have to consider first of all what we might call the constituent elements of the service from the point of view of the public who use it. What is it the public expects and has a right to expect from the Telegraph Service ? I think we may lay down these as the requirements :—

(1) Speed,
(2) Accuracy,
(3) Accessibility, and
(4) Cheapness.

I should like to say a few words about each, and to point out how they are all connected ultimately by considerations of expense.

As regards speed and accuracy, there may to some extent be a conflict even between those two apparently complementary requirements, that is to say, you might attain speed at the sacrifice of accuracy and on the other hand attain a high degree of accuracy at the sacrifice of speed. This is not an important point, because the speed of the Telegraph Service depends only to a minor extent on the speed of the actual signalling ; the reason for preferring speedier to slower methods of signalling is not really a desire for a greater speed of service from the point of view of the public ; the reason lies in other directions. The speed of the Telegraph Service depends on the arrangements for circulation and the provision of circuits and staff more than on the actual speed of signalling, so that there is no need in order to obtain the maximum possible speed of service to run the speed of signalling up to a point at which it tends to interfere with accuracy.

There is obviously an absolute standard of accuracy—that is 100%, whereas in settling a speed of service you are bound to lay down some more or less arbitrary standard as to what is a reasonable speed to aim at. We

have our more or less definite standard of speed—namely, that no telegram should remain in one office in the course of transit for more than 15 minutes, with a concession of 5 minutes' grace in the case of the C.T.O. Is that a reasonable standard of speed or not? Ought the Telegraph Service to aim at being rather quicker than is implied in that standard? That is the serious question to decide before you make up your mind whether the service needs improving in respect of speed. In deciding that question, of course, you must take other considerations into account, e.g., whether you have or have not an "Urgent" service. You have also to consider whether we can afford what it would cost to give a more speedy service.

As to accuracy, I think there is nothing much to be said. As mentioned before, there is a 100% standard of accuracy and that is the least we can be content to aim at.

By accessibility I mean that the Telegraph Service should be available to all as regards sending and delivery. The ideal would be that everybody should have a telegraph service within half a mile or so; an office from which to send telegrams and from which telegrams could be delivered. No doubt this is Utopian, but once you realise you cannot give everybody a telegraph office at his door, it becomes a question how far you can get towards that ideal. If you are thinking of improving the service you must have some general idea of the standard to be aimed at in relation to the availability or accessibility of the service. If you set anything like a high standard you conflict with the other ideal of speed of service, because the more telegraph offices you have the wider your network is spread and the more difficult it must be to maintain any good standard of service without largely increasing the expense. I can illustrate that by a reference to what is often thrown in our teeth. People imagine it is a very effective criticism. You can send a telegram from Liverpool to London more quickly via New York than by direct route. The reason is perfectly obvious. The telegraph service from Liverpool to New York is a single point-to-point service. Perhaps I am exaggerating a little in saying that; but, at any rate, practically all that has to be done with a telegram handed in at Liverpool to one of the cable companies is to bring it to a circuit or a group of circuits and hand it to an operator to transmit it to New York. That is an entirely different affair from having hundreds and thousands of telegrams pouring into some office where they have to be sorted out and circulated to circuits serving all sorts of different towns and distant offices. The more you multiply the number of points in the system the more elaborate and time-wasting the process of sorting and circulation must become. From that point of view there is a conflict between the ideals of speed and accessibility, and as always it is the cash nexus which binds them together. The more money you spend on making the service more widely accessible, the less money you have to spend on staff and circuits and messengers which are necessary to maintain your ideal speed.

Then as to the point of cheapness, that is even more obviously connected with finance than the others. A cheap service is obviously a requirement of the user, who always wants everything as cheap as he can get it or more so. What is a cheap service? I suppose we should all say that the service of the sixpenny telegram days was a cheap service. Perhaps we should not agree that the 1*s.* telegram of to-day is a cheap service. Yet I think it is arguable that the 1*s.* of to-day is probably less than the 6*d.* of 1885 and not much more than the 6*d.* of 1910. I think you can fairly maintain that the 1*s.* telegram of to-day is a cheap service. Of course, the user would like it to be cheaper, and it is very difficult to find a means of judging how far you can go in making it cheaper. Why not make it 6*d.* or 3*d*? Why not go further and throw the whole cost of the telegraph service on to the taxpayer? It is difficult to find an absolute basis of decision as to what is the maximum of loss on the Telegraph Service which the taxpayer can reasonably be asked to bear. How far ought you to go in making the service cheaper to the user and more expensive to the Exchequer? I don't think there is any logical answer to that question. The practical answer can only be found by taking the point at which you happen to stand and saying—"At any rate we must try not to increase largely that deficit. If we do Parliament and the public won't stand it." Though we know the public would appreciate the cheapening of the telegram we have no reason to believe there is any very violent or urgent demand for it.

You will observe that I am implicitly accepting a deficit as something more or less inevitable. I do want to say a word about a cheaper telegram in connexion with the suggestion that is sometimes made that you can at one and the same time make telegrams cheaper to the public and reduce the burden on the Exchequer. We are told that if only you reduce the charge to 6*d.* you will get such an increase of traffic as will turn your deficit into a profit. Well, I quite understand outsiders making that suggestion, but I have been much pained to find it made inside the service, because it seems to me that it will not stand a moment's consideration of actual facts. The ordinary inland telegraph service now handles 41 or 42 million telegrams a year. The highest figure we ever had was about 90 millions. If you halve the charge for the telegram, you have got to double the number of telegrams before you get the same revenue, so that you would need 84 millions. To work at a profit you must make something more. So that in order to be in as good a financial position as we are now, if we had a sixpenny telegram we should need to exceed the highest traffic of the days before telephone competition was so severe. But then a much larger staff would be required, and that would put up the cost. The two ends could never meet. Public policy might perhaps justify a reduction of the present charge, but at least let us not be told that by reducing the charge to 6*d.* we may wipe out the deficit or reduce it. It is quite clear that if the deficit is to be reduced at all by the manipulation of rates, it is in the upward direction we should have to move and not the downward. Whether the public or Parliament would stand an increase in the tariff it is difficult to say; some day we may be in a position to try this course, but I cannot say it is in sight at present.

I am afraid my remarks have been somewhat discursive, but the point I have been trying to make is that in putting forward suggestions for the improvement of the Telegraph Service in relation to speed, accuracy and accessibility, you have to consider whether an improvement on one side can be carried out without involving a corresponding degradation of the service on another side, because money spent (e.g.) in increasing the speed of service will increase the deficit unless we can save a corresponding amount by closing unremunerative telegraph offices, &c. You must look at the question as a whole, and it is impossible to deal with any single suggestion in isolation because of the financial element which is always in the background. The deficit has shown a gratifying fall in the last financial year; it is substantially lower than it was. We are still, however, far from being in the happy position of having money to spend. Anybody can say: You ought to have a 10-minute standard instead of a 15-minute standard, and a telegraph office at every half-mile; but that does not carry you very far unless it can be shown that these things can be done without any substantial increase of cost.

I may, indeed, be told: If you improve the service you will get more revenue and that will take the place of the savings. As to that I confess myself sceptical. All the evidence I have does not bear out the view that if you improve the service you will get increased traffic. The service has been definitely improved in several directions during the past year. Last July the hours of telegraph business were extended, so that in any town area you can now hand in a telegram till 9 p.m., and if you are in a town area and a telegram addressed to you comes after the hour of closing of the public office and before 9 p.m., that telegram will be sent out to you by a postman. Then a telephone subscriber or caller sending a telegram does not now have to pay a trunk fee in certain circumstances, as used to be the case. I need not dilate on the abandonment of the requirement that the sender of a telegram should lick the stamps—that is the removal of a minor irritation which has been carried out within the last year or two. Further, we have been keeping offices open longer on Bank Holidays during last year, and so public facilities have been improved. At the same time, the speed of the service has very definitely improved. Comparing the position to-day with that of a year ago, the improvement is quite marked. I have one or two figures. Some 18 months ago we set up a system of hourly reports from zone centres on the traffic position on the main routes. If the delay has reached as much as 15 minutes—that is, the first telegram waiting to be sent has been as long as 15 minutes in the office—it is reported. The number of these reports in 4 weeks of February, 1929, ranged from 855 to 949 a week; in February last they ranged from 142 to 172—a very evident decrease in delays in all those offices, through which 80% of the traffic passes. In January, 1929, 30% of the traffic of the Central Telegraph Office was dealt with in less than 15 minutes, in 1930, 55%. The corresponding figures for other large offices were 77% in 1929 and 87% in 1930. This indicates a definite improvement in the speed of the service during the last month or two as compared with the corresponding period a year ago. Yet in spite of these improvements in facilities and in speed of service, the fall of traffic was at least as marked in January and February this year compared with the previous year as in 1929 compared with 1928. There is no indication that these improvements have had any effect whatever in retarding the fall of traffic.

Of course, it may be said that trade conditions are bad, and that if not for these improvements the fall would have been greater. But the facts as I see them give no ground for the contention that if only you improve the service you will get increased traffic and thereby increase the revenue. I am convinced that if we are to spend money on improvements—in speed, or accessibility or in any other way—without increasing the deficit, we shall have to show that we can save money somewhere else.

There is another consideration that has to be taken into account in connexion with suggested improvements—I mean the interests of the staff—the actual telegraph staff—the manipulative staff and their immediate supervisors who run the Telegraph Service and are at it day and night. It is possible, from the point of view of the public, to make demands on the staff which may be excessive from the point of view of those who have to do the work, and I think that has to be borne in mind. There again the financial aspect comes in obviously, for if you thought that in the public interest every telegraph office ought to be open from 6 a.m. till midnight, you could not secure that without working the existing staff overtime or spending sufficient money to double the staff. Minor improvements all mean increasing work. The question whether the advantage to the public really justifies adding to the burdens of the staff cannot be disregarded.

That leads me to one other thing I want to say in conclusion. I am convinced we have in the Telegraph Service a staff capable of meeting all demands made on it. If our service is less than perfect in some respects, as no doubt it is, it is not because we have not got the material to give a good service. One of our problems is to stimulate and keep alive in the rank and file of the telegraph service that keenness and interest in their work which is necessary if they are to do their best. In a declining service that is a difficult problem. If we can solve that we have a body of men and women who are capable of giving a Telegraph Service as good as any country in the world could desire.

Mr. F. W. PHILLIPS, Assistant Secretary, Overseas Telegraphs (The Chairman), said :—

I should like to refer to Mr. Simon's reference to the scope of the debate. I think the Committee had in mind particularly the Inland Service—but that is not to say that the Overseas Service is not open to improvement ! We are free to debate both.

I have *sometimes* been struck by *the tremendous amount of criticism* the Post Office gets in relation to all its services, perhaps more in relation to the Telegraph Service than any other. The Telephone Service runs it very close. It is comforting to me when I am reading criticisms of the Post Office to reflect that at any rate the Post Office were the first to introduce a really successful wireless service. What was the secret of the success of the Empiradio service which the Post Office developed ? I think in one word it was—Enthusiasm. There is not the slightest doubt that in this service as in the Imperial Cable Service a great deal of enthusiasm was shown on the part of all members of the staff from the highest to the lowest.

The position of the Imperial Wireless Services was different from that of our other services I know, but I have always considered whether it would not be possible to throw a little of the same enthusiasm into other branches of the Telegraph Service. It is difficult where you have an old and declining service to be as enthusiastic as in the case of a new and growing service. I was glad when the Empiradio Services were transferred to the Communications Company that the Department decided to continue the canvassing system both on the Overseas and Inland Telegraph Services ; I am sure it will do a great deal of good. I am an absolute believer in canvassing and I think by its means a good deal can be done to stimulate traffic.

One thing we have done as the result of our experience on the Empiradio services, we have now persuaded the Treasury to let us give free credit accounts both for overseas traffic and inland. That will be announced shortly and will place our canvassers in a position to go to firms and press them to open accounts with Post Offices where they can send telegrams to any address in the world without prepayment. I am sure the opening of accounts of that kind will be very useful—it enables a canvasser to "nurse" firms and in the long run it will I think do good to both the Inland and Overseas Services.

Mr. J. STUART JONES (Controller, C.T.O.) said :—

The urge to improve the Telegraph Service, as indicated in the discussions of this Society and in the articles in the *Telegraph and Telephone Journal*, is, I think, a phenomenon of recent years. I suppose that this urge has proceeded from the fact that the decline of inland traffic during the past ten years has got rather on our nerves and there is a feeling at the back of our minds that possibly we have omitted to take measures which might have averted the decline. I doubt whether the decline could have been arrested. Of course, it can be argued that a telegraph service of poor quality drives the public into other channels of communication, but I don't think there is any evidence whatever that the Telegraph Service is or has been of such poor quality as to contribute in that way to its own decline. And I am inclined to disagree with the Chairman in thinking that there is a public outcry against the Telegraph Service. There are, of course, complaints, but they are not numerous in relation to the amount of traffic and one does not often see denouncements of the Telegraph Service in the Press.

I take it that our job in the Telegraph Service is to provide the public with the service it wants and that it is our duty to interpret what the public wants and try and satisfy those wants. Our duty seems to be three-fold :—

(1) To find out what are the defects of the service and to remedy them ;

(2) To attract more traffic ;

(3) To improve the financial position of the service.

The last point, that of finance, seems to me to be the most important at the present time. An undertaking such as ours which shows a large annual deficit must cause uneasiness in the minds of those responsible for the administration of the service, just as any honest person must be uneasy if he cannot meet his liabilities. The Telegraph Service, however, has really two functions :—

(1) To provide the service required for business interests ;

(2) To perform certain national services which are outside the range of purely business requirements.

The first part ought to be run as a business undertaking and should be made to pay its way. The second part of the service is bound to be unremunerative. The State, as a matter of policy, provides telegraph service at a very large number of small towns and villages where the traffic is so small that the service is bound to be carried on at a loss. I suggest that the loss incurred in performing this national service, which would never be undertaken by a private company, should be assessed and that the Telegraph Service should be subsidised to the extent of that loss. The business side of the Telegraph Service, however, ought not to be subsidised. As a taxpayer I have a strong objection to such a subsidy. If, as a taxpayer, I have to help to subsidise any public utility, I would rather do so for coal or wheat or something more valuable to the community as a whole than a telegraph service which is used by a comparatively small number of people.

As regards putting the service on a better financial basis, the last 12 months have shown a great improvement in this respect, and I think the salvation of the Telegraph Service will lie in the introduction of high-speed machines and in the training of the staff to greater skill. There is little waste in the Telegraph Service, and if we do all we can to improve the machines and the skill of the operators it will do much towards placing the service on a better footing in every way.

As regards defects of service, there is really very little to find fault with in the present service. The time taken in delivering telegrams after transmission is the weakest point, and I think that money spent on a more expeditious delivery would be well worth while. Public complaints are directed more against the time taken to deliver telegrams than anything else.

As regards attracting more traffic, it is possible that expedients such as advertising might do some good, but the present slump in traffic is due to bad trade conditions and increased traffic can only come when the trade of the country is in a better state.

(An interesting discussion ensued in which Messrs. Sharp, Young, Davis, Ritter, Colliver, Highet, and Gibbon took part.)

LEEDS DISTRICT NOTES.

By the time these notes appear we shall have bid our official farewell to Mr. J. H. Goodwin, Assistant Traffic Superintendent, on the District Manager's staff.

Mr. Goodwin commenced his official career at Derby in January, 1882, was appointed Telegraphist in 1885, and dates his association with telephone work from 1892, when he was employed in the Derby Exchange. He was appointed to the Leeds staff in October, 1914, and was closely associated with all the traffic aspects of the transfer of Leeds to automatic working

MR. J. H. GOODWIN.

in 1918. Of a kindly disposition, he was ever ready to place the vast store-house of his knowledge, particularly of Departmental rules and regulations, at the service of his colleagues. While we intend to express our regard for Mr. Goodwin in a tangible form in the near future, we feel that tribute must be paid in these notes to the Darby and Joan affection which in recent years influenced Mr. Goodwin to decline promotion on two occasions for domestic reasons. The many friends of Mr. Goodwin will agree that no picture of him could be complete without his white neck-tie threaded through a gold ring, and we are glad this characteristic is so clearly reproduced in our photograph.

On April 4 last, in the presence of a large number of the staff, Mr. A. Ryder, Higher Clerical Officer in the Superintending Engineer's Office, was presented with a pewter tea service on the occasion of his retirement under the age

limit. The Chair was taken by Mr. S. A. Pickering (Staff Officer), who was supported by Mr. J. W. Atkinson (Superintending Engineer) and Mr. T. B. Johnson (late Superintending Engineer). The Chairman and a number of those present spoke of the esteem and goodwill in which Mr. Ryder was held, one and all wishing him, and also Mrs. Ryder, the best of health and good luck during his period of retirement. Mr. Atkinson formally made the presentation, after which Mr. Ryder suitably replied, thanking all for their good wishes.

Mr. Ryder's service has been somewhat unique for the Engineering Department, he having spent the whole of his official career at Leeds. He entered the service at the Head Post Office in 1885 and was appointed S.C. & T. on Jan. 1, 1886. On Mar. 1, 1898, he was, however, transferred to the Engineering Department at Leeds as a clerk, ultimately becoming Higher Clerical Officer, which position he held up to his retirement.

Mr. H. H. Padgett, Clerical Officer in the Superintending Engineer's Office, retired under the age limit on Mar. 31 last. Mr. Padgett entered the service of the late N.T. Co. at Leeds, in July, 1901, and was transferred to the Superintending Engineer's Office in January, 1912, when the Telephone Service was taken over by the State. As a token of the esteem in which he was held Mr. Padgett was presented with a clock, and also with a ladies hand-bag for Mrs. Padgett. Unfortunately, Mr. Padgett's health has not been of the best for the past few years, and on this account the presentation was made privately by Mr. Atkinson (Superintending Engineer). The best wishes of his colleagues are extended to him, coupled with the hope that *with rest his health will be restored and that he and Mrs. Padgett will be* spared many years to enjoy his retirement.

We regret to announce the death of Mr. E. A. Dobson (Sectional Engineer's Office, Leeds) on Mar. 28, after a short illness. Entering the Post Office as a Learner at Leeds in 1903, he gave good and faithful service in the Telegraph Branch until 1924, when he was appointed Clerical Officer in the Engineering Department, a post he held at the time of his death. During the war he was for four years in the R.E. Signals and saw active service in East Africa. He was of a quiet, unassuming disposition, and the esteem in which he was held was shown by the floral tributes and the presence of many representatives of the Sectional Engineer's and Post Office staffs who assembled to pay their last respects at the church and the grave-side.

Leeds Telegraph Messengers' Concert and Prize Distribution.—The Albion Hall, Leeds, was crowded on Wednesday evening, Mar. 26, when the Annual Concert and Prize Distribution in connexion with the Boy Messengers' Institute took place.

Lt.-Col. Jayne, D.S.O., O.B.E., M.C. (Postmaster-Surveyor), presided, and was supported by Messrs. J. W. Atkinson (Superintending Engineer, North-Eastern District), J. Bownass (Assistant Postmaster), T. A. Bates (District Manager), C. H. Mansell (Chief Superintendent, Telegraphs), several of the Head Postmasters in the West Yorkshire District and Supervising Officers from other Departments.

An unusually attractive and varied programme was highly appreciated by the company the items evoking most applause being mouth organ duets of classical airs rendered by two of the messengers.

Prizes, which had been provided by Lt. Col. Jayne, Messrs. J. Bownass, C. H. Mansell, F. Senior, and the Telephone and Instrument Room Staffs, were presented by Mrs. Jayne to boys who had attained educational successes and excelled during the past year in personal qualities, general efficiency, cleanliness and smartness.

During the evening Lt.-Col. Jayne enlarged upon the avenues of promotion in the Post Office open to Boy Messengers and urged the necessity for parental co-operation, particularly in respect of the educational aspect, in assisting the Department to fit the boys for the higher posts awaiting them.

The general smartness in appearance of the messengers present at the concert was the subject of many favourable comments by members of the public who were in the audience.

TRAFFIC SECTION DINNER.

APRIL 1 is notoriously a day when even the most dignified may unbend without loss of status, and the members of the Headquarters Telegraph and Telephone Traffic Section, who selected this date for their Annual Dinner, made full use of the liberties and privileges of the day. The dinner took place at the Loudoun Hotel, and was unlike any other official function in the history of the section. Rank and precedence were set aside and members of all grades mixed on the most democratic terms round the table. The popularity of the innovation was evidenced by an almost hundred per cent. attendance of members of the section.

The motto of the promoters appears to have been "Liberty, Equality, Fraternity," and such was their fervour for this noble principle that the selection of Chairman and speakers to the many and unusual toasts, was determined by drawing the names from a hat. The speakers were caught unawares, in a moment of natural expansion, and expressed themselves in their native and woodland notes.

The choice of Chairman fell on Mr. Gillett, who fully justified the remark of a colleague that in certain circumstances he would be the life and soul of the evening. He was; he caught and personified the mood of the assembly, which constitutes ideal chairmanship. No occasion found him without an appropriate quip, and his duel with one of the speakers, who at length enquired whether it was a speech or a dialogue, was one of the brightest moments of the evening.

Before sitting down to dinner the members divested themselves of all official decorum by solemnly donning paper hats: It was a symbolic act. The menu was continually interrupted by the reading of telegrams, which arrived from all quarters, and did not appear to be conceived in the most *serious vein, particularly the one advising an Aberdonian who was present* that his golf ball had been found, and asking if the instructions to sell his club should be cancelled.

The programme following the dinner was of a very varied and interesting description, and was as notable for the items announced from the chair which did not materialise as for those that did. The toasts fell into very good hands. Mr. Stuart Jones moved that of "Ourselves" and Mr. Stewart responded, the whole company heartily endorsing by singing "For we are jolly good fellows, which none of us can deny." "The Scots who left home" was moved by Mr. Fright, and Mr. Anderson who responded entered into the history and philisophy of the great trek in an inimitable way.

The singing of Mr. A. Hemsley and Mr. J. Whiffen was of a quality *that called forth hearty appreciation, and Mr. F. Riley proved to be an* accomplished entertainer at the piano. Mr. W. H. Oxlee exploited a rich vein of humour in his comic songs, and Mr. J. C. Craven told some tall stories with refreshing candour. The occasion was marked by the first appearance in England of Li Chang Lung—a Chinaman of placid exterior with a Scottish accent, who in association with Mr. Hemsley gave a remarkable exhibition of thought reading, which it is thought the Telegraph Section intend to develop as a means of communication.

Perhaps the most popular feature of the programme was the community singing of original verses dealing with Traffic Section personalities. The soloists were chosen haphazard regardless of their vocal abilities, and their embarassment was only equalled by the amusement of their colleagues. A song to the tune of "Clementine" dealing with the official struggles of various members of the section was greatly enjoyed, the company entering with extreme unction into the singing of a chorus at the end of each verse which ran:—

"Aint it shameful? Aint it awful?
Aint it all a blinkin' crime?
How they worked, and all for nuffink!
All for nuffink, every time!"

The Telegraph Section, a small but resolute band, sang a little oratorio in praise of the Telegraph Service, which betrayed a note of optimism in the final verse:—

(*To the tune of "My Bonny."*)

No. 1.

"The telephone crosses the ocean,
By wireless it crosses the sea,
Its doing its best to keep up with
The old art of Telegraphy."

No. 2.

"We still are a happy division,
With chances and prospects galore,
Tho' Graham Bell and now television
Are knocking like wolves at the door."

No. 3.

"We found that the Baudot did help us,
And Murray again gave the lead,
From victory to victory we triumphed
And found our salvation in Creed."

No. 4.

"So now we can carry on smiling,
And keep the old country intact,
When dials and selectors go wonky,
We've got the old telephone whacked."

Chorus.—"Give back, Give back,
Give back my traffic to me, to me,
&c., &c."

During the evening the prizes for the Section Billiards Championship were distributed, the recipients being:—

Mr. R. M. Musche—1st. Prize.
„ A. W. White, 2nd „
„ C. S. Earle, Highest break.

The evening was indisputable evidence that traffic problems do not sour a man's nature, and that the Traffic Section do not take their pleasure sadly.

A BRIEF CHRONOLOGY FOR STUDENTS OF TELEGRAPHS, TELEPHONES AND POSTS.

BY HARRY G. SELLARS.

(*Continued from page* 146.)

1897, June 22 ... Postage of letters reduced to 1*d.* for the first 4 oz. and ½*d.* for each additional 2 oz.

1897, June 30 ... Telephone cable designed by Willoughby S. Smith and W. P. Granville laid between the Isle of Wight and Hampshire.

1897, July ... Marconi Wireless Telegraph Company formed.

Marconi introduced an arrangement by which decoherence of the filings in a wireless coherer was effected by a small hammer tapping the tube. This hammer was actuated by an electro-magnet brought into circuit with a small battery each time the current from the main battery passed through the coils of a morse receiver.

Marconi carried out wireless trials across the Bristol Channel.

Sir Oliver Lodge took out a patent for Syntonic Wireless Telegraphy in which he obtained more prolonged oscillation and better selectivity.

(Ducretet established wireless communication between Rue Claude Bernard and Boulevard Port Royal, Paris—about 500 metres distant.)

1899 ... ... Number of telegrams dealt with during the year, 90,000,000.

Net Postal Revenue, £3,710,336.

Loss on Telegraphs, £587,452.

Deficit on Post Office Savings Bank during last three years, £34,123.

1900, Jan. 1 ... Eastern and South African Telegraph Company granted subsidy for 20 years for laying three South African cables.

Atlantic cable laid for Commercial Cable Company.

Committee appointed to consider question of cable communication with the Empire. Members: Lord Balfour of Burleigh (Chairman), Marquess of Londonderry (Postmaster-General), Lord Hardwicke (India Office), Lord Onslow (Colonial Office), R. W. Hanbury, M.P., Gen. Sir John Ardagh (War Office), and Admiral Custance (Admiralty).

National Physical Laboratory founded at Teddington.

Telegraph companies suggested to the Cable Communications Committee that treble rates should be charged for "urgent" messages, which would be given priority.

Emilio Guarini, of Trani, introduced a relay, or repeater, which, used in conjunction with a coherer, retransmitted received wireless signals.

Marconi patented coupled wireless circuits which enabled more energy to be transmitted and greater selectivity to be obtained.

Wireless communication established between Rathlin Island and the mainland and between Anglesey and the Skerries.

Sir Oliver Lodge published his work "signalling across space without wires."

1900, Feb. ... Rowland page printing multiplex telegraph system exhibited at the Paris Exhibition.

Post Office Wheatstone A.B.C. apparatus replaced by telephones where practicable.

First exchange providing full automatic trunking facilities installed at Bedford, Massachusetts. Ten thousand subscribers could be accommodated.

Electro-magnetic relay adopted for telephone switching.

Reginald Fessenden succeeded in transmitting speech without wires over a distance of one mile.

W. Duddell devised a method of producing continuous oscillations by an electric arc.

1900, May ... Subscription for connexion with telephone exchanges fixed at £7 10*s.* for first half-mile and £1 5*s.* for each additional quarter-mile, with unlimited calls on subscribers in the same area. A message-rate system was also established under which a subscriber paid a fixed annual sum for his installation and, in addition, a fee for each local call originated.

Eversheld introduced an Ohmmeter from which the "Megger," for measuring insulation and conductivity, was evolved.

John Gell constructed a typewriter keyboard tape perforator.

Prof. David E. Hughes died.

G. F. Mansbridge patented a condenser in which tinfoil paper took the place of metallic foil and paper.

Creed introduced a telegraph receiver which produced perforated tape identical with that used at the transmitting end. He also produced a pneumatic telegraph printer, with slide valves controlling pistons actuating typewriter mechanism and printing on paper tape.

(Harold Bille designed a morse telegraph transmitter modifying that of Wheatstone and an electric receiving morse perforator.

Willson introduced a telegraph receiving perforator combining the devices of Creed and Bille.

J. W. Willmott devised an automatic Wheatstone transmitter with a magnetic bias, and designed a new form of punch for Wheatstone perforators.

P. Mulligan, E. V. Smart and C. C. Vyle fitted electric motors to automatic Wheatstone transmitters.

Vyle devised a differentially wound polarised telegraph sounder, and, with Smart, worked out a system of duplex.

C. E. Hay also devised a system of duplex for short circuits.

A. W. Martin suggested improvements in quadruplex arrangements.

A. Eden invented a "Sounder Silencer," for use at relay stations, which was developed by H. R. Kempe and A. J. Stubbs.)

1900, July ... Fee for official redirection reduced to 1*s.* per annum and the period limited to three years.

£120 limit for letter insurance extended to British possessions and India.

Murray introduced a speed correction for phonic wheel motors of multiplex telegraph distributors.

(*To be continued.*)

INTER-DEPARTMENTAL GOLF COMPETITION.—P.O. (LONDON) GOLFING SOCIETY.

SECRETARY'S OFFICE *v.* ACCOUNTANT-GENERAL'S DEPT. AT BANSTEAD DOWNS GOLF COURSE—MAR. 24, 1930.

Singles.

S.O.		A.G.D.	
R. J. P. Harvey	1	C. Cross	0
W. E. Weston	1	A. J. Ratcliffe	0
W. R. Birchall	1	H. Buckland	0
P. W. McIntyre	0	S. W. Briggs	1
H. H. Kilby	1	P. S. Pert	0
D. Macgregor	½	G. Baker	½
J. Scholes	1	W. L. Gartland	0
W. H. Smith	1	W. H. T. Porter	0
H. E. Gallaher	0	A. Smith	1
R. P. Crum	1	H. E. Eckford	0
R. H. King	1	C. H. Sainsbury	0
H. L. Pearce	1	Sir H. Bunbury	0
	9½		2½

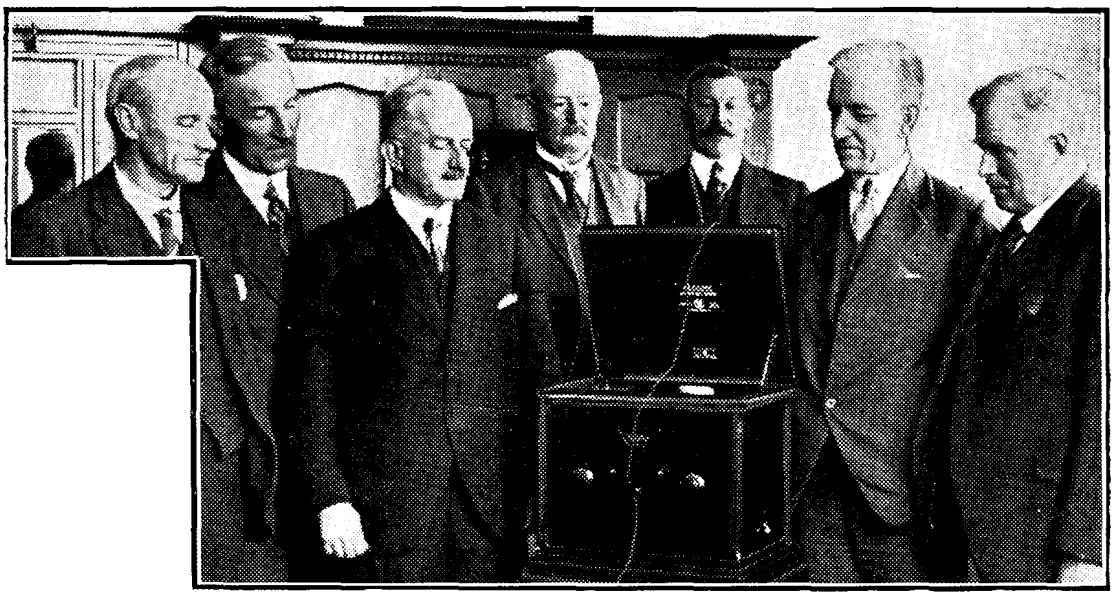
Foursomes.

Harvey and Weston ...	1	Cross and Pert	0
Birchall and Crum	1	Buckland and Eckford ...	0
McIntyre and Scholes ...	0	Gartland and Briggs ...	1
Kilby and King	1	Ratcliffe and Sainsbury ...	0
Macgregor and Smith ...	1	Baker and Porter	0
Gallaher and Pearce ...	0	Smith and Young (Banstead)	1
Total ...	13½	Total ...	4½

RETIREMENT OF MR. ROBERT AITKEN.

A LINK WITH OLD NATIONAL COMPANY.

A DISTINGUISHED statesman, referring the other day to the Government Telephone Service, said they had men on their staff who might be said to have followed the telephone from its cradle, and were still ahead with all the latest marvels of wireless telephony.



[*By kind permission of the "Bulletin," Glasgow.*

MAJOR CAMERON. MR. R. AITKEN.

He might well have been describing the life of Mr. Robert Aitken, M.I.E.E., Superintending Engineer for the West of Scotland District—a district which extends from Carlisle to the Outer Hebrides, and eastwards from Glasgow to Linlithgow—who has just retired from the Service after a distinguished career. In connexion with his severance of office, Mr. Aitken, at a large and representative gathering of the staff, presided over by Mr. R. Cunningham, was presented with a handsome 3-valve Madrigal wireless set and loudspeaker in recognition of his long service and also as an appreciation of the staff's esteem and affection. The presentation was made by Major John Cameron, O.B.E., M.I.E.E., Assistant Superintending Engineer.

A native of St. Andrews, Mr. Aitken is laying down the reins of office owing to the operation of the age limit. Looking back at the milestones of life he has passed—and it may be recalled that he has given many young men heartening to make some of their milestones in time of stress—it can be said that this gentleman from the "Capital of Golfland" has helped to build up and extend the British telephone system. He has links with the old service, and many interesting recollections of these far-off days when a telephone in some country villages was looked upon as something just a little uncanny.

Mr. Aitken has knowledge of the earliest forms of telephone instruments as well as of the very latest. He joined in 1891 the National Telephone Company, and two years later he was transferred to its engineering department. He was what is known as "a young man o' pairts," and by 1896 he was chosen to go on a tour of the country with Mr. Dane Sinclair, the Manager of the National Telephone Company, and Sir John Gavey, in connexion with the valuation of the trunk telephone circuits prior to their transference to the Government.

Mr. Aitken was also responsible for the preparation of all the early traffic and underground schemes carried out by the National Telephone Company. When the Post Office entered into an agreement to rent the underground plant to the company in London, all the arrangements on the Company's side were made by him. Prior to the transfer of the National Telephone Company's local lines to the Post Office in 1912, he was in charge of the Company's headquarters staff in London engaged in the inventory and valuation of the plant. When the transference to the Government took place, Mr. Aitken joined the staff of the Post Office Engineer-in-Chief in London as Assistant Superintending Engineer and was promoted in 1926 Superintending Engineer to the West District of Scotland.

In Mr. Aitken's early days in London he was an enthusiastic Rugby football player and also a great pedestrian. His hobbies at the present time are wireless and walking—the two "W's." While a non-smoker, he has been known, as a cautious Fifer, to take a little whisky with his haggis, but never known to drown it. In Caledonian circles in London and at Clan gatherings and concerts Mr. Aitken was well known, but unless to his intimates, he was regarded as a typical Scot who heard everything but said very little. Mr. Aitken will be missed in Glasgow, but he has the best wishes of many in his retirement. It is not known if he intends to go back to St. Andrews in order to qualify for some of the big prizes in golf.

C.T.O. NOTES.

Promotions.—Miss E. Bailey, Telephonist to Assistant Supervisor; Messrs. E. B. Matthews and W. G. Howson, Telegraphists to Overseers.

Retirements.—Messrs. W. Wood, Overseers, T. J. Lunn and H. E. Patten, and Miss C. Willmott, Telegraphists.

C.T.O. Veterans.—The Ninth Annual Dinner of the Veterans' Association was attended by about 80 gentlemen drawn from the active and retired sections of the office. Both the Controller and Deputy-Controller were present. A very happy evening was spent by all.

The City of London Male Voice Choir.—This choir assisted in the aid of that most deserving charity—especially as regards TS—the Alexandra Orphanage, and all who attended experienced a musical treat. Besides the choir, Miss M. Busby, the well-known soprano, Miss Marie Wilson, violinist,

and Parr and Jennings, of "Ours," gave of their best. The Orphanage funds will materially benefit by the result of the concert.

C.T.O. Library.—The Annual Report and Balance Sheet for 1929, whilst not able to show record figures, still indicates that the library is one of the most popular institutes of the office. Over 1,200 books were purchased, besides rebindings, and members are happey to known that for every 1*s.* received in subscription 10½*d.* is spent in new books and rebindings.

Dramatic.—"*The Last of Mrs. Cheyney.*"—The C.O.D.O.C. production of Frederick Lonsdale's play was highly successful. When an amateur club undertakes a West End production one is keenly interested, not in the comparative sense, but rather in the method of handling the play. The part of Mrs. Cheyney is an extremely difficult one, but in the capable hands of Miss Blodwyn Pugh, the portrayal left nothing to be desired. Miss Pugh throughout the play sustained the character in a polished manner. Mr. Percy Loeber, as Lord Dilling, gave his usual efficient performance of a part that was not too easy, but at times one was apt to gain the impression that he was a little too sharp in his replies. Mr. Charles Phillips depicted the character of Lord Elton extremely cleverly, and as Charles, Mr. Percy Richards obtained the nicety of balance that was required. As Lady Frinton, Miss Gertrude Mathieson gave a splendid performance, she was a typical society "lady." Miss Hood's portrayal of Mrs. Ebley was rather lacking in distinction. The remainder of the cast were excellent, and it is only space that does not allow one to criticise each player individually.

C.O.D.O.C.—The total active and honorary membership of the club now totals 350, an increase of 30 since the commencement of the season.

During the five years the club has been in existence 34 performances have been given, and 16,900 tickets sold.

The Committee takes this opportunity of thanking all patrons and members for their support and co-operation during the past season.

The Civil Service Arts Magazine is now available. This issue contains full reports of C.O.D.O.C. productions during the present season. Copies may be obtained from Mr. A. W. Eagland, C.T.O.

Programme for Season 1930/31.—The Operatic Section will produce "A Country Girl" at the Guildhall School of Music, Oct. 14, 15 and 16. Second production—Feb. 3, 4 and 5.

Dramatic Section.—Next production, Dec. 3 and 4. Second production, Mar. 18 and 19. At the Cripplegate Institute.

MANCHESTER NOTES.

Telephone House.—The occupancy of Telephone House is now assuming large proportions. During the week ended Mar. 29 to April 1 the East and West Sections of the Engineering Department moved in together with the concomitant Stores Section. The advance guard (numbering 50) of Supervisors and Telephonists for training in the method of operating in the new Toll Exchange have also taken up their quarters here. It is also expected that in a few months' time the Divisional Offices of the Ministry of Labour will be established in the building.

Resignations.—Miss A. Atherton, Writing Assistant, Accounts Section, resigned on the occasion of her marriage and was presented with many useful personal presents, together with a canteen of cutlery from the D.M.O. Staff.

Miss B. Hobson, Writing Assistant, Traffic Section, was also the recipient of numerous presents from her friends in the office, together with a case of fish eaters and a case of cutlery from the D.M.O. Staff on her resignation from the service on the occasion of her marriage.

Another link with the late National Telephone Co. was severed on April 2, when Mr. A. Harris, Contract Officer, Class I, retired under the age limit. He entered the service of the late National Telephone Co. in February, 1906, soon after the establishment of the Contract Sections, and was promoted Contract Officer, Class I, in April, 1920.

Mr. Harris was an enthusiastic member of the Volunteer force for a number of years, retiring on the formation of the Territorial Force with the rank of colour sergeant; he was an excellent shot, competing at the N.R.A. Meeting at Bisley on many occasions, winning the Bronze Medal in 1892, when he was a private in the 2nd Volunteer Battalion, Manchesters. In 1916 Mr. Harris joined the forces as Instructor of Musketry and served in various parts of England and Ireland. He was promoted Staff Sergeant Instructor very soon after he joined up and was demobilised in 1919. At a gathering of the D.M.O. Staff he was presented with a gold watch and a canteen of cutlery as a mark of the affection and esteem in which he was held.

All our good wishes go with him on his retirement.

Promotion.—Congratulations to Mr. T. E. Herbert, Assistant Superintending Engineer, who, on the retirement of Mr. W. J. Medlyn, Superintending Engineer for the South Lancs. Engineering District, on June 1 next, has been promoted Superintending Engineer, also to Mr. J. F. Fletcher, Sectional Engineer (Manchester West) on his promotion to Assistant Superintending Engineer, vice Mr. Herbert, and to Mr. T. T. Partridge, appointed Assistant Superintending Engineer vice Mr. A. J. Eames, retired under age limit as from 10th inst.

Social.—We also tender our congratulations to Mr. R. J. Broadbent, Assistant Traffic Superintendent, Manchester, on his winning the Chess Championship of Lancashire.

A very successful wind up social evening organised by the Social Committee of the District Manager's Office was held on the 10th instant, at which about 200 members of the Staff were present. A first-class programme of dance music was furnished by the "Quixotics," and an exhibition of eccentric dancing was given by Mr. Whitehead, all present were enthusiastic at the excellent fare provided; with many expressions of regret that the season of social functions had come to an end.

It should be stated that the series of gatherings of this nature which have been organised during the winter have been most successful and it is hoped the Social Committee will continue the good work next season.

NOTTINGHAM LADIES' HOCKEY TEAM.

THE Nottingham Civil Service Ladies' Hockey Team accomplished a very good performance in the Civil Service Ladies' Hockey Tournament promoted by the Civil Service Women's Hockey Association at Chiswick on Saturday, April 5. After a series of keenly contested matches they reached the final by a win over the Ministry of Labour side in the Semi-Final. They were defeated in the Final by the Ministry of Health.

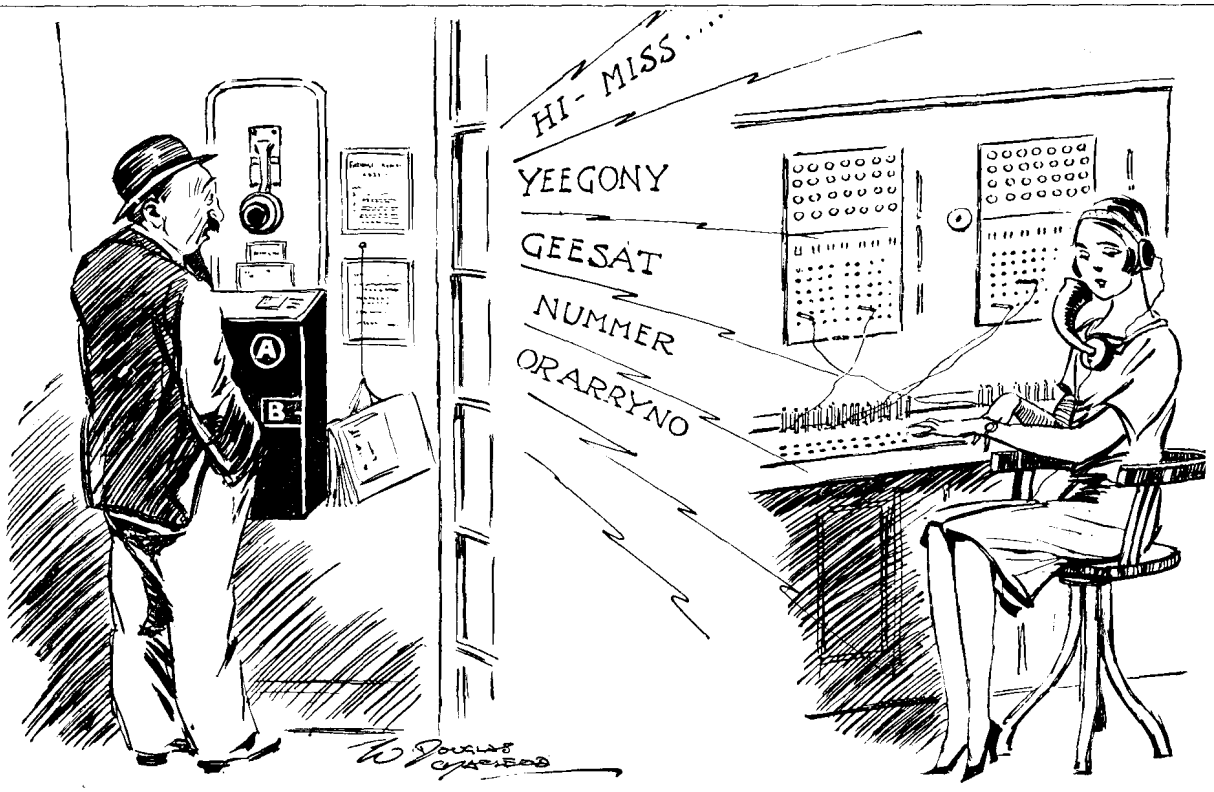
Top Row:—G. Spriggs (D.M.) (Organiser); N. Searcy (Inl. Revenue); D. Vine (P.O.); M. Waite (D.M.); J. I'Anson (D.M.); P. Hawley (D.M.); E. M. Reddish (D.M.); W. Duke (Engrs.); Stephen McFadden (Referee and Coach).

Bottom Row:—K. Barton (D.M.); K. Keatley (D.M.); M. Collins (D.M.); D. Lowater (Engrs.); M. Jones (Min. of Lab.).

(*D.M.—District Manager's Office*).

The achievement of the Provincial side is all the more praiseworthy as the team has only played together for a few weeks. It is felt that they have made a very creditable show at the first attempt. On the next occasion when visiting Chiswick, they hope to do better. They were the only provincial side competing.

Civil Service Sports has already established a strong hold at Nottingham and under its encouraging auspices, Tennis and Swimming will be popular features this summer.



(A Glasgow contemporary's idea of the problems of the Anglo-Continental Telephone services.)

EXCHANGE GIRL—"Sorry; the lady who knows Norwegian is out for her lunch."

[Reproduced by courtesy of the "Glasgow Evening News."

GLASGOW TELEPHONE NOTES.

ON the evening of Mar. 27, 1930, members of the Traffic Branch and of the Exchange Supervising staff met in Reid's Café, Gordon Street, to bid goodbye to the subject of our portrait, Mr. J. A. Matheson, Traffic Supt., Class II, in consequence of his transfer to the Edinburgh Traffic Office. Representatives from the other sections of the District Manager's Office and from Scotland West Traffic Branch were also present.

MR. J. A. MATHESON.

The gathering was arranged to provide an opportunity of making tangible recognition to Mr. Matheson of the high regard in which he was held by the various members of the staff with whom he came in contact, and half-way through a programme of songs and readings Mr. Johnson, Traffic Supt., conveyed to Mr. Matheson, on behalf of the staff, a portable H.M.V. gramophone. In making the presentation Mr. Johnson referred in happy phrase to the success with which Mr. Matheson had maintained the high traditions of the Glasgow Traffic Branch and to his deservedly earned popularity with all those whom he met in the course of his official duties. He extended to him the best wishes of all his friends for his future success in the service.

Mr. Johnson was followed by Mr. Coombs, District Manager, who occupied the chair. In a racy speech Mr. Coombs referred at length to the highly successful manner in which Mr. Matheson had discharged the duties of Traffic Supt. in charge of the "Service" Section of the Traffic Branch and wished him Godspeed in his further progress in the Department. Miss Wood and Mr. Harvey on behalf of the Exchange Supervisors and Clerical Staff, respectively endorsed with a few remarks the appreciative references to Mr. Matheson of the previous speakers. Mr. Matheson at the finish of a well-delivered reply was accorded enthusiastic musical honours.

After an interval for tea and conversation the second half of the musical programme was carried to a conclusion. A very enjoyable evening terminated with the singing of Auld Lang Syne.

The promotion prospects of the Glasgow Clerical Staff, which were stagnant for many years, have been given a fillip. After Mr. Dewar comes Mr. Gibson, who was the central figure in an interesting ceremony on Friday, Mar. 28, on the occasion of his leaving the Glasgow Office to take up an appointment as "Clerical Officer with Allowance" in the Scotland West District.

Mr. Gibson joined the service of the late National Telephone Company in 1902 as a Junior Clerk. He was promoted Clerk (Overseer scale) (later Third-Class Clerk) in the Post Office in 1914, and until the changes necessitated by the Reorganisation Report was in charge of the Advice Note Section.

Mr. Wright, Chairman of the Civil Service Clerical Association (Glasgow Branch), congratulated Mr. Gibson on his appointment, commented on his popularity and assured him of a warm welcome at any of the social functions which might be held under the auspices of his office. Mr. Law, Chief Clerk, Mr. Johnson, Traffic Supt., and Mr. Lucas, Contract Manager, also voiced congratulations and good wishes. Mr. Coombs, District Manager, on behalf of the staff, presented Mr. Gibson with a suit case, golf bag and clubs. He spoke highly of Mr. Gibson's abilities as an officer of the Department and of his sterling worth as a man and wished him every success in his new surroundings.

Mr. Gibson thanked Mr. Coombs and the staff for the many kind things which had been said and for the appropriate and useful gifts.

The Bell Golf Club carried out the first meeting of the season over the Deaconsbank Course on Wednesday, Mar. 26, when the afternoon's sport was thoroughly enjoyed under ideal weather conditions. The winners were, first, J. Cameron (80 net), followed by a tie for second place between J. A. Matheson & G. Hunter, with a net score of 82 each. Although all of the above are members of the Traffic Branch, it is not suggested that there is any connexion between the reckoning of "special records" and golf scores.

Voice over Central Enquiry Line: "Could you tell me, Miss, where in Glasgow I could buy a monkey"?

Central Enquiry Telephonist (with local knowledge): "Yes; at ——'s."

Voice: "Thanks very much, Miss. I have won my bet. I told a friend here that the Glasgow Enquiry could tell me anything I wished to know and he bet me that you couldn't tell me where I could buy a monkey. Thank you."

It has been officially denied that the owner of the voice went 50-50 with his winnings with the Central Telephonist.

"My Service."

(Concluded.)

I NOW come to the most important part of my talk. I should like to tell you how big a part telephone service plays in my work. It links me with *my stockrooms, with my supplies and with my special customers.* Often enough it means just the difference between getting something through successfully and failure. To a very busy person good telephone service is of high importance, but to me it means even more than that. Naturally, it is imperative to keep one's hands on a thousand things and keep them woven together harmoniously. It is impossible to be in these thousand places at once, and for this reason the telephone is worth its weight in gold to my business and therefore to me, if it gives me that efficient service I have learnt to look for in it.

I wonder if telephone operators know how close they are to the heart of things—how much difference it makes if they put themselves wholly into their job. How many of the fine points of life—business and personal—are settled across a telephone. I think telephonists must feel rather like the Fates—who, unseen, sit weaving the threads of people's destinies.

You have more scope for making people feel the true value of real courtesy and service than almost any other people I can think of. Because you, too, come across grouchy people, just as we do, you may think your interest and efficiency not appreciated, but this is not so—there are always the other 80% who will recognise and be grateful, and, even with the grumpy ones you never know what help you are giving to the other people they are in contact with by the swift execution of their requests.

Speaking of appreciation: I will tell you of a recent incident which will serve as an example, since the people concerned are known to me personally.

A business man, whose headquarters are in Paris, but who has important interests in this country, comes over to London frequently and stays at one of our big hotels. A few weeks ago, arriving by the Golden Arrow, he found when he reached his room, that he had to telephone someone named Gray living in one of the streets of Knightsbridge. Turning to the telephone book, very tired, and in a hurry to change for a dinner engagement, his horrified eyes saw page after page of Grays—and he didn't even know the initial of the particular Gray he wanted. He called up the hotel operator and said: "If you haven't done your good deed to-day, here's your opportunity. I want someone named Gray, living in X Street, off Knightsbridge. Please get him for me." In three minutes his telephone bell tinkled: "Mr. Gray *is out. He is expected in within ten minutes. I'll try again then, and let* you know." Within a quarter of an hour his telephone rang again. "Mr. Gray is on the line waiting to speak to you."

The next morning our business man was rung up at the hotel. The same operator took the call. "I'm sorry, there is no reply," she answered, "but *I remember he told me yesterday he didn't always hear the bell, so I have* sent a page up to his suite to see if he is in. Will you hold on?" Two or three minutes later, she reported that he was in and coming to the telephone.

Later he was discussing this with his secretary, who said: "What a pity we haven't someone as courteous and thorough at our telephone at the office, *especially since our business calls so much for very careful* telephone service." He smiled and said nothing. A week later that operator was installed in a job in his London office at a greatly enhanced salary, and, since it is a young progressive business, she has a wide scope for advancement.

That is just an incident, but it serves to prove that thinking round your job instead of just carrying out its essential duties is not only worth while, but, almost invariably, "bread upon the waters" leading to some pleasing form of recognition.

Salesmanship, you know, isn't just the prerogative of people who handle merchandise—it is just as applicable to a telephone operator as it is to a *stockbroker, a saleswoman in a store, or a great dressmaker.*

Efficiency, perseverence, intelligence, judgment, enthusiasm, concentration and consideration—all the components of officially recognised salesmanship—are the qualities which belong just as much to your job. You may not see the returns—the figures built up on the strength of your demonstration of these points, but they are there just the same, and they mean more than you can ever trace, contributing towards the smooth running of things a far greater share than can be expressed in words.

Lastly, I should like to say something about charm. Like original sin, there is a bit of it in everybody's composition—and for some reason (obscure, but probably as old as time) the greater monopoly of this attribute has been accorded to women. Charm is too elusive a thing to go after, it grows out of the warmth of other qualities, as peaches ripen against a sun-baked wall *rather than through the direct contact of the sun. You are given a few grains* of it to start with, and it depends on you, as the individual, whether you make anything of this material or not. The best way to foster it is with that acquisition of understanding and consideration—and all those other qualities we have been talking about—which are so imperative to salesmanship whether it be your job or mine.

Charm is a queer fellow—like Will o' the Wisp, he doesn't belong to Beauty, Breeding, Education, Brilliance or Position—he just is or is not—he will be found where there are those several qualities which are the fine essence and real meaning of service, and he is the best birthday present anyone, socially or in business, could wish for.

Here is something for you to remember:

A clever American woman writer was asked by a famous editor to define Charm. She shook her head—smiled, and wrote:—

"Not Beauty, nor Intelligence, nor Grace,
Nor any pondered lore,
Nor manner, nor the mark of ancient race,
But just—the something more."

which brings us back to the beginning—

"The good heart does a little extra."

N. ELTT.

Pollards Exchange.

A first birthday celebration, in the form of a Social and Dance organised by the staff of the new Pollards Exchange, Norbury, took place on Saturday, Mar. 8, at the Library Lecture Hall, Thornton Heath, when a very pleasant evening was enjoyed by a large gathering of friends present.

As a striking contrast to the Arctic elements which preceded the opening of the exchange just a year ago, when "something hot" was the order of the day, such a moderate temperature prevailed during the refreshment interval that "Lemonade" proved the favourite and an "easy winner." Miss E. M. Brown took charge of the catering arrangements in her usual capable manner, and there were many willing helpers to assist.

The Black Dominoes Dance Band and the "spot-light" were features of the evening much appreciated, and Miss D. S. Stribley's recitation "I aint 'arf a lucky kid" was loudly applauded.

It is hoped that there will be many happy returns, for as yet we are *amongst the babies of the London Telephone Service. And those who* sometimes ask in such surprised tones, "*What* Exchange are you? Never heard of such a place! Where the dickens *are* you?"—will perhaps come along, see, and incidentally enjoy themselves.

A. G. T.

Holborn Exchange.

The social events of the winter season have now been completed and the staff at Holborn can congratulate themselves upon the success of their efforts. Under the presidency of Miss Redmond the members of the Children's Tea Committee have done well; the Social held in the Dining Room on Jan. 24, 1930, proved a very jolly affair, and a profit of nearly £6 was added to the Fund. Many thanks to Miss Fensham and Mr. F. Field, who entertained with elocution and solos respectively. The pantomime "Cinderella"—written, *produced and performed by the staff at Holborn*—formed the amusement at three children's teas, gave pleasure to disabled soldiers, and saw a successful public performance.

On Feb. 1, 1930, the company journeyed to St. John's Hall, Hendon, to the Children's Tea given by the staff of the Speedwell Exchange. Miss Fensham—who was a Holborn telephonist before her promotion—was the organiser, and under her excellent management the producer of "Cinderella" had every opportunity of making the show a success.

Two hundred and fifty children were entertained by the Holborn staff at the Central Mission, King's Cross, on Feb. 15, 1930; there were toys, sweets and a good tea awaiting them when the eventful day arrived, and "Cinderella" was performed with spirit and determination in spite of many difficulties with which the caste had to contend.

Miss Duggin, of Tottenham Exchange, assisted by friends from "Trunks," gave a Tea to 250 children at St. John's Hall, Stamford Hill, on Feb. 22, 1930, when "Cinderella" saw its third appearance. How delighted the children were with the coach and all the fairy lights!

The public performance at St. Bride's Institute on Mar. 6, 1930, exceeded expectations, and the pantomime was produced under the best possible conditions and was very successful. Other artistes gave valuable assistance, Miss R. Young, in her humorous songs delighted the audience, and "Holborn" hopes to see more of her at future concerts. Miss D. Curnow and D. Wilson both showed themselves to be possessed of fine voices and it is anticipated that they will be heard and seen in next year's productions. Miss C. Hunt's contralto voice is too well known to need advertisement, and Mr. Boncey rendered an excellent solo in spite of a severe cold. The professional singers —Miss R. Sheppard and Mr. Guiseppe Ceci—in their songs and duets, drew continued applause from the large audience. Many thanks for their valuable services!

"Suppressed Desires" showed to advantage the dramatic talent of the Misses P. Stanley and L. Connelly, and Mr. A. Tubbs. The sketch was admirably suited to the performers and was appreciated by all present.

On Mar. 29, 1930, a tea was given to the disabled soldiers at Lonsdale House, Clapham, by the girls at Holborn; the Misses Clarke and Bowker should be proud of the splendid work they are doing in this connexion. Upon their invitation the pantomime was presented and the soldiers thanked the performers for the simple tale simply told. All the caste of "Cinderella" worked so well in all performances that it is difficult to make distinctions, but Miss C. Huley undoubtedly possesses dramatic ability and would do well to develop her talent in that direction; her portrayal of "Cinderella" was favourably commented upon at all performances.

Miss M. Logan and Miss E. Jones arranged the dances and their solo dancing was wonderful! Holborn is fortunate in having girls talented in this art. Many thanks to Mr. Newton, who made the coach and took charge of all the stage arrangements.

Now girls! who will volunteer for the position of dramatic critic for next season?

G. M. T.

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.1.

LONDON TELEPHONE SERVICE NOTES.

Contract Branch Notes.

THE business done by the Contract Branch during the month of March resulted in a net gain of 1,992 stations, as compared with 3,190 stations in the corresponding month last year.

The gross new business exceeded that for last year, but ceasements were again high and the result is reflected in the reduced net gain. No less than 800 stations were lost during this month in one contract district alone through 9 subscribers either ceasing or reducing their installations. In the case of a large West End Hotel, 537 stations were lost under circumstances which rendered it impossible to retain the installation or, for the time being at any rate, of recording a corresponding gain.

Exhibitions.—The Ideal Homes Exhibition at Olympia attracted many more exhibitors this year than last year, and the number of telephones provided was 218, which is a considerable improvement on last year's figures.

At the Exhibition held in March last year a visitor was handed an agreement by a Contract Officer which was returned duly signed on Mar. 20, 1930—a year later.

The "seeds" of propaganda may not always bloom in the first year, but they do not necessarily die.

Promotions.—We are pleased to record the promotions to H.C.O. of Mr. G. O. Esdaile and Mr. R. L. N. Canham.

Mr. Esdaile was employed in the Contract Branch Headquarters, and Mr. Canham was in the City District Office.

"*April Fool.*"—April 1 is the day of the year when the self-styled practical joker claims to be given full licence, regardless of the consequences of his actions.

The day produced the usual crop of applications for Telephone Service which on investigation proved to be inspired by that type of individual whose perverted sense of humour causes much trouble and expense to other people, by their feeble efforts to be "funny."

One Contract Officer had four such hoaxes to deal with and a very indignant letter was received from an irate householder to whom an agreement had been sent at the supposed request of one of his "friends" complaining of interference by the Department with his private affairs.

We do not always see the funny side of the other fellow's "joke" but the absence of originality in this kind of April perennial induces us to retort on the perpetrator, by addressing him in his own words "April fool," or to use a colloquialism "And you."

Obituary.—The South-East Contract Office suffered a severe loss in the death of Mr. P. Kelly, who died very suddenly on Mar. 20 last after an operation.

"Pat" as he was affectionately known to most of his colleagues, entered the service of the National Telephone Company on Feb. 4, 1910, and had an extensive knowledge of the details of Contract work which was invaluable to the office. He will long be remembered, especially by the junior officers, as one who was always ready to give counsel and advice, and to give it cheerfully and ungrudgingly.

The funeral at Brockley Cemetery was attended by the District Contract Manager and a number of the staff, and the quantity of flowers sent testified to the general affection in which he was held.

L.T.S. Sports Association.

Football Section.—The season ended, so far as League engagements are concerned, with an away win on April 5 over the Royal Mint by 2 goals to 1. This completes the programme for the season which reads as follows:—

				Goals.		
Played.	*Won.*	*Lost.*	*Drawn.*	*For.*	*Against.*	*Points.*
20	16	0	4	85	19	36

A splendid record. The Football Section have brought further honours to the London Telephone Service by annexing the 2nd Division Civil Service League Championship.

It will be remembered that the Bowls Section last summer won the Bunbury Cup competed for by all Civil Service London Clubs.

The winning of the Championship by the Football team means that the club will automatically ascend to the 1st Division next season, where no doubt the opposition will be much stronger, but it is felt that the present team will acquit itself creditably in the higher circle. No doubt the Captain, Futerman, and Messrs. Evans and Culley will feel very pleased with the results of a very successful season.

Bowls Section.—The representations made to the Civil Service Sports Council requesting that a panel be provided and exhibited showing the winners of the Bunbury Cup have been refused on the grounds that it is the custom to limit such displays to competitions involving National Civil Service championships.

A variation in the method of collecting green fees is proposed this year. Tickets will be issued as usual for players engaged in single-rink contests, but in the case of club matches the team Secretary will be responsible for collecting and paying over the full amount due in respect of each member of his club, and in return a combined receipt will be issued instead of the former practice of purchasing blocks of tickets.

Accounts Branch Cricket Section.—The Annual General Meeting was held at Cornwall House on Monday, April 7.

The new President, Mr. R. Tinniswood, occupied the chair, supported by Mr. W. R. Bold, the Vice-President.

The minutes of the last General Meeting were read and confirmed.

A brief outline of the past year's activities was given by Mr. Hough, the Secretary, followed by a financial statement showing a balance in hand of £3 14*s.* 5*d.*

Mr. Hugh Williams (the Club Chairman) appealed to the honorary members to support the club as much as possible during the forthcoming season by attending the matches and assisting, by umpiring, scoring, &c. A satisfactory response is anticipated.

A vote of thanks was accorded to Mr. Tinniswood not only for presiding over the meeting but also for the keen interest he had already shown in the club.

He replied that it was his intention to attend some of the matches and that the club could rely upon him as an enthusiastic supporter.

Contract Branch Cricket Section.—It has not yet been possible to sum up the prospects of the Contract Department's chances of regaining the Cricket Shield which was lost last season to the Traffic Branch.

Here is a list of the season's arrangements:—

May 6 (practice)	at Battersea Park.	
May 13	„ Finsbury Park.	
May 20.—	League Match *v.* Accounts	At Chiswick.
June 10.—	„ „ *v.* „	
July 3.—	„ „ *v.* Messengers	
„ 8.—	„ „ *v.* „	
„ 22.—	„ „ *v.* Traffic	
„ 29.—	„ „ *v.* „	

Stamford Dramatic Society.

On Mar. 24, at the Cripplegate Institute, the Stamford Dramatic Society produced "The Best People," a light comedy, before an enthusiastic audience. This is the fourth play given by the Society during the two years of its existence, and we congratulate the members on the high standard

STAMFORD DRAMATIC SOCIETY IN "THE BEST PEOPLE."

of acting which they have attained in this short period. Although the play itself is of a type which could hardly fail to entertain, it requires skilful direction and polished acting to ensure its complete success, and we consider that the sincerity of the Society's interpretation is indicative of the extent to which their ability has grown with experience.

ANOTHER SCENE FROM "THE BEST PEOPLE."

Generally, the play appeared to have been carefully rehearsed and the players thoughtfully cast, and we were particularly pleased with the absence of those irritating hitches and unhappy pauses which frequently mar amateur productions. Special mention must be made of the orchestra which provided well-chosen light music during the intervals.

May we say that we consider this play to be quite the Society's best to date, and we look to them to maintain in future productions the tradition they have created with "The Best People."

National Sanatorium—Benenden.

The last Concert of the Season organised by the Staff of the London Telephone Service was held on Saturday, Mar. 1.

The Artistes were:—Miss Nellie Beare, soprano, Miss Margaret Worth, mezzo-soprano, Mr. Hugh Williams, tenor, Mr. Arthur Hider, bass, Mr. Arthur Samuels, humourist, Mr. Wilfred Stracey, entertainer, and Miss Ida Wise, accompanist.

The Concert was under the direction of Miss Worth.

The programme comprised Songs, Duetts, and Quartettes. The Staff patients were delighted with the items and the humourist received no meagre portion of the applause.

The Resident Medical Officer, on behalf of the audience, proposed a very cordial vote of thanks to the artistes for their entertainment and to the staff of the L.T.S. in providing the means by which the Concerts were possible.

Miss Worth responded and stated that it was always a pleasure to organise the Concerts and that the artistes were most willing to assist her whenever possible.

Retirement of Messrs. F. Sinclair and R. Macann.

To mark the occasion of the retirement of Mr. F. Sinclair, Night Supervisor, London Wall Exchange, and Mr. R. Macann, Night Telephonist, Sydenham Exchange, after serving 39 and 22 years respectively with the Telephone Service, a tea and social was held at the Royal Hotel, Southampton Row, on Mar. 10. There were at least 150 persons present, including Night Supervisors and Night Telephonists, a good many with their wives and children.

F. SINCLAIR.

R. MACANN.

A very enjoyable time was spent; after tea there was some good singing, rendered by the ladies present and the Night Staff.

Mr. Napier, Controller, expressed his pleasure at being asked to attend to make the presentation. He handed to Mr. Sinclair a cheque for a substantial amount and to Mr. Macann a smoker's cabinet and a cheque with the best wishes of their colleagues. Both the recipients expressed their pleasure and thanks for the gifts and message of goodwill.

As the function was drawing to a close the whole joined in the chorus "For he's a jolly Good Fellow" and concluded with "Auld Lang Syne."

Presentation to Mr. B. R. Mead, Traffic Branch.

A representative gathering of London Headquarter and District Traffic Officers assembled in the Conference Room, Cornwall House, on April 4, to greet and congratulate Mr. Mead on his recent appointment as District Manager, Canterbury. The Controller, Mr. Napier, on behalf of Mr. Mead's many friends in the L.T.S., presented him with a cut glass Reading Lamp and a Barometer. Mr. Napier, in referring to Mr. Mead's appointment as a well-deserved promotion for his many years' hard work and varied experience in the Service, jocularly evolved the theory that a District Manager's tour of offices round the Thanet coast resorts may have influenced Mr. Mead in his selection of a barometer as one of the gifts. Mr. Mead in responding gave a glowing description of the beautiful surroundings of his new office and stated that while he was greatly attracted by his new appointment he felt it a great wrench after so many years to leave his many friends in the L.T.S.

Presentation to Mr. J. Leslie, Accounts Branch.

On Mar. 7, after 47 years' 7 months' and 7 days' service, Mr. Leslie retired. The Conference Room was crowded, just after office hours, on that day, to bid him farewell. The Controller, in presenting Mr. Leslie with a cabinet gramophone and records, referred to his long and faithful service.

He commenced in the Northern District Telephone Company on July 31, 1882, and after occupying various posts in the Provinces, was appointed Chief Clerk of the City District, London, in 1896. In January, 1905, Mr. Leslie was appointed Chief Cashier, Metropolitan District, and he held this position through to the transfer of the N.T.C. in 1912 until 1922, when the Revision of Rates called for his skilled accountancy in another section of the Accounts Branch. Mr. Napier made appropriate reference to the high esteem in which Mr. Leslie was held by all his colleagues, his strict integrity and lovable disposition.

Mr. Leslie's reply was typical of his modesty but not lacking in appreciation of the parting gift and the heartfelt good wishes that accompanied it. The following extract from a letter subsequently received describes his feelings. "Friday, Mar. 7, was a strange sort of day for me. I would not go through it again not even for another gramophone." So ends the official career of one of the stalwarts of the Telephone Service. He will be greatly missed by the Staff. Men of his calibre who are so considerate and take such kindly interest in their fellow workers can ill be spared.

Personalia.

Resignations on Account of Marriage.

Telephonists.

Miss M. Lycett, of Museum.
" K. A. M. Huxham, of Museum.
" W. E. Little, of Ilford.
" M. Williams, of Clissold.
" G. O. Ruffey, of Hop.
" G. E. Goodhew, of East.
" R. E. Pollard, of East.
" L. E. I. Rushworth, of Toll A.
" J. A. F. Ruffles, of Gerrard.
" F. Cole, of Fulham.
" V. M. Robbins, of Holborn.
Miss M. L. Doe, of Ealing.
" J. G. Bower, of Tottenham.
" K. Perrin, of Tandem.
" W. M. T. Smith, of Tandem.
" A. L. Eames, of Paddington.
" G. A. Doughty, of Bermondsey.
" E. M. Wesley, of Avenue.
" R. V. Seeley, of Trunks.
" E. M. Howlett, of Trunks.
" M. L. E. Jones, of Bishopsgate.

A DOGGY STORY.

IF I were asked what I like most about my job—I am a Contract Officer—I would not hesitate in answering "Adventure." Now that may seem strange to the uninitiated. What adventure, they will ask, does a Contract Officer meet with? Yet it is a fact that seldom a day passes without something exciting happening to relieve the sameness of endeavour—which sounds better than "the monotony of work."

For instance, this morning I called by appointment upon a charming lady, petted her dog a little, and obtained an order. In case it may be thought that I obtained an order *by* petting her dog, let me add that this action was quite incidental.

As I left the house the dog left, too. A few turnings away I noticed that he was following me, so I tried to "shoo" him home. Not being successful in this, I continued on my way and made another call. This call finished I left the house, and received a rapturous welcome from the dog, which had waited patiently for me.

This was getting awkward. Now what should I do—take him back home, or continue on my journey in the hope that he would come to see the folly of his ways? I decided to try strategy.

First, I let the animal bound a long way ahead, then hid behind a tree. Nothing doing—he rushed back and came straight at me with joyous barks.

I then tried going a little way up a short turning, doubling back when he was a long way ahead, then darting up another road. Same result—dog's arrival, breathless, but evidently enjoying it immensely.

And so we kept on for another couple of miles, until I knew that it was a case of either taking him all the way home or having his company for the day. I chose the former alternative as being the less unpleasant.

When the dog's mistress came to the door she said "Oh! you naughty darling." I forget now what I said.

Some things are better forgotten. F. W. G.

LONDON ENGINEERING DISTRICT NOTES.

Presentation to Mr. Harry Stone.—A large gathering of members of the London Engineering District assembled at Denman Street to bid farewell to Mr. Stone on his retirement from the service under the age limit.

Mr. Gomersall, Superintending Engineer, in presenting a cheque to Mr. Stone, outlined the qualities that he considered should be possessed by an officer filling the responsible post of Executive Engineer. He must, said Mr. Gomersall, be a man whom you can trust, in counsel wise, in judgment good; he must speak what he thinks but speak wisely and he must be at once just to the Department and sympathetic to the staff. He regarded Mr. Stone as a model Sectional Engineer. He possessed powers of organisation to an unusual degree and his wide experience enabled him to deal adequately with the emergencies which from time to time challenge the resources, abilities and zeal of engineers. Moreover, Mr. Stone had succeeded to a continually increasing degree in combining efficiency with economy—an objective forced by the times upon all executive and administrative officers.

Capt. Hines, Mr. Brown, Mr. Ridd all paid tribute to Mr. Stone's outstanding qualities as a man and engineer. Their observations were endorsed by Messrs. Hilton on behalf of the Clerical Staff, Gallard on behalf of the Chief Inspectors, Simmons on behalf of the Inspectors, and by Mr. Dennis.

Mr. Cornwall recalled several amusing incidents which had occurred during his long acquaintance with Mr. Stone, and wished him the best of good fortunes. Mr. Bolton said in his early years he had received great encouragement from Mr. Stone, which he was glad on such an occasion to recognise. Messrs. Padden and Prescott, on behalf of Mr. Stone's immediate assistants, voiced their appreciation of one who, in the words of Mr. Prescott, was a very fine gentleman.

Mr. Stone, in reply, thanked the various speakers for their very generous tributes. He recalled many interesting episodes of his long career, referred to the interests which would prevent his "stagnation," and finally gave a cordial invitation to those of his friends who might find themselves in the vicinity of his "home in the country" to look in and chat over days gone by.

Final of Civil Service Football Cup: L.E.D. Lost to Ministry of Pensions.—A serious knee injury to H. L. Webdale early in the game largely contributed to the defeat of the L.E.D. when the met the Pensions in the final of the Civil Service Cup at Chiswick on April 9. For the first 20 minutes of the game the L.E.D. more than held their own and gave every promise of at last winning the coveted trophy; but this was not to be. Webdale's retirement necessitated a re-shuffling of the team and whilst in this disorganised state Daniel opened the scoring for the Pensions. At half-time the score stood at 1-0, and although in the second half the "ten men" battled gallantly against superior odds, they were unable to pierce their opponents' defences. Once "Jim" Casey got clean through, but his usual unstoppable shot went wide of the goal. Midway through the second half Daniel increased the Pensions' lead with a shot which went in off the foot of the post, and just before the end Gower converted a penalty, for the Pensions to run out winners of a dour fight by 3-0.

As a whole, the L.E.D. defence stood the test well, but playing only four forwards, the attack fizzled out, although G. H. Smith (Redhill F.C.) gave his usual polished display at inside right. Of the Pensions team, H. H. Gower (Dulwich Hamlet International) and W. Barr (London Caleys) played outstanding games, whilst Daniel (Bromley) made an efficient centre forward.

The heads of both the Departments concerned attended the match, which attracted a record gate. Mr. F. O. Roberts, Minister of Pensions, had the satisfaction of seeing his men win the final for the second time, whilst the Superintending Engineer, Mr. E. Gomersall, who was accompanied by Sir Raymond Woods, was most unlucky to see his side defeated in the final; for a similar experience befell him when he came to London with the Sheffield Engineers in their final tie with the Pensions 3 years ago.

Sir Fredk. J. Wall, of the Football Association, presented the Cup and badges to the winners, after which a large company of players, officials and guests, spent a delightful evening of song and dance in the Pavilion.

Teams.—*L.E.D.*—T. Donegan, F. S. Lever, H. L. Webdale, S. A. Skinner, W. J. Toleman, W. Merrick, J. E. Shelley, G. H. Smith, W. A. Drew, S. V. Brocklesby, J. Casey. *Ministry of Pensions.*—A. M. Wilkinson, K. S. Weston, H. H. Gower, C. C. Boorman, W. Barr, J. Hill, S. H. Murrell, R. E. Higgins, S. V. Daniel, F. Watts, G. P. Illingworth.

Opening of New Exchanges.

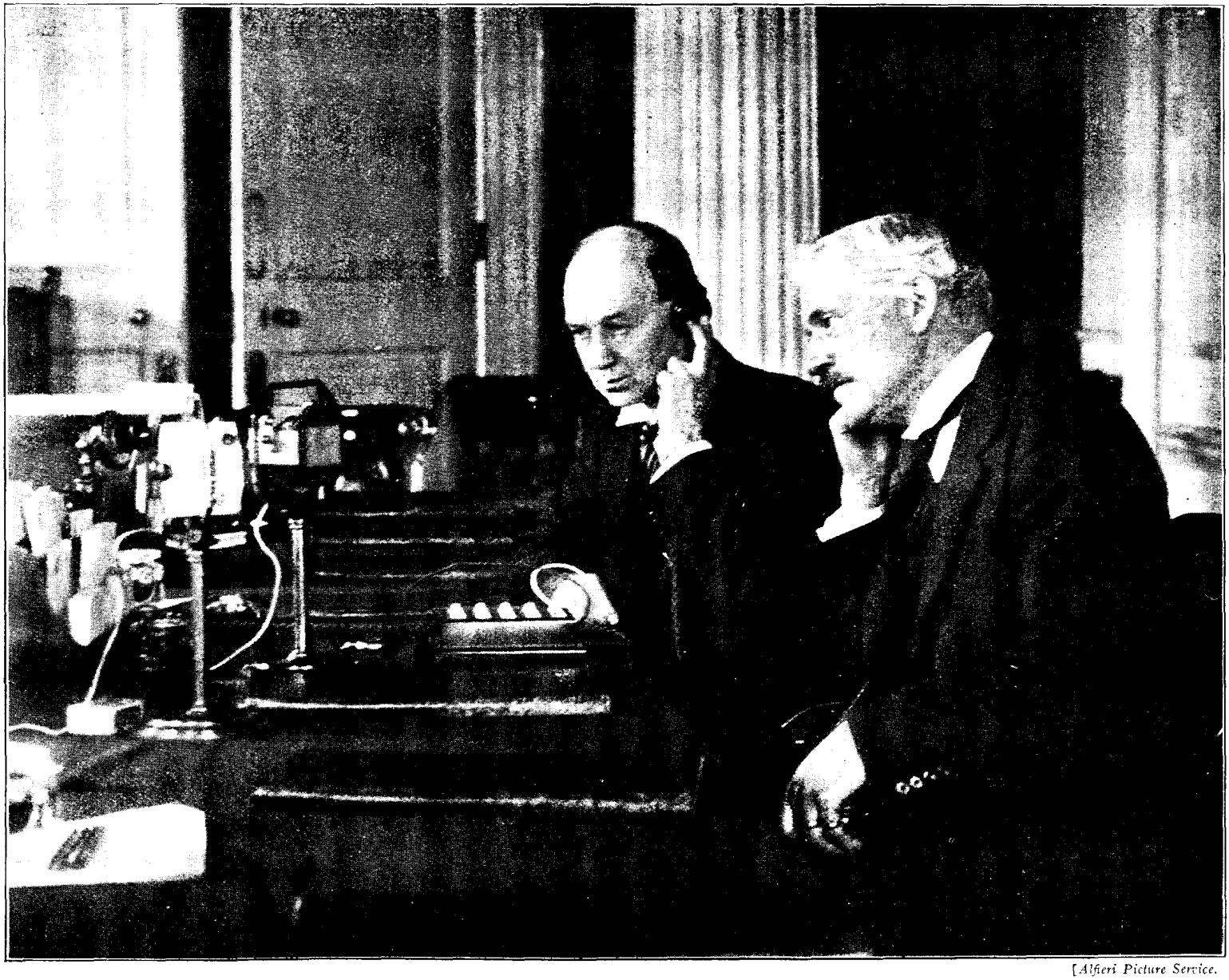
Name.	*Manufacturer.*	*Type.*	*Date.*
Amhurst (Paragon Road, Hackney)	A.T.M.	Automatic	April 3, 1930.
Fairfield (Croydon)	G.E.C.	Automatic	April 30, 1930.

THE

Telegraph and Telephone Journal.

VOL. XVI. JUNE, 1930. No. 183.

CONTENTS.



[*Alfieri Picture Service.*

THE RIGHT HON. J. RAMSAY MACDONALD INAUGURATING THE ANGLO-AUSTRALIAN TELEPHONE SERVICE. BESIDE HIM IS THE POSTMASTER-GENERAL. (*See page* 177.)

The
Telegraph and Telephone Journal.

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

Editing and Organising Committee - - - Lieut.-Col. A. A. JAYNE. J. STUART JONES. W. D. SHARP. W. H. U. NAPIER. J. W. WISSENDEN.

Managing Editor - - W. H. GUNSTON.

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.*

VOL. XVI. JUNE, 1930. No. 183.

OVERSEAS TELEPHONE EXTENSIONS.

AFTER a period of relative quiescence,—we say relative advisedly, for minor extensions of the overseas telephone services, amplifications of existing relations take place every month—a great burst of activity in the task of bringing other Continents into telephonic communication with this country has taken place during the last four or five weeks. In the first place service was opened to Australia enabling subscribers in their homes and offices to speak to subscribers in their homes and offices in Sydney, Melbourne, and Brisbane. This constitutes the longest-distance service of any kind hitherto afforded to the telephone-using public. Secondly, a subscriber-to-subscriber radio service was opened to the Argentine and extended by land lines to Uruguay and Chile. Thirdly, a service was opened via Paris to a call office in Rio de Janeiro, Brazil; and fourthly, communication has been established between this country via Amsterdam and certain call offices in Java in the Netherlands Indies.

Another important step which was taken last month was the reduction of the charges between this country and North America by £1 a minute, so that the charge for a call of minimum duration from London to New York or Toronto is now £6. As the charge for a 3-minute call to Australia is also £6, that for calls to Buenos Aires and Rio £6 9*s.* 0*d.*, and to Java £5 2*s.* 0*d.*, it will be seen that for about £6 communication is now obtainable with the eastern side of North and South America, the East Indies and Australia—surely a moderate sum for a facility of such incalculable benefit.

On a former occasion we remarked that the four Continents of the older geographies were in telephonic communication with this country, with the exception of Asia. We can now extend the statement to the six Continents of the modern geographer without reservation.

RURAL INQUISITIVENESS AND RURAL RESERVE.

WHILST in this country there is an occasional clamour in the correspondence columns of newspapers by writers with an imperfect grasp of telephone finance for utterly uneconomic reductions in rates, there is, amongst the managers and administrators of the thousand and one rural American telephone companies constant evidence of recurring efforts to persuade their subscribers to pay higher rates and thus enable the companies to give them a more up-to-date service with improved and modern plant. The public in Great Britain have little idea of the conditions (to which we made some reference in our March issue) of rural telephony in some parts of America. They know, of course, that the rates are very low, and they are apt to assume that the service afforded is of the high grade associated with the names of the large American companies. We imagine, therefore, that the remarks of Mr. H. A. White, of the American Electric Company, at an annual convention of the Iowa Association, will strike our readers as naive in the extreme. "It can be said without contradiction, I believe," said Mr. White, "that magneto service is fast becoming out-of-date for town and city service." He adds that it is suitable for multi-party line farm services, but admits that many rural subscribers consider it out of date, and goes on to urge rural companies to lay out a programme working towards a higher type of service at reduced rates. "Lead your subscribers," he says, very properly, "to a better rate and do not let them drive you to improvements that should be made, making it much harder to get proper returns." Metallic service of the common battery type, he recognises, is the present-day type of service demanded. But if further evidence were required of the radical differences between British and American rural service, we think it would be supplied by the following sentences. "The average rural subscriber does not want, and in fact won't have, what has been tried several times—a lock-out system. *He wants to listen in on the line, and will do it.* A common battery telephone can be arranged so he can listen without robbing the line of battery and not signal the operator, except when he wishes to place a call."

Could the difference in the psychology of two countries be more acutely emphasised? In Great Britain the main objection to party lines is that other people can listen to your conversation; in rural America the chief charm of the system is that it enables you to overhear your neighbour's business. There the telephone is not only a means of communication: it is also a kind of mechanical feuilleton, novelette, local gazette and cross-talk comedian. It helps to while away the long evenings on lone farms. It also explains the seeming paradox that telephone development is higher in the "great open spaces" where habitations are scattered and remote than in the more compact (or less inquisitive) rusticity of England.

HIC ET UBIQUE.

ON April 30 public telephone service was opened between this country and Australia. Communication is available to and from all parts of England, Scotland, and Wales, and was restricted initially in Australia to calls to and from telephone subscribers (at their ordinary telephones) in Melbourne and Sydney. For the present the hours of service (British time) are 7 a.m. to 10.30 a.m. and 4.30 p.m. to 10 p.m. Monday to Friday, and 7 a.m. to 10.30 a.m. Saturday. The service will not be open on Sunday for the time being.

The charge for a call from any place in Great Britain to Melbourne or Sydney is £2 per minute, minimum £6 for 3 minutes.

May was a month of considerable activity in the overseas telephone services. Not only was the Australian service extended to Brisbane and other places in Queensland (at the rates above quoted), but important extensions and additions were made to the service to South America.

A full person-to-person service was opened between subscribers in all parts of England, Scotland, and Wales, and subscribers (at their ordinary telephones) in the principal towns in the provinces of Buenos Aires, Cordoba, and Santa Fe (Argentine), Monte Video (Uruguay), and Santiago, Valparaiso, and Vinadelmar (Chile). The charge for a 3-minutes' call to the city and province of Buenos Aires is £6 9*s*. 0*d*. ; to the remainder of the Argentine and Uruguay £6 15*s*. 0*d*., and to Chile £7 1*s*. 0*d*.

The new service will be afforded for the present via the Madrid-Buenos Aires radio circuit, calls to Chile and Uruguay being extended over land-lines from Buenos Aires. Connexion will be made over a *direct* radio link between the Post Office radio stations in this country and the radio stations in Buenos Aires as soon as the necessary arrangements can be made.

On May 14 a limited telephone service was opened between London and Rio de Janeiro (via Paris). At the outset the hours of service are restricted to 5 p.m. to 6 p.m. daily. For the present, subscribers in Rio have to be called to certain special public call offices in order to receive calls from this country.

The charge for a call to Rio is £6 9*s*. 0*d*. for the first three minutes and £2 3*s*. 0*d*. for each minute or portion of a minute thereafter.

Lastly, on May 23 a limited telephone service was opened between Great Britain (all parts of England, Scotland, and Wales) and the Netherlands Indies (Java) (via Amsterdam). The hours of service are at present restricted to the period from 1.40 p.m. to 5.10 p.m. (British Summer time) each weekday. The service will not be open on Sundays or on public holidays. Subscribers in Java have to be called by the officials there to special public call offices (in Bandoeng and certain other towns) in order to receive calls from this country. The charge for a 3-minute call is £5 2*s*. 0*d*.

Says the Paris correspondent of the *Observer* :—

There are several ways of keeping up your social and business prestige. One is to have a good address. Another is to have a telephone number which sounds well. Now there are two telephone exchanges in Paris which are called Roquette and Menilmontant ; but the districts which also bear these names are in what may be called the distinctly plebeian quarters of Paris. The reorganisation of the telephone service in connexion with the installation of the automatic system has caused a number of subscribers to be notified that they will be transferred from one of these exchanges to the other. A body of them—who claim, of course, to live on the very edge of the unfashionable district—have, however, protested. If they are to be changed, let it be to an exchange which does not place them in the East End of Paris. They suggest Nemours, which is not only a historic and noble name in itself, but also has the advantage of not giving any indication of where the subscriber lives, except that, with such a name, it must be in a select and elegant neighbourhood.

This evokes memories of the days when the old National Company changed the name of "Deptford" Exchange to "New Cross" for analogous reasons.

From the latest returns we learn that the total number of telephones in Germany increased during 1929 by 222,731 to 3,115,120, and those of France by 90,575 to 1,056,034. France has thus now passed the million mark and Germany the three million. Great Britain may be expected to pass the 2 million mark by the end of the current year. At the end of March we had over 1,900,000 telephones.

Quite recently a Chinese military officer (says an evening paper) after being repeatedly given the wrong number, took a bodyguard of troops to the telephone exchange and beat up the offending operator. His emotions will command sympathy even from those who cannot applaud his action. "Never trouble trouble unless trouble troubles you," runs the maxim. It is probably just as well that we have no such opportunity as this indignant soldier had of troubling trrrouble even when it does trouble us.

What troubles us is how you "beat up" a man in the sense suggested by the writer. You can "beat up" a few friends to make a bridge party, or a dance party, or to accompany you in any sort of expedition. You can "beat up" an egg ; but in English we say "beat" in the literal sense of assaulting a man. We suspect an Americanism, the use of which seems to excite in some writers a flattering sense that they are bi-lingual.

When we read in a newspaper "Boring the Vatican— Great Task of Telephone Engineers," we wondered why the good offices of telephone engineers should be considered "boring." The paragraph, however, described the solid walls, sometimes 15 feet thick, which the Italian engineers had to bore when wiring the Vatican for the recently installed telephone system. When we learn by reading further that the 500 inhabitants of the Vatican City are to have 600 telephones between them, we feel that the effect of introducing this much-disputed convenience in such numbers ought to be anything but boring.

Again, when we read that Sir Henry Thornton had spoken by telephone from a moving train in Canada to Trafalgar Square in London, we knew that inevitably and infallibly the train was moving at 60 miles an hour. Nor were we disappointed. All self-respecting trains worthy of journalistic notice do so move. In the late 'forties, Great Western trains achieved that speed, and the ideal mile-a-minute has been a *sine qua non* of public demand ever since. The luckless foreigner with his kilometres has no happy counterpart to it. 100 kilometres (62.14 miles) an hour is a nice round figure, but it has not the popular thrill of "a mile a minute."

"Recently," says the *Architectural Review*," a well-meaning village community council in Derbyshire wrote asking to be put on the track of a really good design for telephone poles. The answer is easy. The present telegraph poles are an excellent design, simple, effective, and now, by custom—which is much in these matters—acceptable. Let not some guileless artist-architect be tempted to give himself away."

The moral is, we think, that most excrescences on a landscape become, as it were, mellowed by custom and age, and blend with their surroundings. The petrol pump will become as familiar as the roadside village pump, which we must remember was not always rusty and picturesque, but new and utilitarian.

We welcome amongst our contributors this month Mr. John C. Craven, whose humorous writings in the *Post* are familiar to our readers.

THE MAINTENANCE OF TELEPHONE PLANT.

H. G. S. PECK, B.Sc. (HONS.), M.I.E.E.

(*Continued from page* 157.)

ROUTINE visits to subscribers' offices at regular intervals for the overhauling of the equipment are not now made, such overhauls are carried out when a visit becomes necessary to deal with a fault. Private branch exchange operators are asked to make regular tests of all cords, also to make certain speaking and signalling tests for checking the condition of the common battery when this is of primary cells. The condition of local batteries in telephones is verified by making six-monthly transmission tests from the test desk at the exchange, and the results of such tests are recorded on the fault card relating to the circuit concerned. If, however, when the time comes to make this test it is found that a local battery telephone has not been visited within twelve months a maintenance visit is made.

Primary batteries are tested whenever a visit to the telephone is made, and a cell is regarded as unsatisfactory if the E.M.F. is less than one volt after connexion to a two-ohm resistance for one minute or if the internal resistance is more than two ohms for a large cell or four ohms for a small cell.

This method of maintenance is undoubtedly efficient, and has been proved to lead to economy in staff, but the control must be systematic and the overhauls done carefully and intelligently; neglect in this matter leads to an increase in faults, this increase in faults reduces the time available for overhauls, which process continues until the plant cannot be maintained by a staff that should be adequate.

The principal troubles occurring on subscribers' telephones are adjustment faults on bells, switch-hooks, keys and switches, intermittent receiver cords, defective transmitters and damaged apparatus. On private branch exchange switchboards the most frequent troubles arise from intermittent cords, damaged plugs and defective adjustments of signals. A fair number of faults arise from defects in the insulation and conductors used in the windings of magnets and other coils. Faulty cords are exchanged and brought to a repair centre where those fit for re-use are cut down and repaired. Adjustments of automatic dials *in situ* are not permitted, each maintenance man carries a spare dial and this is used to replace a faulty item which is brought to the repair bench at an automatic exchange for attention.

Trunk and Junction Lines.

Daily speaking and signalling tests are made on all trunk and junction lines. These tests are made by the operators if the circuits are available, but if the circuits are not connected to the manual switchboard the tests are made by the engineering staff.

In addition to the daily speaking and signalling tests, insulation resistance and conductor resistance tests are made monthly on all overhead circuits exceeding 50 miles in length, the longest circuits being divided into sections for this purpose. Similar tests are made on circuits less than 50 miles long when testing for faults.

Overhead circuits are regarded as faulty when the conductor resistance is more than 25% above the calculated value, or when the difference between the resistances of the 2 wires of a loop is more than 3 ohms in a testing section, also when the insulation resistance is irregular or less than 200,000 ohms per mile. This value of the insulation resistance is an average and some parts of the line may be below this, but 60,000 ohms per mile is the limit even under the most unfavourable conditions.

Subscribers' Lines.

Subscribers' lines are tested at either 3-monthly or 6-monthly intervals, according to the facilities available. The standard of insulation resistance for a subscriber's line of any length is 250,000 ohms; circuits found below this are scheduled and tested weekly and if the insulation falls below 150,000 ohms, or is less than 250,000 ohms on 4 successive weeks, the lines are regarded as faulty.

Overhead Plant.

Main overhead pole routes are inspected annually and subscribers' routes are inspected every two years. The regulation of wires is subject to visual inspection whenever a lineman traverses the route. Decay of wooden poles occurs between "wind and water," and the condition of the poles at the ground line is checked by tapping. This test is important owing to the possible danger to life and property. Stays are inspected for corrosion and slacking, and checks are made to verify that the conditions have not changed in any such way as to render additional stays necessary.

Terminal poles are inspected six-monthly and distribution poles are inspected annually. Roof poles, owing to the special risks arising from their position, are inspected whenever it is necessary that they should be climbed, special attention being paid to corrosion of the poles and stays and to the fixing of the stays. A general inspection of all other poles is made whenever the pole is climbed in connexion with the localisation or clearance of a fault.

With these methods of maintenance such faults as occur are usually due to malicious or accidental damage or to wind and occasionally to extremes of temperatures. Breakdowns of routes, apart from faults on individual circuits, are caused by storms, floods, snow, falling trees and occasionally by building operations, or the breakage of poles by motor vehicles.

Manholes, Footway Boxes and Ducts.

An inspection of manholes and footway boxes is made at least once a year and the condition of all concrete, brickwork, joists, boiler plates, cable supports, covers, &c., is checked, all corroded ironwork is repainted, the bonding of pipes and cables is checked and tested. Any mud or refuse that may have accumulated is removed and loose covers are adjusted or changed and repacked with yarn and compound. If gas or water is present its source is traced and, if necessary, advice is given to any other undertakers concerned. All visible and accessible portions of cable sheaths and joints are inspected for fracture or damage; it is also necessary to watch for creeping of cables owing to traffic vibration when the route is on a slope.

The principal causes of trouble on underground plant are the works of other undertakings, the reconstruction of roads, and subsidences owing to water or to mining. Cable sheaths and iron pipes are also affected by electrolysis and chemical corrosion.

Cables.

Insulation tests are made monthly on all underground cables carrying trunk and junction circuits. The standard of insulation resistance for main underground cables is 10,000 megohms per mile and for junction cables 5,000 megohms per mile. The circuits are regarded as faulty if the value is less than this or is falling or is variable. Monthly tests of conductor resistances are also made.

Precise methods of localising incipient insulation failures have been developed, and it is possible by their use to determine the position of a fault of several hundred megohms resistance to within one-fifth of a mile on a cable of 100 miles in length.

Such localisation tests are made by a Varley loop test. Tests are made in rapid succession alternately from the two ends of the line until consistent results are obtained. To avoid disturbance by varying earth potentials the testing battery is connected not to earth but to the twin wires of the good and faulty cable pairs. Batteries of a P.D. up to 500 volts are used and connected with the same pole to line at both ends. To avoid irregular results owing to the effect of the charging current, the line is connected to the

battery for at least an hour and a half before localisation tests are commenced and care is taken not to discharge the line during the tests. The whole of the apparatus used for making these tests must be of the highest grade, well insulated and arranged to protect the staff from the high voltage used. A reflecting galvanometer having a sensitivity of 5 by 10 + microamps per millimetre at one metre is used. When making tests the apparatus and batteries are stood on blocks of paraffin wax which are cleaned before use, the connecting wires used are V.I.R. insulated and the ends are waxed to a distance of 6 inches and not subsequently handled during the test. The exact position in a short length of cable is determined by a Murray test using a slide wire.

Telephone Repeaters.

For the successful and efficient working of telephonic repeaters it is essential that a regular system of testing should be adopted in order that the overall volume of transmission on trunk circuits may be maintained, that speech shall not be distorted and that signalling failures shall be reduced to a minimum.

The first and most elementary test is that of the filament, plate and grid battery voltages and of the filament and plate currents. These tests are made daily on all repeaters.

Every repeater is adjustable to give ten degrees of amplification and each of these is tested at six-monthly intervals and checked with the original value obtained when the repeater was installed.

The efficiency of a repeater when set at the amplification proper to the circuit in which it is connected is measured weekly at a frequency of 800 cycles and at varying frequencies half-yearly. These tests are known as "gain" tests, and are made by connecting the repeater between two lengths of cable and comparing the attenuation over this repeatered cable with that over a similar cable without repeaters. The input is obtained from a valve oscillator, and the received current is amplified and rectified before measurement. A departure of not more than ± 1 decibel from the specified gain for any repeater is permitted.

The continued agreement between each balancing network and the line with which it is associated is checked quarterly by observing the maximum amplification possible without oscillation.

In addition to the foregoing tests of every repeater, tests are made at half-yearly intervals of the overall volume efficiency and speech quality on repeatered trunk circuits. For making the volume test both ends of a circuit are provided with test sets capable of sending through a definite impedance and accurately measuring a current of between 2 and 3 milliamperes at 800 cycles and of amplifying and rectifying and indicating the received current. The sending end advises the receiving end of the sent current and of the closing impedance to be used: the receiving end measures the received current and compares it with that obtained by testing with the same sent current through a calibrated cable having the specified efficiency of the trunk circuit under test. A maximum departure of ± 1 decibel is tolerated. The speech quality tests are made by transmitting actual speech in the form of disconnected words and figures and checking that they are correctly heard without undue repetition.

(To be continued.)

THE SHANGHAI TELEPHONE JOURNAL.

WE welcome the appearance of the first issue of our new far-eastern contemporary, a journal published in the interests of the staff of the Shanghai Mutual Telephone Company. It contains articles descriptive of its aims, on Fault Prevention and on Automatic Telephony, notes and comments and personal items.

Run on similar lines to our own journal by contributors drawn from the staff, it has our best wishes for a successful career. It is well printed and got up.

MORE NOTES ON THE TELEPRINTER.

BY JOHN C. CRAVEN.

THE origin of the teleprinter is a matter on which there has been a great deal of speculation. Where did you come from, baby dear? Out of the everywhere into here! Members of the Traffic Section believe that it came as a direct answer to prayer. The legend runs that a traffic officer was seated one day in Hyde Park feeling very discouraged and disconsolate when he felt a touch upon his shoulder. Looking round he saw a beautiful vision. "Go away," he said. "You know what the police are like round here."

"I'm not that sort of girl," she replied. "I'm your good fairy!"

"All the same," he said, "your presence is very embarrassing and the world is very censorious: I think you'd better go away."

A tear glistened in her eye. "Every time I materialise, and appear to mortals, I get the same reception; I am shunned for fear I shall compromise somebody."

"Well," he replied, "you must admit it's very awkward for a chap to be seen in a public place with a girl in a ballet skirt, even if she does carry a wand. However, what do you want?"

"You are distressed," she said, "and I want to help you. Tell me your troubles. Is it because your ugly sisters won't let you go to the ball?"

"No," he answered emphatically, "it isn't. You're a few centuries out of date. It's because I can't find exactly the right kind of telegraph instrument to rehabilitate the British Telegraph Service."

"If that is all," she replied, "it is soon remedied. Fetch me a pumpkin."

"Good heavens! do you think I carry pumpkins concealed about me?" he said with irritation. "I might search all London without finding a pumpkin."

"In that case we will make this stone serve." And so saying she touched a large stone on a nearby rockery with her wand, and it turned into a teleprinter. He gazed at its black, shining case with astonishment, and then turned to thank his benefactress; but she had vanished. Thoroughly dazed, he picked up the bulky instrument and staggered out of the Park, followed by a large number of plain-clothes detectives, who thought the circumstances highly suspicious. Accosted by one of them with an inquiry as to the nature of his burden he replied that it was a typewriter. "Oh," said the detective, "if you must carry your writing utensils about with you, don't you think it would be much more convenient to use a fountain pen?"

That, as I said before, is the legend; but I think that all accounts attributing a miraculous origin to the teleprinter may be discounted. I have gone into the matter very carefully and find that the reality is much more prosaic. A certain jobbing mechanic named Beaker had a typewriter brought to him for repair, which he carefully took to pieces. During his absence his small son entered the workshop and seeking a means of diversion mixed up the parts with those of a knitting machine also awaiting repairs, and a few odd motor parts which were lying about, together with odds and ends from his Meccano set. When Beaker returned to his workshop, and had dealt suitably with his son, he set to work to make the best of a bad job. He was a man of grit and resource, and with great ingenuity managed to build up a machine in which every part was utilised. This explains why the teleprinter contains so many separate bits and is a compendium of every mechanical and electrical principle ever discovered. He was a bit staggered at the result, and when his client saw it he said it was a good typewriter spoilt, and refused to have it back. Unable to dispose of it as a typewriter Beaker put four wheels on it and tried

to sell it as a Baby Austin but could not find a buyer. Then the man who had left the knitting machine called round, and when he saw it he shouted "Eureka," which means "It's the goods." Strangely enough, its telegraph possibilities were not at once realised, but it was extensively used for some years for type-keyboard knitting, a big advance on the old method of taffling wool with a pair of skewers.

When first used for telegraph purposes it was not, of course, in its present finished state, and was cynically known as the "start-stop" instrument; because no sooner was it started than it stopped. The average amount of working time lost per day was then 12 hours, but the stability has since been improved, and instead of working time lost we find it being called upon to put in a little overtime outside its normal working hours.

The advent of the teleprinter has brought into being a new class of telegraphist—the maintenance officer. He examines it through a small instrument held to his eye, like a duchess using her lorgnette, which gives him an air of great distinction. He is very proud of his machines, and a maintenance officer was very much distressed the other day by the thoughtless remark of a visitor whom he was showing through the instrument room.

"I see you're doing good business," said the visitor.

"As a matter of fact," replied the M.O., "we're rather slack at the moment. Why do you say that?"

"Well—look at all the cash registers you are using."

The future of the teleprinter in the telegraph service appears to be assured. It is easily reared, behaves well in captivity, is clean in its habits and can be trusted with children. The staff has taken so kindly to it and so much is it esteemed that good telegraphists when they die and go to heaven now expect as the consummation of their bliss to spend eternity sending upon a golden teleprinter.

OBITUARIES.

SINCE the issue of last month's *Journal* the C.T.O. Retired List has suffered severe losses in the "passing" of no less than three of its members, thus:—

Mr. J. N. Geary, who retired owing to ill-health early in 1914, while carrying the rank of Assistant Superintendent, 2nd Class.

A stroke preceded his death but by a few days, and he fell asleep in his 72nd year on the 4th ult.

Much respected by his colleagues, it will be recalled by those whose memories carry them back so far, that, both Mrs. Geary—who survives him—and a sister were also formerly on the C.T.O. staff. The fact will also be remembered that our colleague was at one time a member of the 49th Middlesex Rifle Volunteers.

By a strange coincidence one of Mr. Geary's contemporaries, Mr. W. J. H. Joyes, also a member of the 49th, and who also compulsorily retired on account of failing health, was laid to rest during this same month. Mr. Joyes was long and affectionately known as "The Marquis," due to his meticulous dress, manner and bearing, and formed one of a circle of kindred—may it be said, Beaux Brummels of the eighties?—all of whom rose to responsible positions. One may mention the names of G. Adams, W. J. Bond, H. D. Gill, Trezise, F. White, in support of the statement, adding thereto Messrs. MacEwan and H. H. Trollope to complete a group reckoned among the most popular and capable officials of the old school.

Mr. Joyes, whose father was for many years the Postmaster of Midhurst (Sussex), was gazetted Asst. Supt., First Class, in 1907, but retired in 1909 from the cause already stated. He was in his 75th year, his wife, formerly Miss L. Newton, of T.S., pre-deceasing him a few years ago.

The third blow was that of the unexpected death of Mr. John Buchan Murray, a man of strong convictions, though not intolerant concerning those of other folks, even his intended lacerations mellowing into kindly utterance. Under doctor's orders for a few days, then "God's finger touched him and he slept." It was as he would have wished. On his retirement it was not in the nature of J. B. M. to seek out a *dolce far niente* existence. Activity—reasoned, if you like—but activity, purposeful and unselfish, was bound to have been his motto, and Torquay was all the better for such an one in its midst, from which town have already arrived tokens of his "sterling character," and the "asset" J. B. M. proved to the community.

From Mr. C. S. Keen, who, with Mr. C. D. Bennett, late of T.S., represented Old Colleagues at the graveside, comes the following brief account of the service in Ellacombe Church, South Devon:—

"The service was held here to-day (May 14), in Ellacombe Church, of which 'Joe' for long had been a prominent member. There was a full choir, the vicar taking the service, the softer notes of the organ accompanying the cortege with "Oh, Rest in the Lord," as we slowly made our way to his last resting place. Here the vicar paid happy tribute to our beloved colleague's character in his religious life, which evidenced itself in practical work in connexion with the church, not least, indeed, in his strict integrity regarding finance, &c., &c. Among those present in the numerous congregation were: F. T. Wadley, J. Slade, A. J. Jellie, C. H. Honeysett, J. James, Charles Strutton Keen (C.T.O.), R. J. Collihole, R. J. Clancey and A. R. Simmonds (Torquay), B. Bennett (Cardiff), Donaldson of Exeter, C. T. Rowe (L.P.S.), S. G. Bryant (E. in C.O., Hereford)." J. J. T.

LONDON TELEPHONE SERVICE: LEAGUE OF NATIONS UNION.

THE inaugural meeting of the L.T.S. Branch of the League of Nations Union was held on April 24, at Cornwall House.

There was an encouraging attendance, people from all grades of the L.T.S. being represented.

The Controller, Mr. W. H. U. Napier, President of the newly-formed branch, took the chair. He commented on the fact that the meeting was held opportunely on the day following the conclusion of the Naval Conference, and introduced the speaker of the evening—Mr. Alec Wilson.

Mr. Wilson began by describing the League of Nations as a permanent conference of Governments. The League of Nations Union was a voluntary body designed to create and encourage the support of public opinion to the League. The Union, he said, had been growing steadily at the rate of 200 members per day for the last 12 years, which shows how people are realising that the League is a need of the present day. He pointed out that the Union was financed only by the contributions of its members, and that it belonged to no party or creed.

Referring to the League, Mr. Wilson remarked that modern science had so shrunk the surface of the world and so increased the speed of communications, that the League of Nations, a a permanent conference where the men who are running the world can discuss affairs of common interest, is a necessity. All nations—like most men—prefer peace to war, as long as they are getting their own way, and the principal function of the League is to settle disputes peacefully in the interest, not only of the countries directly concerned, but of all the countries who would be affected in the event of a war.

The League of Nations can be most aptly explained by a parable of the motor-car. The Governments of the countries may be compared to the engines, while the function of the League corresponds to that of the gear-box which, while it has no power of its own, enables the other parts to work in co-operation.

Mr. Wilson concluded by saying that the League of Nations deals with an immense variety of subjects—all of them subjects upon which action was necessary but on which no country could take successful action alone.

Advantage was taken of "question time" to ask Mr. Wilson what reply he could make to the frequently advanced objection to the League, that it is contrary to human nature, and that when a country becomes over-populated it must resort to war to obtain colonies to which its surplus population can migrate.

Mr. Wilson pointed out that cannibalism, slavery and duelling were once practised, but with the advance of civilisation these evils had been repressed, and so in time, with the greater advance of civilisation, war must also go. Experience has shown, too, that war is not a solution of the problem of over-population. What the remedy is nobody yet knows. The only solution at present seems to be supplied by nature in that over-population is followed after some time by a decline of the birth-rate.

The last question, which aroused general interest, was "what is the League doing to combat the inculcation of the child mind with sentiments of national aggrandisement and false patriotism?"

Mr. Wilson said that it was the British representative in 1923 who formulated a plan for inculcating right ideas in schools and removing the mental poison in the idea of "national glory." The League, he said, was killing the sense of national arrogance without killing national self-respect: co-operation between national units, and not the extinction of national spirit, was the note of the League.

Mr. H. Dive, the Assistant Controller, proposed a vote of thanks, which was warmly accorded, to Mr. Wilson and Mr. Napier, and the meeting was declared closed.

LANGUAGE SCHOLARSHIP.

MISS ALICE Y. C. WOOD, daughter of Mr. J. Wood, Postmaster, of Worcester, has gained the Modern Languages (Travelling) Scholarship from Durham University. Miss Wood was, until July, 1928, a pupil at the High School for Girls, West Hartlepool, and is now at St. Mary's College, Durham.

PUBLIC TELEPHONE SERVICE TO AUSTRALIA.

(*Illustration on page* 171.)

SINCE the last issue of the *Journal* the Australian Service has taken its place among the rapidly increasing long-distance wireless telephone services. The service is given by "short wave" from Rugby, with reception at Baldock, the corresponding points near Sydney being Tennants Hill and La Perouse.

The official opening of the Service was preceded by a few days trial for service purposes between the officials of the Administrations, and the opinion was confirmed by experience that the Australian circuit gave service which equalled, and perhaps excelled, that of the short-wave circuits which carry Anglo-American traffic.

The inaugural speeches between the Premiers of Great Britain and Australia on April 30 were an outstanding telephonic success, not a syllable of them being missed. Mr. Macdonald's colloquial parting words to Mr. Scullin gave just expression to the feelings evoked in speaking over this circuit. Australia is no longer far far away: formal adieus are obsolete: Australia is within call!

The amount of traffic offered for the service is extremely pleasing. For the first week the demand outward and inward was about equal, but at the time of writing the traffic from Australia is tending to draw ahead. Extension to European countries generally, was in request almost from the opening day, and beginning with France, there has been an extension to a new European country almost every day, so that by the end of May nearly every western European capital and country will be able to communicate with Sydney, Melbourne, and Brisbane.

Mention ought to be made of the keen interest taken in the venture by the Press in both countries. Two prominent London papers were among the first users; and the Australian telephone and its doings were the staple placarded news of the afternoon and evening editions.

The large difference in clock time (Sydney is at present nine hours ahead of London time) and the restricted hours of service 7 a.m. to 10.30 a.m., 4.30 p.m. to 10 p.m., although handicaps, are not seriously discouraging callers. Disturbance during the night hours is willingly suffered in Australia: indeed, co-operation from Australian subscribers and telephone personnel is all that could be desired.

T. H. G.

REVIEWS.

"*Transmission Networks and Wave Filters*," *by T. E. Shea, M.S.* (*Chapman & Hall, Ltd., London.*) 32*s.*

The book is based on a series of lectures delivered by the author to the staff of the Bell Telephone Laboratories, and gives fully the calculation and design of transmission networks and wave filters.

The introductory chapter deals briefly with the necessity for and the functions of different types of network used in telephony. As an illustration a description is given of the networks required for the American type C carrier system, whereby three carrier circuits and one audio circuit and also a sub-audio telegraph circuit are accommodated on one pair of aerial lines.

The engineering limitations which cause divergence between theory and practice are discussed. The remainder of the book is divided into three parts. Part I deals with the principles of transmission networks. It starts with definitions of general terms and units used in transmission measurement. The main principles on which network theory depends are developed and reference is made to hyperbolic functions.

The general properties of networks are discussed, and losses due to reflections and total insertion losses, and also the effects of impedance deviation are fully dealt with.

Part 2 deals with electric wave filters.

After giving the general properties of ideal filters and how filters operate, the more common types of filter are discussed.

Multisection filters, low pass, high pass, band pass, and band elimination filters are described and their theory given.

Part 3 deals with the composition of transient waves.

The method of analysing the various types of waves which occur in electrical transmission by the Fourier analysis are given.

As examples the use of the Fourier analysis is applied to various phenomena met in telephony, telegraphy, television, and telephotography.

At the end of the book a very extensive bibliography is given, to which frequent reference is made throughout the text.

While the treatment of the subject is entirely theoretical, the book contains many diagrams which illustrate the practical application of the theory, and the limitations and possibilities of design.

The arrangement of the text is such that each part follows directly from what precedes and the book can be recommended to all who are interested in the subject, and who desire a comprehensive text book for study or for reference.

"*The Theory of Electrical Artificial Lines and Filters*," *by A. C. Bartlett, B.A.* (*Chapman & Hall, Ltd., London.*) 13*s.* 6*d.*

This book is intended as a general introduction to the theory of artificial transmission lines, line balances, filters, and phase shifters. The treatment of the subject is entirely theoretical, and throughout the text references are made to other works in which particular sections of the subject can be studied in greater detail.

After dealing with the theory of T. and T. section artificial lines with varying terminating conditions, the most general types of artificial lines are discussed and the general theory of repeated networks is given. In the third chapter continued fractions are introduced and ladder networks are dealt with from this standpoint.

In subsequent chapters the theory developed in the first three chapters is applied to various particular cases, some of which are of no great practical value, while in other cases such as that as the coil-loaded cable, the treatment is of practical interest, and is also much simpler than deriving the formulae from first principles.

The section on wave filters deals with the simpler types of filters and phase shifting networks. A chapter on homographic transformation and circle diagrams, and a chapter on the general theory of the multistage amplifier conclude the volume.

The subject matter is clearly set out and well illustrated by diagrams. For those students who intend to pursue the study of the subject to an advanced stage the book should be both interesting and useful.

"*Radio Data Charts*," *by Dr. R. T. Beatty, M.A., B.E., D.Sc.* (*Published by Messrs. Iliffe & Sons, Ltd.*) *Price* 4*s.* 6*d.*

This is a series of diagrams, or "abacs," by which any of the usual calculations which occur in the course of designing wireless receiving apparatus can be solved purely graphically and without any arithmetical operations whatever. It is only necessary to lay a ruler across the diagram and to set it to the given data on two scales to obtain the result where the ruler crosses the third scale.

Each diagram is preceded by an explanation, so that it can be used by even the veriest tyro in the science.

The diagrams are reproduced very clearly and the paper on which they are printed is good. The collection should prove of great utility to all who are interested in the design of wireless receivers.

THE OPERATOR AND THE TRUNK CALL.

BY R. S. GROSVENOR (SOUTH WALES DISTRICT).

THE words indicating the title of this article represent a most essential part of telephone work.

It is of vital importance to both commercial and social life that a thoroughly efficient and smooth working trunk service should be maintained. In order that this shall be assured continuous study by highly-trained technical and traffic officers, many of long experience, is always in progress. This study is necessary in order that the most efficient type of internal and external plant may be available and that such plant is utilised to the greatest advantage.

Improvements in circuit arrangements and switchboard equipment are being constantly introduced in order to minimise delay and ensure that the best apparatus is available for the use of the operator. Research has extended the reach of the telephone, has made telephone service more and more efficient and broken down the barriers of time and distance. The successful operations of the service is in the operator's hands and it is the purpose of this article to deal with that phase of the work.

The viewpoint of the operator in dealing with a trunk call is all-important. When making a trunk call the calling party generally has the cost of the call in mind and is consequently more critical than in the case of local or junction calls. If the call is in every way satisfactory a good impression of the service is created often tending to increased use. Inversely, if a trunk call is unsatisfactory for any reason which the calling or called party considers to be within the Department's control an unfavourable impression is created tending to discourage use and even cause prejudice.

It is not sufficient, however, for a call to be satisfactory. The call should be *sold* in such a way as definitely to encourage use and the telephone habit. An operator is a highly skilled officer whose work calls for tact, patience, a pleasing manner with courtesy under all conditions, quick to grasp the special needs of an occasion and a natural facility of imparting and gaining confidence. It has to be kept in mind that all this requires to be carried out solely by means of the voice—at present—without any helpful atmosphere, physical gesture or personal element of any kind.

The attitude of an operator in approaching a trunk call is therefore all important. Speed of answer, speed of clear, prompt attention to supervisory signals, establishment of conversation without delay after the attention of both parties has been obtained, announcement of periods, viz., 3, 6 and 9 minutes, at the proper time and in the correct manner, require very careful treatment, but to supervise and generally *sell the call* as to leave only the very best impression is of the utmost importance. The tone of voice can make or mar, destroy confidence or encourage use. For a caller to realise that an operator is doing everything possible to meet requirements can only be done by great care in manner of speech, clear, incisive, always pleasant, but without exaggeration.

The trunk call is the more expensive telephone facility for sale and is generally purchased by persons immediately interested in the cost, often on important or vital business. This point is made to impress the necessity for encouraging use by every means in our power. A careful watch requires to be kept that there is no suspicion of casual or uninterested operating. An impression that an operator is not fully interested in the call being dealt with is fatal and immediately reacts on the user.

There is more sorrow over one trunk call that is lost than rejoicing over the ninety and nine that are entirely successful.

A further point requiring always to be borne in mind by the operator is the necessity for *immediately reporting* any appreciable difficulty coming under notice in connexion with a trunk call. This should be a strict practice *at all exchanges*.

Transmission trouble, e.g., inability to hear either calling or called party, inability of parties to hear each other after a connexion has been established, intermittent difficulty resulting in premature disconnexion, false supervisory signals or failure of supervisory signals, &c., should be brought under notice without delay through the appropriate channel.

It is found helpful for travelling supervisors and traffic officers to deal with the following points as a matter of routine when making periodic visits to exchanges: –

(1) Check of duration and timing in operation and recording trunk calls.

(2) Any undue delay or difficulty in obtaining trunk calls through other exchanges.

(3) Any cases that have come under notice of officer-in-charge or operator regarding difficulty experienced in transmission or coming under actual notice at time of visit.

(4) Details of test calls made in connexion with item (3) quoting the number of each circuit used.

(5) Particulars of excessive faults on trunk circuits, also details of any undue duration.

Now a word as to the operator giving assistance to trunk users. A caller should never be *left in the air*, in doubt of what is happening.

Nothing is more irritating than to be told "Your London call" or "Your number is waiting, please speak," and then to have to wait for an appreciable time, which, of course, always seems to be very much longer than it is in fact, before anything further happens. This is a prominent source of annoyance and causes a user to become predisposed to complain of any subsequent incident during the progress of the call, perhaps even of a trivial nature. Every fraction of a minute saved means a service that is more prompt, more effective, more economical. Despatch is the soul of business!

A trunk call cannot be too carefully supervised. Every possible assistance that is necessary should be given by the operator at all times, in a willing and careful manner.

The point of view of a caller may differ strongly from that of the operator, nevertheless strict courtesy on the part of an operator must always be fully maintained, in order that difficulties may be convincingly explained and any tendency to discourage use avoided.

For efficient and satisfactory working the co-operation of the user is essential, and it is proposed to deal with this side of the question in a subsequent article.

The facility with which an operator rises to the occasion in emergency, rush traffic or for any other reason is well known, but it is the little things that count and it is necessary carefully to guard against slipping back in operating methods. The motto "Forward" should be kept well in mind.

The *best* is just good enough for the telephone service. This is the department's aim and every effort is continuously maintained in order that a telephone service shall be available so far as practicable free from imperfections, errors and delays and shall enable anyone at any time to use a telephone and speak to anyone anywhere quickly and at a reasonable cost.

The function of the operator is fundamental; that this will be carried out with ever increasing efficiency there can be "no possible doubt, no possible, probable shadow of doubt, no possible doubt whatever."

PEREGRINATIONS THROUGH THE BROADCASTING WORLD.

By J. J. T.

In the pioneer days of radio broadcasting, not so long ago, even measured by the most modern of time-standards in progress, the engineer in charge has himself been called upon to provide the programme and that with very little of the wherewithal to do so. The writer has indeed known more than one case where the electrician was also "uncle"—in addition to his engineering duties—being assisted by a scratch crew of fourth-rate amateurs obtained at the price of a cab fare to the studio. There were, of course, volunteers in plenty attracted by the novelty, but in these cases it was not infrequently discovered that the value of the actual *deed* was very much below the *will* to do!

Swift indeed have been the developments since those "joyous days"—as a young engineer friend of mine termed them—and to-day it needs not the waste of ink to emphasise how complex has become the organisation of both the technical and the programme features of this new art, demanding highly trained and alert specialists in both departments.

The few columns that follow are not intended to be more than a collection of co-related items from one's own note-book, jotted down within the last two years of rambling among some of the wireless literature of the world. Taken at this face value, it is hoped that, scrappy as such notes must necessarily prove, they will nevertheless be interesting as showing how quickly broadcasting has made its way into the hearts and minds of the nations, even to the condemnation of raucous loudspeakers!

Now as to developments: let us take the U.S.A., on the point of numbers, one would not say of all-round efficiency and control. The Chief of the Radio Division of the Department of Commerce of the U.S.A. gave the following official figures during the Committee stage of the Department's Annual Supply Bill. "In 1922 some 60,000 homes were equipped with wireless receiving sets, the actual audience, it was computed, being less than 80,000. Last year at least 10,000,000 were in possession of receivers." The Radio Manufacturers' Association maintains that although since 1922 no less a value than £500,000,000 worth of wireless apparatus has been manufactured in the States, "there is no saturation point in sight yet." Unless one's memory serves badly, this last statement was made prior to the Wall Street crash.

In any case the total value of the radio sets utilised for listening-in throughout must therefore be immense, when it is realised that nowadays every country is potentially in instantaneous touch with the world's news.

In 1920 there were certainly less than half a dozen working stations on the entire globe, to-day the number broadcasting runs well into four figures.

In February of the present year the White Star Liner *Majestic* made a most successful broadcast which was relayed by the B.B.C. to millions of listeners in Great Britain, this, too, while steaming 1,300 miles out from Southampton, in the Atlantic. Latterly pictures and television pictures have been dealt with experimentally, notably in Great Britain, France, and Germany. The recent exhibition by the Television Society in London gave some real indication of the enthusiasm among amateurs concerning these, the last phases of radio broadcasting. On the Continent the Witzleben and Posen stations have been to the fore regarding the broadcasting of simple pictures, while Berlin has diffused television daily for some time past. Denmark, from Lyngby, has also experimented with both systems.

For the greater part the countries of the entire world have made a success of this new educative and recreative agency.

It has, however, not made much advance in India, where the many tongues spoken, and the difficulty of providing satisfactory programmes for so many differing types of psychological outlook, constitute a very thorny path for the organisers to tread, be they who they may. Authoritative reports from India denote surprise that "broadcasting" has not yet caught the imagination of the people of India, but counsel patience and gradual penetration. At present there are under 10,000 licenceholders for the whole of India, but from the same source it is gathered that there is more than mere suspicion behind the belief that, judging from the number of sets in the country, there is a considerable crowd which is persistently evading payment of the licence. It is not easy to send round a detecting van outside the large cities where the population is scattered and distances are very great. The difficulties of detection have been very successfully met in Great Britain, and one feels inclined to forgive the natives of the "coral strand" when one reads that in Belgium "whereas it is known that there are no less than 200,000 receiving sets in use in the country, the actual number of licences actually paid for had not yet reached the 10,000 figure when the report was issued." The annual payment is only seven shillings.

Reverting to India, there appears to be some dissatisfaction in Burma due to the low power available at the Burma Radio Club, which is apparently responsible for the functioning of the Rangoon Station. That power is only 750 watts and the matter, it appears, is to receive some consideration by the Government. Coming nearer home there was similar trouble in Jugo-Slavia a short time back on account of the inefficiency of Zagreb as a broadcasting station. Here, again, pleadings for assistance from the authorities had become very vocal.

On the other hand the new station of Bratislava in Czecho-Slovakia has been giving good results, since its opening last year. It is noteworthy that 67% of the Czecho-Slovakian licenceholders use receivers of the crystal pattern. The fact that these prove satisfactory is no doubt due to the small area of the country and its politico-geographical position, which enables the authorities to "fully avail themselves of the various international telephone cables round about them," which by arrangement with their neighbours enables the Czecho-Slovakians to receive by telephone some of the more important programme items from the surrounding capitals, *relaying* the portions thus received for local pick-up.

SOME FEATURES IN LICENCE CONDITIONS, &C.

The Swedish broadcasting arrangements are run by a private company under the authority of what is known as the Royal Telegraph Board. There are about 400,000 registered listeners (owners of receivers) to a population of six millions. The licence fee is the same as that of Great Britain, the equivalent in Swedish money of ten shillings. The number of registered listeners is still rising steadily, and without interruption.

Under a recent law in Denmark listeners are to pay a fee of 10 kronen (eleven shillings) for the financial year April 1, 1930, to Mar. 31, 1931. Licences purchased during the short period between Dec. 15 of this year and Mar. 31 of next will be reduced to 5 kroner, that is for the remainder of the financial year. Whether this arrangement is exceptional for this particular financial year or is to be a standing one for future years is not stated. Blind, crippled, and all chronic invalids in Denmark are entitled to free licences.

In Czecho-Slovakia similar conditions have been established by law for blind and "totally disabled" persons who require a wireless licence. In the last-mentioned country certain schools are also exempt from licence charges.

The Spanish authorities tax *each* set, but discriminate between crystal and valve receivers. On the former one peseta (about eightpence) is charged, payable every three months, while five pesetas per quarter are charged for valve receivers, and an *ad valorem* tax of 5% is made on transmitting apparatus.

A usually trustworthy informant states that quite recently all secondary schools in Brazil have been equipped with all-electric receivers. As it is added that suitable programmes compiled by a board of teachers are broadcast for this particular service, it appears evident that the arrangement is backed by official authority.

The district Post Offices of Germany are now authorised to permit receiving sets to be installed "on approval." A trader writes to the local postmaster and gives particulars of the proposed purchase and purchaser. No fee is, however, charged during the next eight days. Should the would-be purchaser disapprove within that period the set is removed and the Post Office duly informed. Should the trader's client agree to purchase, the district Post Office is advised to that effect and at once forwards the licence to the prospective owner.

According to a report of H.M. Consul in Formosa, no fee at all is charged for listening-in in that far-away island. There are actually no restrictions on receivers, while only 20% of these are of the valve-type, the remaining 80% being "crystals" manufactured in Japan. The programmes are usually delivered in Japanese, but occasionally Chinese and English are used.

All broadcasting in Russia is controlled by the Radio Department of the Commissariat of the People for Posts and Telegraphs. Commercial concerns are allowed to operate their own transmitters but technical matters are under the direct control of the Commissariat as above. There are 63 transmitting stations, but the number of registered listeners (? owners of receivers) is comparatively small, because, so it is stated, "registration is only compulsory from the month when one's district station of from 12 to 20 kw. begins to operate." The towns contain 282,045 registered listeners and the country districts 44,240, so the last report states. The total of actual listeners is estimated at eight millions. The registered public loudspeaker sets amount to 9,792 in the towns and 6,533 in the country. These figures do not include those in the streets, the squares, and public gardens. The two last paragraphs may account in a measure for the small number of licences issued in so huge a country as that ruled by the Soviet Government.

THE USES AND ABUSES OF BROADCASTING.

Just as, despite its obvious utilities the *use* of a motor car when carelessly or selfishly handled may become an *abuse*, so with broadcasting. To the British mind the exploitation of the ether for advertising the doubtful virtues of someone's soap or the absolute necessity of purchasing certain quack medicines savours somewhat of sacrilege. There are other countries which apparently have other views, but on the whole the countries of the world, so far, are overwhelmingly on "the side of the angels." To broadcast dance or other music from the *Crested Eagle* or the *Royal Sovereign* as they plough through the murky Thames, or as the *Hindenberg* may do up the Rhine and at several German watering places—so far as it does not unduly disturb the normal amenities—may be permissible, though it is very doubtful whether the *unrestrained* use of the loudspeaker in the upper reaches of London's own river does not at times amount to an offence against good taste, to say nothing more.

Regarding the "loudspeaker," most countries have experienced the difficulty of dealing with the uncontrolled use of this part of radio apparatus, endeavouring wherever possible to bring offences within the legal circle of existing law. In Great Britain this appears to be possible by local by-laws such as those recently framed by the Westminster City Council referring to "nuisances caused by the use of loudspeakers *and* gramophones." In France the Mayor of Chateldou has prohibited the entire use of loudspeakers after 10 p.m. in summer and 9 p.m. in winter. In Vienna, last August, the Chief of the Police in that city threatened fines of £6 or 14 days imprisonment for anyone who has his window open at the same time as his loudspeaker is working, or who uses a loudspeaker after 10 p.m.

In the U.S.A., the town of New Rochelle has passed a new law making it illegal to annoy one's neighbour with a loudspeaker before 7 a.m. or after 10 p.m. Nothing is said concerning the period *between* 7 a.m. and 10 p.m.! The Chief Magistrate of New York, in instructing magistrates under him, maintained that as the law stands in America at the present time, it prohibits unnecessary noise and holds perpetrators guilty of disorderly conduct. He added that under the law, "no person had a right to make any noise which would penetrate beyond the confines of his own home." A New York lawyer thereupon refused to pay his house rent as a protest against the noise of his neighbour's loudspeaker. Mr. F—— gave evidence that the tenant two floors above him operated his loudspeaker night and day, and protested to the magistrate that he should not be forced to pay rent for apartments which resembled a cabaret more than a home. That seemed logical but it puzzled the magistrates, and the last the writer heard of the case was that they were still puzzled!

(To be continued.)

TELEPRINTERS IN THE MAKING.

BY B. S. T. WALLACE, C.T.O.

A SEARCHING, penetrating, lingering unmistakable odour: such seemed to be the one lasting impression recorded by a visit to the telegraph works of Messrs. Creed & Co., at Croydon. As this gradually wore off the memory of other interesting things came to the surface and it was thought worth while to record them.

Had it been the original intention to describe this visit these columns would no doubt have been adorned with workshop photographs and festooned with facts and figures, so perhaps the omission of many things that might otherwise have been noted can perhaps be overlooked while you in imagination take a walk round.

Some years ago I had occasion to visit Messrs. Creed's Works, and partly from curiosity as to how such a sudden heavy call for teleprinters was being met in what was a comparatively small building and also the desire to learn how certain parts were actually made and their limitations, I sought a further visit.

The works have already been augmented by temporary buildings pending the construction of a permanent six-storey structure to cover the site now occupied by the present one-storey buildings.

Needless to say, there is much activity everywhere, plenty of overtime, and I understand a night shift may also be introduced to cope with heavy demands, for not only teleprinters but morse apparatus also.

There is such a maze of machinery and processes that one would require several days and the company of the various individual experts to obtain even a slight acquaintance with the whole of these works, and many questions that might otherwise have been asked simply had to be left for lack of time. The order of progress through the ramifications of the various shops is a somewhat uncertain memory, so I will give a few impressions and detail any interesting things gleaned on the way.

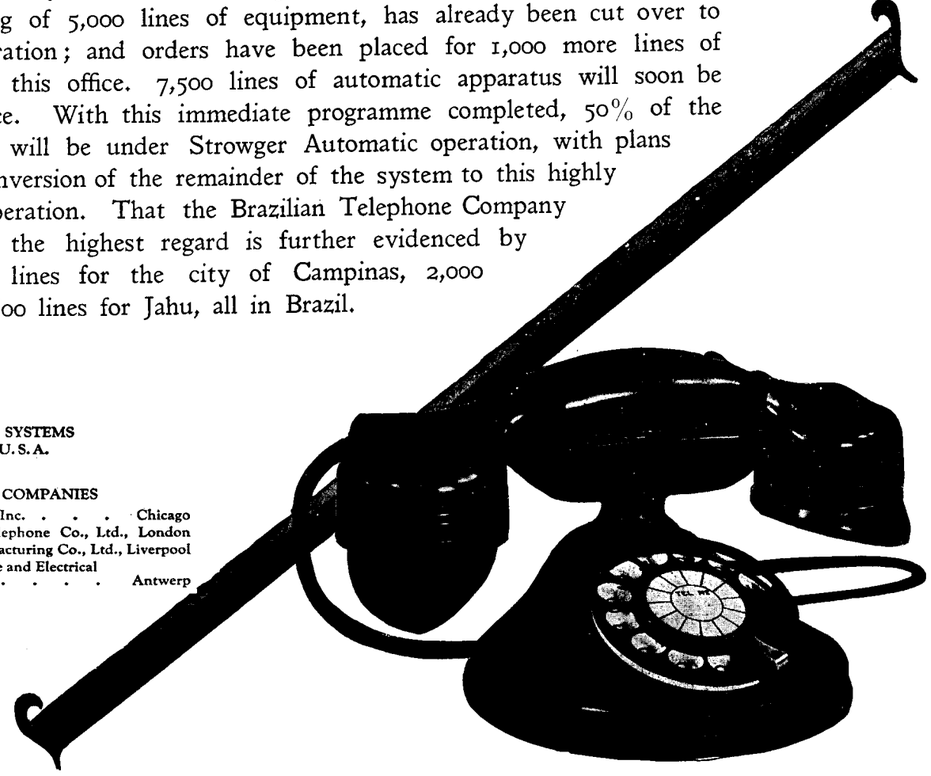
The tour commenced at the principal machine shop. Here one is introduced to what on first acquaintance appears to be a Heath Robinson nightmare. It contains hundreds of drilling, boring, and cutting machines; not simple things, but great robots with mechanical brains, adjusted to less than the thousandth part of an inch, each designed for turning out one particular part. They are worked from a perfect maze of overhead belts and shafting. There is only just room to creep cautiously between these machines. (This system of belt and shafting will be replaced in the new building by individual electric motors to each machine.)

A view of the public square and beautiful municipal theatre at São Paulo, Brazil. The public buildings of São Paulo are designed with the highest regard for artistic and aesthetic considerations, a practice characteristic of most South American cities.

latchless Service Brought to São Paulo, razil, by Strowger Automatic Equipment

O PAULO, Brazil, situated some two hundred and fifty miles southwest of Rio de Janeiro, is the centre of one of the largest coffee-raising districts in the world. dy past the three-quarters of a million mark in population, it is one of the most ly growing and progressive cities in South America.

telephone system, owned and operated by the Brazilian Telephone Company, is ly being modernized by means of Strowger Automatic Telephone equipment. eiras office, consisting of 5,000 lines of equipment, has already been cut over to ger Automatic operation; and orders have been placed for 1,000 more lines of natic equipment for this office. 7,500 lines of automatic apparatus will soon be led for Central office. With this immediate programme completed, 50% of the hones of São Paulo will be under Strowger Automatic operation, with plans cted for the early conversion of the remainder of the system to this highly factory method of operation. That the Brazilian Telephone Company s this equipment in the highest regard is further evidenced by t orders for 2,000 lines for the city of Campinas, 2,000 for Petropolis and 800 lines for Jahu, all in Brazil.



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C. B. CLAY FOOTBALL CHALLENGE CUP.

THE final tie in the C. B. Clay Challenge Cup was played on the Tufnell Park Football Ground on Friday, April 25, between teams from the Post Office Stores Department (Holloway) and the City Internal Section, London Engineering District.

A large crowd of spectators attended to see what proved to be a typical cup tie game. In the first 5 minutes Capon scored for the City Internal Section.

Further goals were scored by Cissel, Capon (2) and Gadd and the City Internal Section eventually ran out winners by 5 goals to *nil*.

Since this was the fourth time in 5 years in which the Stores have appeared in the final tie without being successful they appear to be distinctly unlucky in their efforts to win this competition.

Col. C. B. Clay, the donor of the cup, was unfortunately unable to be present owing to an attack of lumbago, and in his absence the presentation of the cup, together with miniature cups to each member of the winning team, was made by Mr. P. J. Ridd, Assistant Superintending Engineer of the London District.

It may interest readers of the *Journal* to know that this Football Challenge Cup was first instituted in 1898 and is still open to all teams representing the staff of any branch or section of the Post Office associated with the telephone service in London, including the following departments:—

The Secretary's Office.
The London Telephone Service.
The Post Office Stores Department.
The London Engineering District.
The Office of the Engineer-in-Chief.

Entries for the competition are cordially invited and particulars can be obtained from the Hon. Secretary, Mr. C. J. Head (London Engineering District), Mr. A. E. Wild (London Telephone Service) or Mr. Woollard (Engineer-in-Chief's Office).

The proceeds of all matches are devoted entirely to charity and the competition has been the means of raising upwards of £200 during the past few years.

It was only possible to take a momentary glance at some of the various operations in this building, including the cutting of the ingenious cam tracks from the heavy steel rod and the boring out from solid blocks of metal the cores and magnets for the relays. The latter operation was more or less hidden by the continuous stream of cooling liquid flooding the whole process. Girls are employed on a few of the lighter machines, such as engraving: one such operation being the cutting of an identity number in the typehead combination combs.

Despite the apparent congestion there was in this shop a noticeable atmosphere of cleanliness and comfortable warmth. Even in the most fleeting of the temporary buildings the radiator system would have won the heart of any New Yorker.

The next department contained retorts and other apparatus for tempering and hardening the various steel parts, conspicuous among which were the relay and other strip connecting rods, combining lightness with strength and rigidity.

Then came the stamps, cutting out from steel plates such things as key bars with the same facility as the hole is punched in a tram ticket.

The enamelling room, where the covers and bases are given their glossy black coat by means of spraying apparatus, is of special interest. It all looks so simple and easy that one longs for some such device for ordinary domestic decorations. There is one drawback, however. The fumes are harmful—whether to health or from risk of explosion I did not enquire—so the operations are done in an alcove in front of powerful exhaust fans.

I have a faint suspicion that my guide intentionally lingered in this room in gleeful anticipation of witnessing my olfactory reaction to the next department. There is a distinct fascination in the smell of this enamelling process. One gets the impression that if it were not for the suction fans a state of pleasant inebriation would quickly be induced. So the contrast to what was to follow was the more marked.

We pass on. The next door is opened, but before my head is inside I involuntarily exclaim "Fish, rotten fish!" and to complete the illusion appear a number of tanks and the sound of running water. But there are no fish. This is the plating room, drenched with the fumes of deadly cyanide of potassium. There is no mistaking it. A warning in flaming red letters proclaims "That scratch may lose an arm. Go to the dressing station at once!"

The fumes alone are calculated to make a cut fester: yet, like the proverbial arsenic eaters, the staff seem quite inured to it all. Apparently there is no risk to those in perfect health, and of course all needful care is taken by the provision of such things as rubber gauntlets.

You will notice that certain steel parts of a teleprinter, such as the keybars and locking bars, have a silvery sheen a little brighter than lead but not so bright as silver. This is an electrolytically deposited coating of the uncommon metal cadmium. This is considered the most serviceable medium for preserving the surface of steel from oxidation and rust.

Electro-plating is always an interesting process to watch, but on this occasion I was glad to pass out into the fresh air and across to one of the temporary buildings.

This "temporary" building is intended to last 18 months. It is built of bricks of a new pattern, having a ridged surface, handsome in appearance. I am quite sure, if it were allowed to do so, this structure would outlast many of our modern so-called "ideal residences," which seem to be built of brick not far removed from the clay huts of the Ancient Britons.

This building contains several departments, including assembling, testing, research, demonstration. When the teleprinter parts are finished a "complete" machine is built up from them. This complete machine is then passed to experts who dismantle it to the last screw and assemble it again, but this time fitting and testing each part as they go. The "finished" instrument is then put to a continuous running test for two weeks. After passing this it is ready for service.

One could spend a day in the test room, but I had to be content with a glance at two teleprinters (3A in P.O. nomenclature) undergoing a breakdown test. These machines had been working continuously day and night without a stop for over twelve months. They certainly looked as if they had seen some hard work. Nothing ever reminded me so much of the man who built a Ford car from parts picked up on the road, dropped by other Ford cars, and when he had finished made his car go faster, do more miles to the gallon, and last longer than a new one. Hence the moral: that if a piece of machinery is correctly designed and attended to by someone who thoroughly understands it, it will stand up to the work it is made to do.

These teleprinters under test are operated by a robot finger driven by an electric motor. There was no gentle, firm, and rhythmic touch about it but a good hefty 60 w.p.m. thump on the key as if it were deliberately trying to wear something out. This robot finger operates a different letter each day.

A Creed relay was also seen under breakdown test and showed no sign of fatigue after more than 12 months of A.C. from the mains.

These were all very illuminating performances. Finally, one is introduced to the demonstration room. Here are examples of everything from Murray multiplex to tape transmitters for column printing teleprinters. Some of the apparatus is fitted up as for station-to-station working, the premier exhibit being automatic Wheatstone, as represented by the cam-operated keyboard perforator and the Creed electro-magnetic reperforator (known in the P.O. as "airless Creed"). So Wheatstone in this form holds its own and is apparently still the leading telegraph system.

One point about the Creed Wheatstone system is worth mentioning, for although it has been tried experimentally in the C.T.O. it was never adopted as standard practice. The transmitter does not send signals direct to line but operates a transmitting relay utilising a dead beat moving coil milliammeter as a current indicator. In the event of a bias developing at the transmitter it can be corrected at the relay before the current is sent to line.

The column printing telegraphs were very much in evidence and do not appear to be under the condemnation attached in some quarters to column printing apparatus.

It was a difficult matter to find any inherent weakness in the teleprinter, though, of course, experiments are continually in progress aiming at the simplification of the more complicated mechanical operations.

One is inclined to form the opinion that these instruments are very much like motor cars. They are as foolproof as they can be made, but a certain amount of mechanical common-sense in the shape of correct adjustment and adequate and timely lubrication—the latter is a vital point—goes a long way towards ensuring freedom from faults and failures.

Though said in jest, the remark of a colleague "That a man ought to be employed on full time going round the C.T.O. oiling up," contains a certain amount of truth.

There is no doubt that the gruelling conditions of P.O. service will have a similar result to letting out on hire to drivers of varying knowledge and temperament, for use on any and every sort of road, a typical modern motor car: it is not going to give the same service as it will to the owner-driver mechanic.

If experience indicates that a further margin or factor of safety is required for heavily worked teleprinters there is no doubt the demand can be met by the resources of the Creed works.

Meanwhile, one feels that a booklet dealing more comprehensively with the mechanical relationship, margin of adjustment, dismantling and re-assembly of the various parts, would be a useful thing to have.

One statistical detail may be of interest. The number of teleprinters manufactured in America during 1929 totalled 50,000, representing something over £5,000,000.

There is some indication that an output approaching this figure may be reached in our own country five years hence. There is not much doubt these instruments will replace many private telephones at present used for conducting the affairs of large business organisations.

HERALDRY IN FLAXMAN EXCHANGE.

MISS CLEMENT, supervisor in charge of Flaxman Exchange, in Mallord Street, Chelsea, has initiated an interesting movement which, through the medium of the medieval art of Heraldry connects the London Telephone Service with days of chivalry. Miss Clement has had the brilliant idea of composing, as a symbol of service, an heraldic device upon a shield, the main feature of which is the caduceus associated with the god Mercury, who, as the divinity presiding over communications, may be regarded as a suitable tutelary genius for a telephone exchange.

The ceremony of unveiling the shield was performed on Thursday, May 15, by the Deputy Controller, Mr. Pink, the District Superintendent, Mr. Buckeridge, presiding over the proceedings. Mr. Pink alluded to the artistic associations of the neighbourhood in which the exchange is situated, and gave an outline of the life of Flaxman after whom the exchange is named, although he himself had no connexion with Chelsea.

Major J. F. Nichols, M.C., M.A., brother of one of the supervisors at Flaxman, who is an authority on Heraldry, gave an explanation of the shield and its achievement, also of the very apt motto selected, *decus nostrum ministrando*, which he translated as, "Our pride is in serving."

Mr. Neate and Mr. Gray associated themselves, on behalf of the Engineering staff of the exchange, with the idea of the shield, and with the sentiments expressed in the motto and in the speeches that had been made, and a vote of thanks to the Deputy-Controller, moved by Mr. Benham and seconded by Miss Cox, concluded the proceedings, which were followed by a social evening.

This movement for reviving the sentiments and ideals of the days of chivalry is a most significant sign of the times, although, in the inevitable course of historical evolution, we have now reached the position when it is no longer the knights who go to the rescue of distressed damsels, but the damsels who come to the rescue of distressed subscribers. We heartily congratulate Miss Clement on the initiation of the idea.

H. G. C.

PROGRESS OF THE TELEPHONE SYSTEM.

THE following gives a brief review of the growth in the telephone system during the past financial year.

The total number of stations working in the Post Office system at Mar. 31, 1930, was 1,882,110, representing an increase of 127,469, or 7.3%, for the year. The increase of 127,469 stations is the highest on record, and exceeds that for the year 1928-29 (the previous best) by roughly 4,000. The exceptionally good result for the year 1929/30 is partly due to the accelerated growth in call offices in rural areas.

The growth for the year in London, England and Wales (excluding London), Scotland and Northern Ireland was as follows:—

	Total Number of Stations at Mar. 31.		*Increase.*	
	1929.	1930.	*No.*	%
London	626,714	675,783	49,069	7.8
England and Wales (excluding London)	948,934	1,016,869	67,935	7.2
Scotland	157,169	166,184	9,015	5.7
Northern Ireland	21,824	23,274	1,450	6.6
Total	1,754,641	1,882,110	127,469	7.3

Residence rate installations at Mar. 31, 1930, numbered 260,420 in the Provinces and 167,122 in London, the total of 427,542 representing an increase of 40,791, or 10.5%, for the year. The increase in business (subscribers) exchange installations for the same period was 24,294, or 3.8%. Throughout the country the proportion of residence to total subscribers continues to rise and at Mar. 31 last the percentage of residence subscribers was 48.9 for London, 34.8 for the Provinces and 39.2 for the country as a whole, compared with 30.5, 22.8 and 25.2 respectively at July 1, 1922, when the lower tariff for residence subscribers was introduced.

The total number of call offices (including kiosks) at Mar. 31, 1930, was 31,091, of which 6,016 were in the London telephone area and 25,075 in provincial districts. The net addition during the year was 5,227, or 20.2%, as compared with 1,810, or 7.5%, during the previous twelve months. The high rate of increase in the year 1929-30 was mainly due to the progress made under the scheme for the extension of telephone facilities in rural areas inaugurated as a result of the proposals contained in the 1929 Budget. The number of call offices in rural areas (included in the above figures) was 9,021 at Mar. 31 last, as compared with 5,877 at Mar. 31, 1929, and 5,371 at Mar. 31, 1928.

Of the net addition of 5,227 call offices for the year, 1,762 (33.7%) were kiosks. At Mar. 31 last kiosks in London numbered 1,709, and in the Provinces 6,331, giving a total of 8,040, which represents a 28% increase for the year.

During the twelve months ended Mar., 1930, 142 new exchanges were opened under the Rural Development Scheme of 1922, bringing the total number of exchanges opened since the inception of the scheme up to 1,409. In addition to the 1,409 exchanges opened, there were at Mar. 31 last a further 94 in course of construction.

The total number of exchanges working at Mar. 31, 1930, was 4,647, of which 1,496 serve urban districts and 3,151 rural districts. The number of exchange lines connected with the former was 1,066,911, and with the latter 128,590.

The number of rural party line stations working at Mar. 31, 1930, was 10,105, as compared with 10,456 a year previously. A number of such lines are being replaced by exclusive lines in connexion with the opening of rural automatic exchanges.

Largely as a result of the scheme for the extension of call office facilities in rural areas, considerable progress was made during the year 1929/30 in connecting rural railway stations with

the telephone exchange system, and at Mar. 31, 1930, the number of stations connected was 1,631 as compared with 1,106 at the end of March, 1929, and 890 at the end of March, 1928. The increase of 525 (47%) for the year was comprised of 52 rented circuits and 473 call offices.

The number of effective calls originated during the year 1929/30 is estimated at 1,322 millions, or 56.5 millions (4.5%) more than the total for the year 1928/29.

At the time of going to press, the final results for the last two months of the year 1929/30 in respect of trunk calls were not available, and the year's figures will be given in a later issue. Particulars of the January traffic, which have not yet been quoted, are as follow :—

The total number of inland trunk calls dealt with was 9,621,796, representing an increase of 303,628, or 3.3%, over January, 1929. Outgoing international calls numbered 46,330, and incoming international calls 50,231, representing increases of 3,390 (7.9%) and 4,998 (11.0%) respectively over January, 1929.

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

LONDON—Amhurst (Hackney), Fairfield (Croydon) (both automatic).

PROVINCES—Bexhill, Farnborough, Great Moor (Manual) : Aylesford, Barming, Bearsted, Hunton, Loose, Maidstone, Otham, Wateringbury (automatic) : Ballachulish, Clifford, Dunure, Glemsford, Little Gaddesden, Martin, Privett, Ridgewell, Rumford, Steele Road, Topcliffe, Wenvoe (rural automatic) :

and among the more important exchanges extended were :—

PROVINCES—Eccles, Grimsby (automatic), Heckmondwike, Norton, Sidmouth, Taunton, Urmston, Walton-on-Thames.

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

Plymouth—Torquay,
Derby—Loughborough,

while 73 new overhead trunk circuits were completed, and 79 additional circuits were provided by means of spare wires in underground cables.

CIVIL SERVICE ARTS MAGAZINE.

WE notice in the May-July issue of this excellently produced journal, that the Poetry competition of February was won by Miss Eleanor McAllister, well known to our readers as Hon. Secretary of the London Telephonists Society. We have much pleasure in reproducing it :—

AN AFTERTHOUGHT.

You are gone : gone !

A little of your spirit must remain
To grace the place where once you gazed
On glancing firelight, glowing in the room
Dim with the shadow of departing day.

So do you stay !

And I more strength and comfort gain from that
Sweet afterglow, which spreads a golden web
Around the simple acts of daily life,
And lifts to glory all the common things.

ELEANOR MCALLISTER.

PUBLICATION OF TELEPHONE NUMBERS.

THE notes in the December issued under "Hic et Ubique," drawing attention to the omissions of advertisers in American publications and in the *Telegraph and Telephone Journal* to publish their telephone numbers, were interesting and provocative. Some evidence of a telephone should, of course, be an integral part of every address. It might be argued, however, by all telephone administrations that the publication of telephone numbers should be confined only to the current issues of their telephone directories. Progressive and rapidly developing telephone systems require the opening of new exchanges. Areas served by existing exchanges suddenly become congested, due to the removal of business from one area to another. Some areas have, in consequence, to be divided over two and sometimes more exchanges. Subscribers increase their installations and require large blocks of lines in lieu of one line only. They form large combines and suddenly centralise their interests and require them served by large installations at new addresses. Such changes make for telephone progress and are welcomed. They would, however, be more easily dealt with were it not for the changes in telephone numbers they necessitate and the opposition such changes produce. Subscribers generally state that their telephone numbers have been widely advertised and are one of their assets. They point out with truth that telephone numbers cannot be altered easily in the advertising matter they have already circulated. Unfortunately, also, they do not all correct advertisements in hand before issuing them and they are circulated giving incorrect telephone numbers.

The general publication of telephone numbers means that any changed number should not be re-allotted for a long period—generally about one year. Calls received for these numbers have to be referred by the exchanges affected to the new ones, causing irritation to the callers, delay in the completion of their calls, artificial restriction in the development of exchanges, wasted holding time on junction routes and much correspondence and clerical work, which could all be avoided if the current telephone directory was the only available reference for obtaining telephone numbers.

It was interesting to find that technical advertisers refrain mostly from publishing their telephone numbers, and one speculates as to whether they do so from their specialised knowledge of the conditions which prevail and from a desire to be helpful. On balance the omissions appear to be a matter for commendation and not reproof. If all advertisers referred readers to the current telephone directory for their telephone numbers, telephone administrations would undoubtedly be relieved of a frequent cause of complaint and difficulty. The enforced use of the telephone directory in all cases might be difficult for aged and poor-sighted persons, but this could be overcome, no doubt, by printing in a better type than that now used.

Should it ever occur that the general publication of the telephone numbers outside the telephone directory should be stopped, arrangements would have to be made by the responsible telephone administrations for new subscribers and those with changed numbers to publish their numbers until the first issue of the directory containing the information has been completed to the public. This might not be difficult to arrange if a special notice was sent in each case to the subscribers concerned, giving them dates when the publication of their telephone numbers outside the telephone directory should cease.

Whether it would be worth while for all telephone administrations to attempt to carry their public with them in this matter, is debatable, but from many points of view the question is one worthy of more consideration than it appears to have received in the past.

G. BUCKERIDGE.

TELEGRAPHIC MEMORABILIA.

WIRELESS has found many outlets for its energy, but the latest, that of "oil-diviner," comes somewhat as a surprise, no doubt, to most of us. However, the Federal Radio Commission of the U.S.A. has allotted five short-wave frequencies specially for the purpose of oil exploration and the body just mentioned is sufficient guarantee. The method employed, it appears, by oil surveyors is to transmit a radio signal simultaneously with the detonation of a subterranean explosion of dynamite. By measuring the time lag between the reception of the radio signal and the sound it is possible, so it is stated, to determine whether oil exists in the territory between the transmitter and the receiver.

The gracious testimonial paid by the *Electrician* in its issue of May 9 last cannot be passed over without an expression of appreciation from a representative journal of the Telegraph Service: It was on the occasion of the opening of the Central Scotland grid, when in addition to the *daily* press there were also representatives of technical journalism eager for news of an epoch-making event; concerning the part played by the Telegraph Service, our contemporary writes:—

> "It is the fashion to throw stones at the telegraph service, and it is only fair to hand that much abused institution a bouquet when such an offering appears to be deserved. The last sheet of our telegram of about 1,200 words, giving the report of the proceedings at the opening of the Central Scotland grid, was delivered at our offices in Fleet Street about an hour and a quarter after the time at which the entire telegram was handed over the counter at Edinburgh. As the *Electrician* is not a daily, and there was heavy special traffic for the dailies to be handled, the telegraph service is entitled to credit for rising to the occasion in a very satisfactory way."

Companies.—The Anglo-American Telegraph Co., Ltd., report that in respect of 1929, rent from W. Union Telegraph Co. was £262,500: to this is added £65,625 brought forward. Four dividends totalling £3 15s. per cent. paid on Ordinary Stock. Balance, £65,625 carried forward.

Great Northern Telegraph Co., Ltd.: For 1929 directors propose to pay dividend of 20% including 5% already paid, to transfer £33,333 to Reserve and Renewal Fund and to allot £38,889 to pension fund.

Personal.—The late Mr. Walter Judd, formerly with the Eastern Extension Telegraph Co., left estate valued at £15,575 (net personalty £13,257).

Promotions.—It is not unlikely that could a vote be taken of the Telegraph Service, the promotion of the much esteemed author, Mr. T. E. Herbert, M.I.E.E., to the post of Superintending Engineer would prove the most popular, and no attempt will be made here to paint the lily! Too late for last issue, notification reached me of the promotion of Mr. E. L. Clair from Asst. Supt. to Superintendent Lower Grade, C.T.O. Though known in a smaller circle, here, too, the congratulations cannot but be sincerely unanimous regarding one whose capacity has been well proven.

The promotion of Miss E. Horsley to Supervisor Higher Grade and Miss F. L. Ockelford to Supervisor, both sequential to the retirement of the much respected Miss J. M. Rintoul, brings back to one's mind tactfully helpful service during the war and post-war period, when geniality was a priceless quality in dealing with frayed nerves and high pressure.

Round the World!—AUSTRALIA.—From the *Electrical Engineer of Australia and New Zealand* and other sources it is gathered that the federal works committee has recommended the establishment of a telephone service between the eastern states and Western Australia. The economical and modern proposal is to use the two existing 300 lb. copper *telegraph* lines for the provision of a voice-frequency telephone circuit, the telegraph traffic then being carried on high-frequency carrier channels upon the present physical lines, which will provide one voice-frequency telegraph channel, *eight duplex telegraph channels permitting of the simultaneous transmission of sixteen telegrams.* The optimistic telegraph report continues with the suggestion that "as the telegraph traffic increases" it will be possible to add two additional duplex telegraph channels without incurring further capital expenditure at any point between Adelaide and Perth. Provision is also made for increased telephone traffic by two additional telephone circuits "without any further expense other than for an additional wire on the existing poles." The capital cost of the scheme figures out at £69,800, and the estimated annual charges of the system £49,300. The estimated annual revenue is put down as £55,000, and of this the *telegraph service will contribute* £42,000, and the *telephone service* £13,000. The italics are the present writer's. CANADA.—Reuter's agency states that a radio-telegraph station, to be the largest on the Pacific Coast, with a range of five to eight thousand miles, and which will provide direct communication with all parts of the Pacific, will be constructed this summer on Lulu Island, south of Vancouver. The Director of Radio-telegraphy for the Department of Marine and Fisheries, Ottawa, is making final arrangements for the construction of the station, which will be in operation by the early autumn. CHINA.—By arrangement between the Chinese Ministry of Communications and the Chekiang Provincial Government, says *The Electrical Review*, work has been started on a long-distance telephone line between Shanghai and Hangchow, and is to follow the same route as that of the Telegraph Administration's circuits. For economical reasons the lines will be erected on the telegraph poles. It would be interesting to know the relative revenue results of the two services thus literally working side by side throughout this long route. FRANCE.—The initial aerial power of the new Brumath radio plant, near Strasburg, will be 12 kw., but it may be increased to 25 kw. later, says *The Electrical Review*. *World Radio* announces that the Toulouse station is to be moved 12 miles out of the town and that its power is to be raised to 60 kw. The short-wave wireless station on the Eiffel Tower, Paris, is to be used—if the change has not already been made—as the centre of a police radio service. Receiving stations will be established all over France and at boundary towns and seaports, and broadcasts will take place at intervals of an hour at a wavelength unknown to all except the police. From one point of view this statement would appear to have some confirmation, according to the *Wireless Trader*, which reports General Ferrié (chief of the French Military Wireless Services) as having said, in connexion with a scheme for the conversion of the Eiffel Tower into an ultra short-wave station for colonial purposes, that "if the tower under present conditions should prove unsuitable for ultra short-wave work, we will at once attempt to find a more suitable site, as it is absolutely essential that a great French station of this sort should be established. It is known that the present French Postmaster-General favours the scheme. GREAT BRITAIN.—On May 8, cable communication between the Shetland Islands and the mainland was interrupted. Telegrams were at first sent by post from Aberdeen, or from Kirkwall, but wireless apparatus enabled communication to be restored later. GERMANY.—*Combined picture-telegraphy, transatlantic telephony and ordinary trunk telephony.*—It is stated at some length in the German and other technical press that a contract has been placed with Siemens & Halske for the manufacture and laying of special cables for linking the transmitting station at Nauen and the receiving wireless station near Beelitz with the central operating station in Berlin. The specifications for the cable have been worked out by the German Versuchsamt, and the Telefunken, the Transradio, and the Siemens & Halske companies. The lengths of cable required are as follows: Berlin and Nauen 31 miles and Berlin and Beelitz 33. The inductive loading will differ considerably from that of ordinary telephone cables. The new cables are to be used for picture transmission and also for transatlantic telephone circuits. Carrier frequencies up to 18,000 cycles are to be employed on what will be known as the high-speed picture telegraphy circuits. Some of the circuits for 16,000 Hertz limit frequency are also intended for the trans-atlantic service, while lower speeds will be possible for slow picture telegraphy and still lower frequencies will provide facilities for

official communications between engineers, operators, &c. It is reported that throughout the summer months the Berlin station is to broadcast daily from 6.45 to 8.15 a.m., in addition to its normal hours.—ICELAND.—Parliament has resolved to terminate as from January, 1932, says *The Times*, the contract with the Great Northern Telegraph Company for cable connexion between Iceland and the Shetland Islands. Wireless communication will be used in place and the above authority thinks it probable that the Government will accept an offer of the Marconi Company for telegraph and telephone services between Iceland and foreign countries for £20,500. The Director of Telegraphs anticipates that the new method will mean a great saving, besides giving more dependable communication, as cable interruptions are now very frequent. INDIA.—The report of the India Office Post and Telegraph Department for 1929 states that there are one hundred and sixty-five wireless stations in India, fixed, mobile, and experimental included. The Beam telegraph service between London and Bombay was considered to have given successful results. A steady increase of traffic, principally in the cheaper classes of telegrams, was noted and by the end of the year the average number of paid telegrams amounted to 70,000 per month. The telegraph and telephone mileage was increased by 2,016 miles of line, 14,000 miles of wire, 34 miles of cable, and 2,400 miles of cable conductors. New construction included 7,932 miles of wire for the various railways and 1,898 miles for irrigation service. The maintenance under the charge of the Department at the end of the year was altogether 102,000 miles of line carrying 467,000 miles of wire and 1,073 miles of cables containing 82,500 miles of conductors. Thirteen departmental telegraph offices, namely those at Kalbadevi, Amraoti, Jaipur, Dalhousie cantonment, Narayengani, Debrugarh, Tavoy, Toungoo, Taungyi, Allahabad cantonment, Fyzabad, Salem, and Hyderabad were converted into combined post and telegraph offices. It should perhaps be mentioned that at one time post and telegraph offices were completely separated, so much so that there were cases where one had to go to one part of the town to despatch a telegram and to quite another in order to obtain stamps to post a letter. Telegraph and postage stamps were quite distinct and could not be used for alternate services as was the case at one time in Great Britain. The scheme for the extension of telegraph facilities by authorising sub and branch offices and village postmen to accept inland ordinary telegrams from the public for transfer to the nearest telegraph offices for onward transmission had been found successful and is to be continued. One very interesting fact recorded of the wireless Beam service in India is that "Interruptions were of very brief duration and were mainly caused by disturbances on the *land lines* between Bombay *and* the wireless stations." It does not require a tropical climate to produce conditions such as those just quoted, for one has heard of similar results in northern climes! The principal improvements in land-line telegraphy which have been introduced by the Government during the last six or seven years have been in connexion with long-distance circuits employing high-speed printing systems. The installations of regenerative repeaters or retransmitters has rendered quadruple "up and down" working on the Baudot system possible over the longest circuits operated by the Department. ITALY.—According to a recently-issued report of the Italian Department of Posts and Telegraphs, there were 41,133 miles of telegraph lines, representing 326,149 miles of wire in Italy last year. JAMAICA.—It is understood, says *The Electrical Review*, that the Government has granted an English company a licence to erect a wireless broadcasting station at Kingston. It is to be erected shortly at a cost of £20,000. U.S.A.—It is announced that an additional 10,000 simplex telegraph typewriters (teleprinters) are to be installed this year by the Western Union Telegraph Company. The Postal Telegraph Company states that they have increased the number of typing telegraph installations on their system by 500%.

Meddlesomeness.—Meddlesomeness is the very opposite of helpfulness, for it consists in forcing yourself into another self, instead of opening yourself out to the other.—G. Macdonald.

J. J. T.

CORRESPONDENCE.

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

SIR,—For the most honest borough in London I would give the palm to Chelsea.

This morning a police officer presented himself at the exchange door and handed in 4*d*. He explained that a caller in a call office had pressed button "B" in order to get 2*d*. back on an ineffective call, but a silver sixpence had come down the chute instead. The caller changed the sixpence, kept 2*d*., and took the remaining 4*d*. to the nearest policeman on point duty.

M. J. C. (Flaxman Exchange).

A PLEA FOR THE USE OF CORRECT TERMS AND EXPRESSIONS IN DEALING WITH TECHNICAL MATTERS.

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

Probably most of your readers are aware of the ability of our cousins in the U.S.A. to coin words to suit the occasion, and of the remarkable aptness of many of those terms; but when it is a matter of recording technical subjects and of their conservation for the use of posterity, there is unquestionably a duty on everyone who has to deal with such matters, not only to use correct language, but also to use correct and understandable words and expressions.

Brevity is an admirable quality, much too often ignored nowadays, but there is no necessity to sacrifice correctness to obtain it.

The term "trouble shooter" for the official who has to clear faults, may be expressive, but its meaning is not clear to everyone, neither is it correct. Similarly the expression for a fault as a "bug" in the instrument or on the line, as the case may be, is neither correct nor suitable. Of course, one thing leads to another, and it may be that the term "trouble shooter" was the logical outcome of the description of a fault.

The word "phantom" is being used considerably in reference to certain types of telephone circuits, and there has been an occasional use of "ghost" for another type, which might involve the use of "sprite" or "sylph" for further developments in that particular direction. Now neither a phantom nor a ghost have any existence whatever, and their use is totally inaccurate and unsuitable. The use of either of these terms by a profession which is generally supposed to be one of the most modern and progressive is to my mind most regrettable, because there is no necessity to do so. The English language has ample accommodation to supply correct and understandable words and expressions without the need for adopting incorrect and unsuitable words just because they happen to be used on the other side of the Atlantic.

The word "superposed" is much to be preferred to "phantom" and is in every sense correct, while "double superposed" when used to indicate a circuit that is obtained by superposing on two other superposed circuits is quite understandable and is also correct.

If it is a case of brevity and conciseness, I can think of no better word than "plus," which is shorter than "phantom," and "double plus" for the double superposed circuit. The usual plus sign of "+," and "++" are very convenient too, both in writing and in labelling.

The Commission Electrotechnique Internationale does not use the available word "fantôme," but "circuit combiné."

Although the writer of this note is a great admirer of the progress and inventiveness of the Americans, there are some things they do which he considers not to be desirable and should not be adopted in this country, more particularly by a Government Department. If not, then we ought not to stop at half measures, but proceed to adopt his "bug," his "dooty" and his radio "toobs."

May 21. X.

[*Apropos* of "ghost," we have actually seen proposals set forth for styling a circuit superposed on two "phantoms" as a "ghost," and on two "ghosts" as a "spook" circuit.—ED., *T. & T.J.*]

MR. A. G. BRISTOW—NORTH-EASTERN DISTRICT.

ON April 25 we said good-bye to our Traffic Superintendent, Mr. A. G. Bristow, who left York to take up his appointment as District Manager of Bristol.

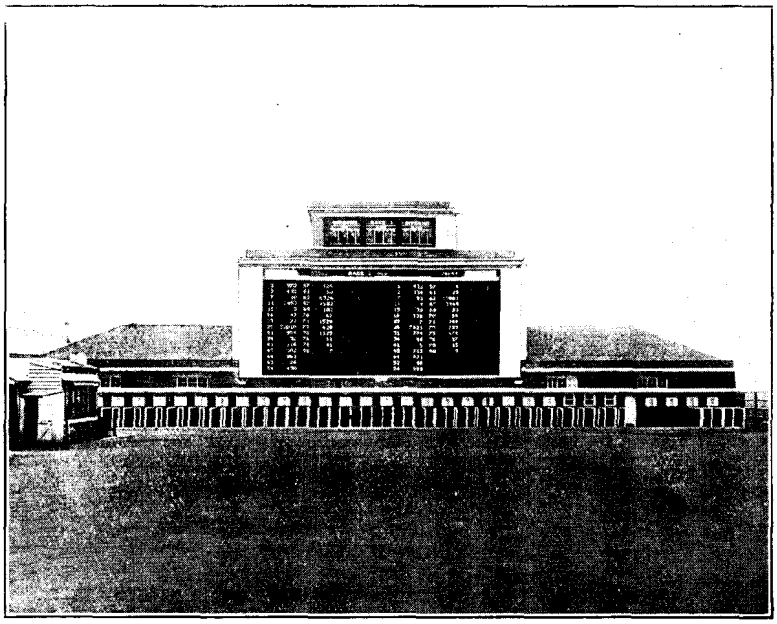
Mr. Bristow was presented with a very handsome electrical Jacobean standard lamp, and at a meeting of Exchange Supervisors and Traffic Officers was warmly congratulated on his promotion. He expressed regret in leaving a district where he had found such friendly relations between Exchange and Traffic staffs.

We all wish him the best of luck and hope that he will soon settle down in his new environment.

THE A.T.M. ALL-ELECTRIC TOTALISATOR AT THE ROWLEY MILE COURSE, NEWMARKET.

AT this season of the year some of our readers may be interested in the picture we publish of the all-electric totalisator installed by the Automatic Telephone Manufacturing Co., Ltd., of Liverpool, on the famous Rowley Mile Course at Newmarket. It is the first installation of its kind.

The Newmarket totalisator is designed for a total of 45 runners, the entire equipment, with the exception of certain ticket-issuing machines, located at other parts of the course, being housed in the building which constitutes the main indicator.



Its chief claim on the attention of a non-sporting publication like the *Journal* is that the electro-mechanism is identical with that comprising Strowger automatic telephone exchanges all over the world. It is made up into detachable component groups, mounted on pressed steel shelves carried by *angle-iron frames*.

Each of these component groups of Strowger switches and relays can be lifted from its shelf or replaced within a few seconds, and without disturbing the permanent wiring, a system of interlinked contacts resembling a double comb, one set fixed to the supporting rack, the other attached to the component group, ensuring perfect electrical continuity.

An important item of the equipment is the central control switchboard, from which the whole of the betting, including the issue of tickets at any point on the course and the horses running in each event can be controlled. Betting can be started, stopped, or modified as necessary, from this central switchboard, and, once the control switches have been set for betting in accordance with the agreed procedure on any given race, the control board is locked to prevent accidental operation of the control keys, or unauthorised interference whilst the race is in progress. This facility is one of several which effectually safeguards the racegoer against fraud.

GLASGOW TELEPHONE NOTES.

MISS MARION C. JAMIESON, the subject of our portrait, joined the service of the ex-National Telephone Company when the Message Rate System was introduced in Glasgow, and was one of the first Women Clerks employed in the District Office. The employment of women extended rapidly soon *thereafter, and Miss Jamieson, at quite an early age, was promoted to be* Head of the Section, with responsibility for the control of all the local and trunk call accounting. She now occupies the post of Higher Clerical Officer in the same office in which she commenced her telephone service. During her career, Miss Jamieson has seen the abolition of the Unlimited Rate, various *changes in methods of recording and accounting, and the introduction of many* mechanical devices for increasing the output of work. She takes a keen interest in all phases of the service, and is always ready with valuable suggestions for the improvement of the work. As far back as July, 1908, there appeared in the *Journal* an article from her pen on Sectional Balancing of *Accounts at Glasgow, and it is interesting to note that this method has since* been introduced generally as the standard practice under which telephone accounts are rendered. The writer of these notes, who, in 1908, was stationed in one of the southern districts, filed his copy of the article in his History of Telephone Accounting, and surprised Miss Jamieson by reminding her of it on his taking up duty in Glasgow three years ago.

MISS JAMIESON.

As a Supervising Officer, Miss Jamieson applies that rare principle enumerated by David Copperfield—"To do our duty to those whom we employ, than which there is no better way to get them to do their duty to us," and she fosters the spirit of encouragement of right methods, in preference to carrying on a campaign against wrong methods which, where indulged in, is out of proportion to the sum of the day's work.

Outside of her business activities, Miss Jamieson is interested in literature, is fond of music, and finds considerable pleasure in a garden.

"A Garden is a lovesome thing, God wot!
Rose plot,
Fringed pool
Ferned grot—
The veriest school
Of peace; and yet the fool
Contends that God is not—
Not God! in gardens! when the eve is cool?
Nay, but I have a sign:
'Tis very sure God walks in mine."

T. E. BROWN.

Princess Mary's Visit to Glasgow.—The Civil Service Sports Ground, Scotstoun, was the setting of an interesting and impressive spectacle on the afternoon of May 10, when Her Royal Highness Princess Mary, Countess Harewood, who is President of the Girl Guide Movement, took the salute at the Rally of the County of Glasgow Girl Guides.

Several members of the Exchange staffs are associated with the Girl Guide Movement and took an active part in the proceedings.

MISS M. K. SHEARER. MISS M. M. RUXTON.

The above photographs are of Miss M. K. Shearer, Assistant Supervisor, Class II, and Miss M. M. Ruxton, Telephonist, both of the Central Exchange. They had the distinction of being presented to Her Royal Highness, the former as a member of the Civil Service Sports Council, and the latter as District Commissioner of the North-Eastern Division of Girl Guides.

Our congratulations are due to both these ladies, and especially to Miss Ruxton, on her recent promotion from Staff Captain to District Commissioner.

Glasgow Post Office War Entertainments Committee. The past winter has seen no decrease of activity on the part of this Committee towards the welfare of our wounded soldiers. In all, nine entertainments have been provided for the patients at the Bellahouston, Ralston and Erskine Hospitals, and, in addition, a general outing to "Princess" Pantomime in February. We desire to place upon record our appreciation of the Committee for another successful season.

Mr. E. N. Payne, Assistant Traffic Superintendent, left Glasgow on April 30 to take up duty at Edinburgh on the following day. "Ernie" has the good wishes of all his late colleagues for a successful and happy career in the branch of his adoption.

In this as in most things he has once again shown that foresight for which he is deservedly credited.

A Day with Pepys. Sunday: Sunday is the day to dine at someone else's expense.

Up right early and before I went out of my chamber did draw a musique scale, in order to my having it at any time ready in my hand to turn to for exercise, for I have a great mind when not at work to perfect myself in my scale, in order to my practising of composition. After breakfast did take an airing in the garden to my very great content. Then to church, where there preached little Dr. Duport. But though a great scholler, he made the most flat dead sermon, both for matter and delivery, that ever I heard, and very long beyond his hour, which made it worse. However, much against my will stayed out the whole church in pain, but I did entertain myself with my perspective glass by which I had the great pleasure of seeing and gazing at a great many fine women; and, what with that, and sleeping, I passed away the time till sermon was done. Thence to my Lord Rutherford's with some others, his officers and Scotch gentlemen, of fine discourse and education, did dine. Last Sunday did dine at home all alone, which I do not like on Sundays. Then to church again, where I did hear a young preacher, and he did exhort in terms beautifully devoid of eloquence splendid with the deadly accusive monotony of truth. Back again to my Lord Rutherford's, where some Scotch people at supper. Pretty odd company; but there played one of their servants upon the viallin some Scotch tunes only; several, and the best of their country, as they seemed to esteem them by their praising *and admiring them: but! the strangest ayre that ever I heard in my life,* and all of one cast. But strange to hear my Lord Lauderdale (a Scot), say himself that he had rather hear a cat mew, than the best musique in the world; and the better the musique, the more sicke it makes him; and that of all the instruments, he hates the lute most, and next to that the bagpipe. Thence home and to prayers and to bed.

LEEDS DISTRICT NOTES.

Retirements, &c.

Miss Marion Rawcliffe, Assistant Supervisor, Class I, Huddersfield. Evidence of the affectionate regard in which Miss Rawcliffe is held by the Huddersfield telephone staff was shown by the large gathering which assembled *in the Dining Room at the Huddersfield Post Office on* Monday evening, May 12, when a presentation to her was made by the Head Postmaster,

MISS RAWCLIFFE.

Mr. Austen, of a handsome standard lamp, given by the Supervisors and Telephonists of the District. A presentation of a service wagon from the Postal and Telegraph Supervising Officers was also made later.

Miss Rawcliffe entered the Post Office as a Sorting Clerk and Telegraphist at Burnley in 1885, and she soon became an expert telegraphist, being frequently called upon for duty for special events. *On one occasion,* when the American Ambassador was speaking at Burnley, advice was received of a column report too late to make special arrangements. Miss Rawcliffe keyed the report on a long-distance YQ circuit to all the principal cities of Great Britain from Aberdeen to Plymouth. She walked home at 3 a.m., after each station had signalled "Good night, old man." In 1907 she transferred to the telephones as Assistant Supervisor II at Burnley, becoming Assistant Supervisor I at Huddersfield in 1920. Clear sighted capacity, shrewd observation and forthrightness were allied in Miss Rawcliffe with a sympathetic and charming personality. She leaves the Post Office after 45 years' service in good health, with the hearty good wishes of all her colleagues that she may spend many happy years of retirement in her new home at New Milton, in Hants, overlooking the Solent.

Mr. G. M. Burton. Another officer to reach the allotted span of official life is Mr. G. M. Burton, Executive Engineer in charge of the Technical Section of the Superintending Engineer's Office. He commenced his service as a telegraphist at Hull Post Office in 1885, and 10 years later was transferred as a clerk to the P.O. Engineering Department at Cambridge. Three years later he was appointed Sub-Engineer in the then Bishop Auckland section, and in 1919 became Executive Engineer.

At an informal gathering in the Dining Hall of Telephone Building, a wireless set was presented to Mr. Burton as a token of esteem from the North-Eastern District staff generally, and he was also handed a brooch for Mrs. Burton. Mr. J. W. Atkinson (Superintending Engineer) and others testified to the regard in which Mr. Burton was held, and all present wished Mr. and Mrs. Burton the best of health and happiness during his period of retirement. The formal presentation was made by Mr. C. Wood (Inspector, Technical Section), after which Mr. Burton, in a few well-chosen words, thanked his colleagues for the gifts and good wishes.

Mr. H. J. Hewins. On April 30 another member of the Superintending *Engineer's staff Mr. H. J. Hewins- retired* on reaching the age limit. Mr. Hewins entered the Service at Birmingham in 1885 as telegraph learner. He was transferred to the Engineering Department as a clerk in 1900 and served in that capacity both at Birmingham and Preston. In 1913 he was promoted to a 2nd Class Clerkship at Leeds, becoming later a Higher Clerical Officer, which rank he held until his retirement.

At an informal gathering on April 30, in Telephone Building, Mr. Atkinson (Superintending Engineer), on behalf of the staff, presented Mr. Hewins with a clock and a case of pipes as a token of the esteem in which he was held, and, with other speakers, conveyed to him their best wishes for a happy period of retirement.

Miss W. Field, Assistant Supervisor, Class II. One of the most popular members of the junior supervising staff at Leeds Exchange, Miss W. Field, left the Service on April 10 on the occasion of her marriage. She was the recipient of a handsome pewter tea-service from the exchange staff, and the many other gifts from individual members of the staff bore eloquent testimony to the friendships she had made.

Bradford Notes.

The close business relations between the Yorkshire woollen area and Australia made us anticipate that the new Australian service would be welcomed by Bradford subscribers, but it was pleasing to find that the first call from Bradford to Sydney was made on the day the Australian service was inaugurated. The call, which was from Mr. Robert Cook to his father-in-law, Sir Joseph Cook, a former High Commissioner for Australia, was in every way satisfactory, and received many favourable press comments throughout the district.

Our hats felt somewhat tight when we read the following in a recent edition of the *Yorkshire Evening Post*:-

> "There was a nice little compliment paid the other day in an assembly of business people to the women who work in Bradford Telephone Exchange. Said a visitor to the city, 'You have the quickest, most courteous, most intelligent, and most musical-voiced set of telephone operators I have heard in any provincial town.'"

It was with great regret that the Bradford telephone staff said good-bye to Miss M. Charnock, Assistant Supervisor, Class II, prior to her resignation on Mar. 31, on account of marriage. The numerous and costly presents which she received from the staff were real expressions of the affection in which she was held.

Golf.

On Friday, May 9, the Leeds Civil Service Golfing Society held their first annual competition at Sandmoor, when 92 competitors took part in a medal round over 18 holes, to decide which Department should be the first holders of the Championship Shield presented by Lt.-Col. T. P. Hobbins, C.B.E. The weather in the forenoon was not propitious, and the 40 competitors who were drawn to play before lunch completed their rounds in a downpour of rain, proving that if, as has been claimed, Civil Servants are the salt of

the earth, their salt is not of a soluble character. Afternoon players had fine weather, but found difficulty in contending with a high wind.

The Shield was won by the P.O. Survey Department, N. E. District, with 4 net scores, aggregating 293. Other team results were as follows:—

Leeds H.P.O.	305
Inland Revenue	311
Ministry of Labour	311
P.O. Engineering Department	317
Ministry of Transport	317
Customs and Excise	319
Ministry of Pensions	336

The prize for the best gross score was carried off by Mr. H. A. Harrop, of the North-Eastern Survey Department, whose round of 82 was a fine performance in the rain. Mr. A. L. R. Cross (Ministry of Transport) and Mr. J. A. Schofield (Inland Revenue) tied for second place with 83; upon a play-off Mr. Cross won. The best net score of 69 was returned by Mr. J. N. Green (Leeds H.P.O.), Mr. J. Haig Smith (N.E. Survey Dept.) being runner-up with 70.

Supper and a musical evening at the Club House completed a highly enjoyable and successful day.

Football.

The Lancashire and Yorkshire Cup-tie re-play between Leeds H.P.O. and Doncaster P.O. was decided at Roundhay on Good Friday, and was witnessed by an unusually large number of P.O. people. In the first stages Doncaster, with the advantage of the wind, appeared dangerous, but in every case their finishing was weak and shooting erratic. Playing against the wind, Leeds largely concentrated on a defensive game, although several times the forwards broke away in rushes which ended in the Doncaster goalmouth. Half-time arrived with no score, but after the re-start Leeds soon showed their superiority, and Gaunt scored in the first few minutes. The Leeds half-backs kept the ball low and passed well, while at full-back Irons showed fine judgment and played a splendid game. A goal from Cass put the Leeds team further ahead and then goals followed in quick succession from Vickers (1), and Gaunt (3). Result: Leeds 6, Doncaster *nil*.

The semi-final against the Sheffield Engineers took place at Sheffield on May 3, and when time was called after a strenuous game the score was one goal each. Extra time was played and there was an orgy of penalties for "hands" against Leeds, which resulted in Sheffield Engineers running out winners by 4 goals to 1.

Cricket.

The following is the draw for the first round of the Cricket Competition for the Yorkshire Postal Cup, and promises some good matches:—

Pontefract and Castleford	*v.* York.
Doncaster	*v.* Leeds.
Bradford	*v.* Halifax.
Sheffield	*v.* Huddersfield.

LONDON TELEPHONE SERVICE NOTES.

Contract Branch Notes.

THE business done by the Contract Branch during the month of April resulted in a net gain of 3,382 stations as compared with 4,653 stations in the corresponding month last year. The gain in April shows a considerable improvement on the figure of 1,992 for March last, but the returns are unfavourable compared with the results for April, 1929.

The attenuated returns in the business quarters of the City suggest a possible explanation in, among other things, the many schemes of amalgamation, or rationalisation as it is more commonly called.

This modern industrial phase may prove to be a temporary barrier to the hitherto normal expansion of telephone development in this direction, as it is not unreasonable to suppose that the economic considerations underlying these schemes will affect telephone growth as well as other varied interests.

We can, however, look forward to reaping in full measure our share of the advantages claimed for rationalisation when the hoped-for results are being realised.

Underground Telephones.—We have reported from time to time how the telephone has penetrated new and strange places. Not long ago we fitted a number of kiosks in the subways of tube stations, and more recently kiosks were installed in the Rotherhithe and Blackwall Tunnels, under the River Thames. There is no limit to the "heights" as well as the "depths" to which the telephone aspires.

Reward for Good Work.—The Surrey County Council recently opened new offices at Kingston-on-Thames. Included in the invitations to the opening ceremony was one to the Contract Section, and it is interesting to record that this special privilege was extended to us, because we were regarded by the S.C.C. as one of 3 "Contractors" whose general work had most favourably impressed the Council.

Exhibitions.—We have received 21 enquiries for telephones from exhibitors at the forthcoming World's Poultry Congress, which is being held at the Crystal Palace in July this year. Exhibitors nowadays realise in increasing numbers the need to be on the 'phone, but a notable exception is the case of the many Dog Shows held throughout the year. This must be altered, even though some facetious critic may charge us with "going to the dogs."

By the Way.—In response to a request a Contract Officer called at an address in the West End prepared to interview the enquirer. He rang the bell several times and eventually the door was opened about 14 inches, at which a tired face with sleepy eyes appeared.

The following conversation took place:—

"What do you want?"
"I have called from the London Telephone Service, Sir."
"London Telephone Service?"
"Yes, Sir. You asked for a call to be made to-day."
"Well, what's to-day?"
"Tuesday, Sir."
"Good Lord! Have I been asleep since Saturday."

L.T.S. Sports Association.

Annual General Meeting.—The Annual General Meeting was held in the Cornwall House Refreshment Club at 5.45 p.m. on Monday, April 28. There was a very good attendance, and the Civil Service Sports Council was represented by Mr. A. E. Watson, C.B.E., Vice-Chairman of the Council, and Chairman of the Finance Committee. The chair was taken by Mr. Hugh Williams, who, after the minutes of the last general meeting had been read and confirmed, gave a brief résumé of the various sports sections during the past year.

He referred to the success of the Bowls Section in winning the Sir Henry Bunbury Cup, a much-coveted Civil Service trophy, to the efforts of the Hockey Section in organising clubs which resulted in the formation of 5 during the past year; also to the net-ball competitions for the "Liddiard" Shield, which were still in progress.

He announced that the Football Club had succeeded in reaching the top of the Second Division of the Civil Service League without losing a match. The Chairman expressed a hope that this time next year he would be in the position to announce a similar result in the First Division. The Cricket League Shield was won by the Traffic Club last season, and, now that it had been held by each club in the League except the Messengers, the competition during the coming season is sure to prove very keen. In referring to the Swimming Section, it was reported that there were now 33 Clubs with a membership of about 1,300. (Mr. Williams asked the members to note that through an error in transmitting the figures by telephone, the total would appear in the Civil Service Sports Handbook as 3,000.) The L.T.S. now held all Civil Service Ladies' Swimming records and there is every prospect that that high standard will be maintained.

The Lawn Tennis Section also reported a successful season. There were 21 team entries from the Exchange and Office Sections for the Agnes Cox Cup. The final was played at Regents Park and resulted in Clerkenwell, who were the original holders, regaining the cup. The Pink Cup, for singles, draw 28 competitors and the prize was won by Miss Wilson, Office Section, A.R.1, after a hard struggle with Miss Parker, Maryland. The entries for this year are 28 for the former and 77 for the latter. There only remains the Table Tennis Section to report on. Here again the interest is principally maintained by a tournament. There were 96 competitors in the past season's contest and the winners were: Ladies, Miss Gardner, Accounts Branch, A.R.7; and Gentlemen, Mr. George Lewis, also of the Accounts Branch, A.R.4.

The followed the election of officers, which resulted in the re-election of Mr. Hugh Williams, Chairman; Mr. George Lewis, General Secretary; and Mr. F. Meyer, Executive Secretary. A discussion took place as to the formation of an Athletic Section and it was unanimously agreed to call a special Meeting of those interested for this purpose, and also to arrange a Sports Competition during the summer.

The general business of the Association having been disposed of, the Chairman introduced Mr. Watson, who, in response to the cordial reception given to him, stated that he was gratified to find so many members interested in the business part of the Association and added that such a well organised body of enthusiasts was sure of success. He proceeded to relate how the sums contributed to the Council were disposed of and expressed a hope that it would not be long before each district of London was provided with its own sports ground. He referred to the facilities available at Chiswick, both for sport and refreshment, and concluded by inviting questions from any member who sought information. Several items of general interest were discussed and the meeting concluded with a vote of thanks to Mr. Watson, proposed by the Executive Secretary, Mr. Meyer.

A social followed, when several of the staff performed.

Bowls Section.—The first trial of strength in the London Area Bowls League took place on Thursday, May 1, when the L.T.S. opened the season with a match against a strong Headquarters team, who are one of the promoted clubs from the B Division. The result was a win for the L.T.S. by 7 shots, 2 rinks winning by a margin of 8 and 3 respectively, the third being down by 4 shots.

Messrs. Cleland & Heard have been selected as Skip and No. 3 respectively, to represent the London Civil Service in the Southern Counties Single rink championship.

Cricket Section (Contracts).—The Annual General Meeting was held in Cornwall House on Monday, April 28, 1930.

Mr. Culley, the Secretary, presented the annual report and balance sheet which showed a balance in hand of £5 5*s.* 10*d.* The programme for the forthcoming season was discussed, and it was decided to purchase additional tackle, involving considerable expenditure. The meeting decided to defer the election of Captain to the players at a meeting to be held when the first practice game is played. It is hoped that the Section will be able to find some new players from the recent additions to the Contract force.

The meeting expressed their appreciation of the continued good work of the Secretary, Mr. Culley.

Wimbledon Exchange.

On Saturday, May 3, H.R.H. Princess Mary, Countess of Harewood, laid the Foundation Stone of the new wing to the Nelson Hospital, Merton, and the Wimbledon telephonists were proud to be among the many contributors to the cause.

Miss M. P. Trett, a 36-hour telephonist, had the honour to be chosen by her colleagues to present to Her Royal Highness a purse containing £5, and the staff will look upon the occasion as a red letter day for all time.

Night Staff.

The London Night Telephonists Branches of the U.P.W. held their Annual Luncheon on April 28. Mr. R. R. Young was, as usual, the presiding genius. A most enjoyable function, which we hope will be continued.

Personalia.

Resignations on account of Marriage.

Telephonists.

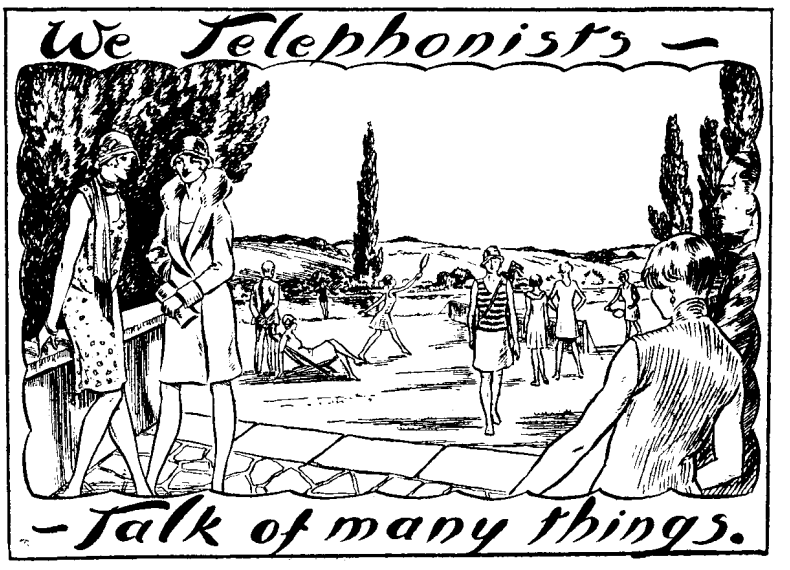
Miss E. J. Villinger, of Museum.
„ R. L. Dilley, of Battersea.
„ V. S. Hitchman, of Battersea.
„ C. P. Bywater, of Bermondsey.
„ F. Redrup, of Richmond.
„ K. M. Bishop, of London Wall.
„ M. W. Walker, of London Wall.
„ N. M. Williams, of London Wall.
„ B. Hunt, of Kensington.
„ K. S. Lawrence, of Western.
„ I. Wilson, of Willesden.
„ D. V. Tilling, of North.
„ E. M. Sturt, of Tandem.
„ G. D. Graddon, of Ealing.
„ E. M. R. Newell, of Bishopsgate.
„ A. E. Wallace, of Hop.
„ J. M. Austin, of Gerrard.

Miss W. A. Hayter, of Gerrard.
„ M. G. Goater, of Gerrard.
„ D. S. R. Portsmouth, of Park.
„ C. E. Charlton, of Lee Green.
„ A. F. Short, of Grangewood.
„ M. Norman, of Holborn
„ F. Jepps, of Victoria.
„ C. E. Isaacs, of Victoria.
„ E. A. Tracey, of Trunks.
„ G. M. Knight, of Trunks.
„ R. J. Simpson, of Trunks.
„ D. M. A. Bird, of Trunks.
„ D. M. Bentley, of Trunks.
„ E. V. Nice, of City.
„ M. F. Sleight, of Purley.
„ R. M. Billings, of Maryland.
„ A. M. Abel, of Streatham.

FOR OUR ADVERTISERS, &c., &c.

Australia, Melbourne, P.M.G.'s Dept. June 17. Supply of loading coil pots (Ref. B.X. 6350). Also, same date and dept., supply of multiple twin cable (Ref. B.X. 6349). Also, same date and dept., Indicators (Ref. B.X. 6333). *New Zealand*, Wellington, Posts and Telegraphs. June 25. Supply of condensers (P. & T. 151/2240) (Ref. B.X. 6308). Also, same date and department, 100,000 3¼-in. lead clips, 30,000 2½-in. ditto, &c. (Ref. B.X. 6375). *Australia*, Melbourne. July 8. Supply of telephonists' telephones (Ref. B.X. 6352). Also, same date and department, telephone generators (Ref. B.X. 6376).

The monthly journal of the British Chamber of Commerce in Argentina directs the urgent attention of British wireless manufacturers to a decree recently issued governing the operation of broadcasting services, &c., which is more than likely to make a big demand in the near future for "high-class complete wireless sets." The journal urges that the effects of the decree should be watched by British makers of the type of set above mentioned whose apparatus would be suitable for the trade which hitherto has been held in check by the defects of the services. J. J. T.



The Seven Deadly Sins.

JUST above my desk hangs a pipe-rack. There are no pipes in it. It is too good for even such excellent and comforting friends as pipes. It is a work of art. It consists of a row of seven heads—monks' heads, to judge by the cowls—and in each head, in the place where the tonsure would be, is a shallow hole for ash. The faces are wickedly ugly and are stated to represent the Seven Deadly Sins. I should think it probable that they do. The rack came from Paris, from whence, it is popularly supposed, most sins, deadly and otherwise, are imported duty-free. Which face represents which sin I cannot say. What indeed are the deadly sins and are there as many as (or only) seven? You don't know I'm sure, and although supervisors know everything, I should hate to be so catty as to suggest that even chief supervisors knew. Such enquiries as I have made of sundry sources—made ever so discreetly and with infinite tact—have only met with a prim Victorian reticence, pursed lips and a knowledgeable shake of the head. However, it doesn't really matter—although one feels that one *would* like to know how far one had yet to go before one was quite a positive rascal. I wonder if—but hush, here comes the Editress.

As I was saying, this pipe-rack has given rise to a division of family opinion. With a bluntness of expression which goes by the name of plain truth, one sister avers that, of the seven faces, that on the extreme left bears a remarkable resemblance to me. Camou, with a loyalty to me which is really quite touching, disagrees, but adds as her profound conviction that the face on the extreme left was undoubtedly copied from that worn by my sister's husband. (He, of course, is my brother-in-law: it's as well that you should be clear in the matter.) I interpose the remark—with the best of intentions, I can assure you—that anyway, he didn't look like that before he married. Have you ever been pierced with a withering glare or withered with a piercing glare, which intensifies a thousandfold when you gasp, "Oh, what *have* I said!"? I have. I felt like a day-old lettuce—all flimp and matty. The other sister, with a Solomonic impartiality, says that so far as she can see, each of her male relatives is a composite reproduction of the whole seven. Fortunately, she is small and can be dealt with suitably at a convenient season.

I would not have you suppose, however, that the whole family is torn by dissension. Not at all! My "in-law" and I are unanimous in the opinions that neither of us can be considered as being in any way like any of the seven faces and that our respective wives showed a rare perfection of taste and appreciation of quality when they chose us out of the heap.

PERCY FLAGE.

Exchange Names.

"Lives of great men all remind us, we can make our lives sublime." Evidently the "power of example" prompted the choice of such exchange names as "Livingstone," "Gladstone," "Tudor," "Waterloo," and others.

The Livingstone Exchange can be reached by taking a stroll through the leafy paths of Grange Park. It stands on top of a hill commanding a view of several counties and is opposite the fine old church of "All Saints." In the stately homes surrounding it dwell those select, exclusive people to whom "Every prospect pleases"—but the "L.T.S." is vile.

Perhaps a Stanley will be sent next September to relieve, assist, explore, and write his memoirs on "How I found Livingstone."

What did Gladstone say in '84? He is supposed to have said: "When one has one, one wants one little one more." But I do not credit him with that observation—his was not a frivolous nature!

One can imagine those stormy days when the Irish Members of Parliament under the leadership of Parnell pursued their obstructionist policy to such an extent that Gladstone might well have addressed the House of Commons in these terms: "In 50 years' time, my friends, England will be in the throes of automatic telephony—let Ireland have Home Rule!"

"Chancery," is so named because it is rumoured that the Editress may, at some future date, write a telephone play with a Ward in Chancery as the heroine.

The fall of Napoleon was due to the victory of the English at the battle of Waterloo and the phrase "He met his Waterloo" comes from this source.

The Waterloo Exchange is accommodated in the same building as "Hop," which would appear to mean that "Hop" has met its "Waterloo."

"Tudor" is named after King Henry VIII, presumably because he possessed "personality." Portraits of him suggest that he was no lover of slimming diets and he was an adept in the art of disposing of unwanted wives. Ye who have charge of the exchange which bears his name, do not, I pray you, admit a Henry into your Tudor!

Does "Fairfield" lie in green pastures where young lambs gambol in the glorious rays of the summer sun? No! it is situated in the heart of a densely populated London suburb and is near the Croydon Town Hall, where the police court strikes terror into guilty souls. A grand piece of architecture known as the "Croydon Almshouses" is situated in the narrow and most frequented part of the main road, a danger to pedestrians and motorists alike. Over 25 years ago members of the Croydon Council talked of having the almshouses removed—they are still talking! The exchange is a short distance from the parish church, with its wonderful peal of bells; it is proposed to make this church a cathedral when Croydon becomes a city. Oh, "Fairfield"! your subscribers need never complain to the Controller, they have but to consign you to the police court, the almshouses, or the tolling of the bell!

The "Empire," "National" and "Metropolitan" Exchanges will eventually be housed together; they derive their names from the fact that the Union Jack may possibly be hoisted over the Wood Street building at the request of satisfied subscribers.

Within the next few years "Wordsworth," "Byron," and "Macaulay" will be opened and it is anticipated that many other English poets and authors will be commemorated by an automatic exchange.

G. M. T.

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.1.

LIVERPOOL NOTES.

It is always a pleasure to announce promotions, and Liverpool just now is able to offer congratulations to several members of its telephone staff.

Miss E. E. Walker has been promoted from Writing Assistant to a Clerical Officer's position at Colchester. Her popularity with her colleagues was exemplified in tangible form by several tasteful and useful presents.

Mr. A. Duxbury and Mr. J. Harding have also satisfied the promotion board that they are worthy of better things and have been promoted from Clerical Officers to Higher Clerical rank at York and Southampton respectively.

In search of a milder and sunnier climate, Miss Hill, a Clerical Officer from the District Office has at her own request been transferred to Guildford.

A popular and well-known figure in Liverpool, Miss C. Williams, the Travelling Supervisor, has left the Service of the State to enter into one no less important—that of matrimony. Her departure was marked by many tokens of the deep regard of all sections of the staff, and we all wish her every happiness and success equal in married life to that she attained in official life.

Her successor is Miss Kermeen, late of Bootle and Trunks, to whom we wish the same success (in her official capacity, of course) as Miss Williams.

A subscriber, describing his experience of the Chilian Service on a call from Santiago to Liverpool, says:

> "I should like to congratulate you, and the telephone engineers, on this wonderful achievement. The transmission was perfect—we heard everything as clearly as a Liverpool-London call. I was advised that the call would come through about 6.30 p.m., and practically to the minute I was talking to my son all those thousands of miles away."

Although the Australian service has not been opened very long, there are not wanting signs that it will be found of much value to Liverpool.

An interesting departmental golf match took place at Bidston on May 13, the Post Office gaining a victory over the Ministry of Labour after some very strenuous but enjoyable contests.

C.T.O. NOTES.

Promotions. Mr. E. L. Clair, Asst. Superintendent to Superintendent (Lower Grade), Mr. W. R. Francis, Overseer to Asst. Superintendent, Mr. S. H. Courtnell, Telegraphist to Overseer.

Miss E. Horsley, Supervisor to Supervisor (Higher Grade).

Miss F. L. Ockeford, Assistant Supervisor to Supervisor.

Miss A. L. M. Rolt, Telegraphist to Assistant Supervisor.

Retirements. Messrs. H. Potter, Overseer, A. H. Colvin, Telegraphist, and Miss M. A. Holloway, Telegraphist.

Cable Room. At a most successful Cable Room Smoking Concert, under the chairmanship of Mr. J. G. King, opportunity was taken to wish Messrs. A. Bing, A. Jay, and G. Matthews, on behalf of the whole of the Cable Room Staff, good health, long life, and happiness in their retirement. In each case the sentiments of goodwill were accompanied by a cheque.

Reunion Dinner. The Threadneedle Street B.O. and Stock Exchange Reunion Dinner was held once more at the London Tavern, Fenchurch Street, where about 100 past and present members of the Staff sat down and enjoyed a splendid meal. The chair was taken by the Controller (Mr. J. Stuart Jones), who, during the course of the evening proposed the toast of "The Staff." Mr. W. C. Hooper ably responded. "The health of the Chairman" was moved in felicitous terms by Mr. Corner and Mr. Stuart Jones suitably replied. The enjoyment of the evening was added to by a delightful concert in which Miss V. Lemaire and Messrs. D. Knowles, F. Hudson, Parr, and Jennings, with Mr. A. White at the piano, gave of their best.

Sport. The seventh season of the Centels Chess Club closed in mid-April.

For the seven seasons the Club has maintained the record of never losing a game by default. Such a record has been praised in one of London's leading evening newspapers, and this record has gone so far afield as being noticed in the *Brooklyn Eagle* of the United States.

The first team, by half a point, finished second to the Admiralty II in the Civil Service League, Division III. They also finished second in the London League "C."

Football.—The annual fixture for the Aldwych Cup—Centels *v.* Barts Hospital—was played at Chiswick and, after being the losing side for five consecutive years, Barts won the cup by one goal to *nil*. The Barts' fund was helped considerably by the sale of tickets.

Billiards. The final of the C.T.O. Billiards Handicap resulted in a win for A. W. Edwards who, with 200, beat W. Smith (Cable Room) who scored 121.

WESTERN DISTRICT NOTES.

On a Saturday morning during last summer (1929), at 10 a.m., Mr. H. W. Francis, Head Postmaster, Falmouth, received a personal call from London. He was told that a gentleman in New York was on the telephone and wished to speak to his brother, who was *staging somewhere on the front* at Falmouth. They could only furnish his name. After doing a bit of quick thinking Mr. Francis, with the assistance of the Inspector of Postmen and a Postman ascertained that the gentleman required was staying at a boarding house called "Holmlea." Enquiry was made at the boarding house, but the gentleman happened to be out. A message was left with the manageress to ask him, directly he returned, to get on to the telephone exchange, when he would be put into communication with his brother in New York, who was waiting to speak to him. Fortunately the gentleman required returned quickly, and within 25 minutes from the time that the Head Postmaster received the call from London the two brothers were speaking to each other.

Subsequent enquiry of the Controlling Telephonist in London elicited the fact that the conversation was perfect.

Presentation at Exeter. Mr. Thomas Houseman, who has held the position of Staff Officer in the Western District Surveyor's Department, G.P.O., Exeter, for the past 10 years, retired from the Service on April 7, and as a mark of the esteem in which he was held by his colleagues he was presented with a very handsome oak monk's bench and a "Buoyant" wing armchair. The bench bore a tablet suitably inscribed.

The presentation was made by A. O. Spafford, Esq., O.B.E., Surveyor of the Western District, in the Palm Court of the Imperial Hotel, Exeter.

Mr. Houseman will long be remembered for his kindness of heart and sympathy, especially for those who experienced illness or bereavement.

F. I. FROST, Traffic Supt.

THE

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CONTENTS.

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TELEGRAPH AND TELEPHONE MEN AND WOMEN.

LXXVI.

MR. A. B. HART.

MR. HART, Staff Engineer, of the Engineer-in-Chief's Office, is in charge of the Lines Section, dealing with the provision of submarine and underground cables as well as with aerial lines for both telegraph and telephone services. In the latter case is included the telephone repeater stations situated at suitable intervals on all the main telephone routes. He was born on Dec. 2, 1874, entered the P.O. service at Cambridge in June, 1893, and was transferred to the Engineering Department in 1896. His experience is a varied one, embracing clerical as well as engineering duties in various parts of the country. He is a member of the "Comité Consultatif International des Communications Téléphoniques à Grande Distance," and in that capacity he shares the credit with the other members of that important body for the remarkable extension of telephony between this country and the Continent during the last few years.

Having been born in the country his hobbies, quite naturally, are influenced by his early associations. He has a small farm, is a golfer and an expert motorist, having taken up that entertaining recreation in the very early days of its development when it was essential that a motorist should also be an expert mechanic and a lover of mechanism, which Mr. Hart has been during the whole of his service with the P.O.

The
Telegraph and Telephone Journal.

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

Editing and Organising Committee - - - Lieut.-Col. A. A. JAYNE. J. STUART JONES. W. D. SHARP. W. H. U. NAPIER. J. W. WISSENDEN.

Managing Editor - - W. H. GUNSTON.

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.*

VOL. XVI. JULY, 1930. No. 184.

TELEPHONE HATRED.

MR. BALDWIN recently confessed that he abominates telephones. We are told that the late Lord Oxford disliked them so much that he never used one. We can, therefore, make no political capital out of these confessions, since leaders of both the older parties have made them. They may argue a conservative habit of thought, but then the vast majority of us, unless we are self-deceivers, are conservative in our attitude to new ideas. At the best, we suspend judgment. At the worst, we are obscurantists determined to see no good in what our fathers did not enjoy before us. Some few have the gift of truly discerning at once the significance of a new invention, or of a new development in art, and can recognise in them the dawn of a new era.

Telephone hatred, the *Evening Standard* aptly comments, is an infirmity of many noble minds. But we feel emboldened to say that it is not the telephone which noble minds detest; it is the annoyance to which they are often subjected through this channel. Public men are often unwarrantably disturbed at their work (or leisure) by telephonic "gate-crashers," but the blame should be laid at the door of those pushing and pertinacious members of society whose actions are not circumscribed by ordinary considerations of courtesy, rather than at that of the telephone itself. Even politicians, we think, cannot really abominate an invention which brings them in direct and immediate touch with those to whom it is their pleasure or their necessity to speak, even though separated from them by hundreds or thousands of miles.

The achievements placed at our disposal by science differ in one notable respect from the works of artists and authors. We may ignore, and even love, the weaknesses and defects of the latter, as we look with indulgence on the foibles of dear friends; we never love the defects or drawbacks of a machine, or the service in which it is employed. We may admire the railway, yet never be reconciled to the missed connexion or the hopelessly late train. We may be wireless enthusiasts, but never regard "fading effects" with affection.

Hence, however much we appreciate the telephone, we like it less when the unwarranted correspondent fritters away our time, and look with no indulgence on the infrequent but none the less unwelcome "cut-off." Others there are, of course, who dislike railway travelling in itself but admit its immense convenience; who have good physical reasons to abominate steamships and yet own that they are admirable and efficient means of communication. To put it shortly, it must be recognised that useful inventions do not, however disquieting this may seem from the ethical point of view, depend on love or admiration for their success. You may abominate them and yet find them indispensable. A more reasonable attitude is one of gratitude for their benefits, and a kindly tolerance of any inconveniences which follow in their train.

HIC ET UBIQUE.

THE expansion of the Anglo-Continental Telephone Service, which at one time seemed to be following the route of the Orient express, has now followed and pushed beyond the itinerary of the Nord express. As our readers know, service was lately opened to Lithuania. Last month, service between London and Tallinn (Reval) in Esthonia was opened on the 2nd, and between all places in Great Britain and all places in Latvia on the 5th. The charge for a 3-minutes' day call between London and Riga is 17*s.* 6*d.* between London and Reval 22*s.* 3*d.*

The Anglo-Australian radio telephone service was extended to Adelaide and other places in South Australia on the 19th ult., and now embraces the four great cities of Australia, viz., Sydney, Melbourne, Adelaide, and Brisbane. The charge for a 3-minutes' call is £6.

A special number of our contemporary *Tijdschrift voor Posterijen-Telegrafie-Telefonie* celebrates the twenty-fifth year of the existence of the Union of Higher Officials of the Dutch P.T.T. It contains retrospective and commemorative articles and a record of the chief officials of the Union since 1905. Besides a group of the Administrators it also contains excellent portraits of MM. Zeilmaker, Renier, Pronk, Fijn van Draat, Meijer, van Poppel, Verpalen, Wesselink, and Kuyper.

The following incident, reported by our correspondent, shows that the life of a contract officer is not without variety and excitement:—

On making a call on the 4th floor of a large block of flats my knock was answered by an elderly maid, who became much annoyed when her mistress's pet dog bolted down the stairs whilst she was conversing with me.

On hearing of the possible wrath of her mistress, if Fido was lost, I joined the maid in a rush down the stairs to recapture the dog. In response to our shouts a butcher's boy eventually succeeded in capturing him.

The worst was yet to come. The front door had slammed, leaving the lady's lunch (sausages) still frying on the gas-stove. The maid was without a key, and the only means of entry was at the rear, which involved climbing the fire staircase, which she did not relish. Considering the position was brought about by my call, I offered to effect the entry. On doing so I discerned the smell of fried sausages in the scullery and turned the gas out before opening the front door for the maid (and Fido), who was much relieved to hear me say: "The sausages are O.K., and not burnt."

ACCORDING to the report of the Department of Overseas Trade, the growth of the telephone system in New Zealand proceeds rapidly, and on Mar. 31, 1929, the number of stations was 152,541 (or 103.72 per 1,000 of population), as compared with 144,552 a year previously. A recent development in New Zealand is the adoption of the system known as "carrier-current" telephony, which not only increases the carrying capacity of the circuit, but adds tremendously to the ease of long-distance communication. The area now covered by inter-island telephone services has been extended, and considerable developments are taking place in the installation of automatic telephone exchanges. On Mar. 31, 1929 42% of the telephones in use were automatic or dial. Dunedin was cut-over to automatic in May, 1927, and Christchurch, the last of the four main centres to be entirely equipped with automatic exchanges, was cut-over on Sept. 14, 1929. In addition, ten of the leading secondary centres are so provided, whilst Whangarei, Marton, and Gisborne will shortly be equipped. The first all-British automatic exchange was cut into service at Hawera in January 1927, whilst two other all-British have since been installed at Dannevirke and Stratford.

The *Daily Mirror* inserts the following letter under the heading "The useless telephone." We venture to think a column entitled "Plaints of the Peevish" would be useful for such correspondents.

A telephone is to me the most irritating, and almost the most useless of modern inventions.

I am rarely able to get a number. When I do get it the people I want to talk to are out. Few of one's friends are ever in, in these days of restless agitation. STAY AT HOME.

The moral seems to be that in these days of restless agitation the irritated gentleman's friends ought to stay at home when he is likely to ring them up, or at least when they are at home, they should arrange not to be using the telephone when he wants to speak to them.

According to the *Exchange Telegraph* the Roumanian Government are understood to have granted a twenty years' licence to the International Telegraph and Telephone Corporation for the development of the Roumanian telephone service.

All dial telephones, says Reuter, have been ordered to be removed from the Senate wing of the Capitol by a special resolution of the Senate, members of which have complained that automatic 'phones are a "nuisance."

The *Chicago Tribune* makes the following caustic comments:—

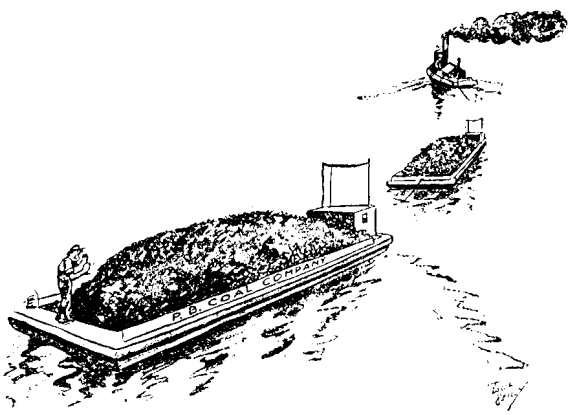
"As the dial telephone mechanism is familiar to us here, it is required of the citizen using it that he know his letters and his numbers. With that literacy, he can take off the first three letters in the name of a telephone exchange.

"He is also required to know the exchange and the number with which he wishes a connexion. Then he is called upon to insert his finger or a pencil, a fountain-pen, gold toothpick, knife point, scissors blade or any other small, suitable instrument—a drill if he is a dentist, the handle of a paint-brush if he is an artist, or a corkscrew if he is a congressman—and whirl the dial around.

"The Conscript Fathers in the Senate at Washington are ordering the blank dials out because Senator Carter Glass of Virginia can't work the abominable things, nor can the other Fathers. . . . It will probably be all for the best."

Three thousand telephones, says *The Electrical Review*, a record number for any single European building, will be installed in Thames House, Westminster, London, on its completion in 1931. The previous record in this country was held by Imperial Chemical House, which had 2,000. In view of the size of the building, which contains three miles of corridors, is of eleven stories, and has 770,000 sq. ft. of floor space, it is proposed to equip Thames House with public call boxes and a system of private intercommunication telephones.

According to a study made by W. P. Banning, Asst. Vice-President of the American T. and T. Co., in the *Bell Telephone Quarterly*, in an analysis of telephone conversations, computes that out of 80,000,000 conversations 50 words account for 60% of the total words used and 700 words account for 75% of the total words used. In 500 conversations in which about 80,000 words were used, only 2,200 were different, or 3%.



The picture here reproduced from *Life* (New York) reached us via the Brazilian journal *Sino Azul* (Blue Bell). We take the Portuguese version of the joke to read:—

"RADIO-TELEPHONY.

"No, Sir! You're on the wrong line. This boat is *not* the *Leviathan*."

RETIREMENT OF MR. D. M. FORD.

MR. D. M. FORD, Deputy Controller of the Central Telegraph Office, who retired on June 20 last after nearly 45 years' service in that Department, was presented by his colleagues at a farewell gathering with a "Grandmother" clock as a token of the high esteem and affection with which they regarded him. The Controller (Mr. Stuart Jones), in asking Mr. Ford to accept the gift, said that Mr. Ford was leaving the service in the best of all frames of mind. He was neither eager to go nor reluctant to leave. He had kept his interest in his work and his energy in doing it up to the very last day of his service and that was characteristic of him. Behind the competent official and the admirable colleague, there was a very kindly and lovable man, and they parted with him with the utmost reluctance. They wished him every happiness in the fresh adventure which life would now offer him. Mr. Ford, in replying, said that he had spent a happy life in the Central Telegraph Office and that he greatly appreciated the gift of the beautiful clock, which would remind him, if a reminder was necessary, of the friends he left behind.

PEREGRINATIONS THROUGH THE BROADCASTING WORLD.

By J. J. T.

(*Continued from page* 180.)

THERE are cases, no doubt, where the unsophisticated owner of a loudspeaker is under the impression that by increasing its volume one is unselfishly giving pleasure to neighbours and passers-by who—poor unlucky ones—are not in a position to afford the luxury of a "super" set.

Hugh Scott in his recently published book on "Good Manners and Bad," an historic treatise on past and present manners in this country, is inclined to compare the abuses perpetrated by the owners of both gramophone and wireless sets with that of the road-hog of to-day, or let us say the misuse of the tooth-pick at a public dinner in the early part of last century!

However this may be, one thing is evident and that is the dissatisfaction of electrical engineers themselves with the present loudspeaker itself. Not more than three months ago Capt. P. P. Eckersley at an informal meeting of the I.E.E. opened a discussion on "Loudspeakers" which was eagerly followed by a very large and keen audience. The captain maintained that "it ought to be possible to assume that transmission could be effected without distortion, but there remained the difficulty of producing a sound-field round the listener equivalent to the sound-field at the microphone, and maybe much of the trouble arose because users expected *too big a compass of sound*." Travelling over the possibilities of further improvement in loudspeaker construction, the opener of the discussion terminated by asking one or two questions, which themselves prove that the loudspeaker at its best is not yet considered to have reached perfection by those who undoubtedly are well qualified to know. Said Capt. Eckersley: "Where should progress lead? The human ear was drugged by noises to which it had been trained, and was unable to make an impartial selection of sound purity. It could not be assumed, therefore, that people wanted reality. What did reproduction mean? Should they aim at the perfect gamut without transients, or adapt distortion and dignify it by the name of Art?"

All of which brings us to a point where the whole question of "annoyance" by means of a loudspeaker appears to be a matter of differing tastes, at a given time, always remembering that, up to the moment the loudspeaker is an imperfect instrument in a very imperfect world of men and women.

Perhaps one of the best systems of broadcasting reception is after all that by means of headphones—except for dance music, as is sometimes provided on certain Continental long-distance trains. In Poland, for example, an attendant passes through the moving train and produces a pair of headphones duly sealed and sterilised, the hire of which for five or six hours is less than one shilling. Connexion is made at convenient plugging-in points underneath the luggage racks.

The huge amount of money spent on radio-advertising by American firms is scarcely realised this side of the Atlantic. Mr. E. P. H. James, Sales Promotion Manager of the American National Broadcasting Company, at a luncheon given by the Aldwych Club in London, stated that "*one hour's broadcasting-time on stations which covered the whole of the United States*, cost 10,000 dollars, and advertisers would in addition spend from one to seven thousand dollars on a single musical or entertainment programme to fill that time."

The average cost of a programme, however, worked out at about one thousand dollars, which, of course, includes stations of much more restricted ranges. Even so, the average half-hour programme, frequently contains not more than three minutes "sales talk."

Whether broadcast advertising is a use or abuse one must leave to those directly interested to decide, but that "listening-in" competitions such as the following have a touch of futility about them would probably prove the unanimous verdict of readers of the *T. and T. Journal*.

It is on record that a competition took place in Louisville, Kentucky, where a prize was offered to the lady or gentleman who should prove able to "out-listen all comers on the radio." A young woman won the prize after continuously wearing the headphones for 106 hours, but became delirious as soon as the strain of the contest had terminated, which in this particular case occurred just as the runner-up—a man—was announced as having fallen fast asleep!

The Electrician not so long ago published a photograph—which by the courtesy of that long-established technical weekly is hereunder reproduced—illustrating quite another type of broadcasting competition which took place at the Los Angeles Radio Show, where each one of a large fleet of perambulators was equipped

with receiving apparatus, each perambulator being tuned in to a different station. Various bed-time stories were then broadcast, the prize being awarded to the story-teller whose respective baby first succumbed to his soporific tale!

There are features of broadcasting which obviously contain far-reaching potential utilities such as experiments carried out by our own Air Ministry, whereby by means of the Fultograph or other wireless picture system it is hoped that weather charts will be broadcast for the use of both air and seacraft.

Developments are also proceeding along the lines of a combination of aircraft photography and wireless broadcasting, whereby photographs of submerged vessels, wrecked or active, may be taken from the air, and the location and particulars duly diffused, to be picked up either on sea or land.

There is naturally a double-edge to the advantages of broadcasting in certain applications of this science, such as the dissemination of news regarding fugitive criminals. The Berlin police last month sent out the description of a known swindler, in fact it has apparently become something of a German routine procedure. One would, however, estimate that such information could easily act as a danger signal to the fugitive himself, who would thus gain considerable time over the sleuthhounds of the law. So subtle is the human mind, however, and at times so surprising are its reactions to circumstances and conditions, that in the particular case quoted the Berlin *Polizei* were astounded to see the wanted man walk into the police-station half an hour after this particular description had been broadcasted. According to the Berlin correspondent of the *Daily Telegraph*, the explanation of this rapid surrender was, "now everybody knows the sort of man

I am. I can no longer bear to be such and I would rather go to prison."

Another writer in the same newspaper aptly appeals to our own B.B.C., if in anyway possible, not to give the British Public a *Police* Gazette every evening, for, continues the humorist, "it is not every man who is inspired with a desire to do a far far better thing than he has ever done by listening to broadcast warnings"!

Here, indeed, we have a case where there is decidedly room for two opinions as to "use" and "abuse" of broadcasting.

(To be continued.)

THE MAINTENANCE OF TELEPHONE PLANT.

H. G. S. PECK, B.Sc. (HONS.), M.I.E.E.

(Continued from page 175.)

Secondary Cells.

The maintenance of secondary cells is based on the variation of specific gravity with charge and discharge. A log-book containing a complete history of the attention given to the cells is kept for each battery and for large batteries particulars of every charge and discharge are recorded therein.

A test charge and discharge are made when the battery is installed or when any major repairs or renewals are carried out. On the test charge the battery is considered to be fully charged when the P.D. and specific gravity remain comparatively steady for 2 hours: the test discharge is made at the 9-hour rate and is ceased when the P.D. falls to 1.83 volts per cell. The specific gravities are recorded over the discharge period and corrected to a temperature of 60° F., and from the range of gravity the ampere hour capacity per hydrometer division (.001 S.G.) is determined for the battery.

Under working conditions the battery is discharged over the full range of specific gravity whenever circumstances permit, the average discharge being not less than 90% of the capacity. The P.D. of the battery is checked during discharge and departure from specified minimum voltages, for various discharge rates is an indication that some internal short circuit exists, that the battery has lost capacity, or that it has been discharged through more than its proper range. Typical minimum permissible voltages are 1.795 volts at 5-hour rate, 1.83 at 9-hour rate and 1.94 at 60-hour rate.

Discharged batteries are re-charged immediately at a rate which gives the greatest efficiency for the charging set, provided this is not greater than the ampere hour capacity divided by 4.5. When the P.D. per cell reaches 2.35 volts, the charging rate is reduced to a value between the ampere-hour capacity ÷ 12 and the ampere-hour capacity ÷ 15.

One charge during each month is continued until three successive half-hourly hydrometer readings on each cell do not vary by more than half a division (.0005 S.G.) and is called an equalising charge. Other charges are ceased when the specific gravity attains a steady value for half an hour.

The maximum specific gravity is not reached until some few hours after the charge has ceased: failure of the specific gravity to increase after the charge has ceased is a further indication of unsatisfactory conditions.

The electrolyte is kept at a level of not less than ½ in. above the top of the plates and is covered with a layer of pure petroleum oil. The oil prevents spraying and reduces evaporation to an almost negligible quantity.

Since the specific gravity fall during discharge is proportional to the quantity discharged, it is possible at any time to ascertain the residual charge on the battery by comparing its specific gravity with that obtained on the equalising charge and applying the ampere hour equivalent of one degree of specific gravity to the further available range.

Design.

Every detail of the design and manufacture of the plant has its effect on maintenance. Adequate factors of safety, especially in electro-mechanical apparatus, have not always been provided in the past, but the qualities of reliability and accessibility are now receiving much greater attention. It is obvious that the method which is cheapest in first cost is by no means necessarily the most economical when the annual charges for maintenance are properly brought to account.

A most difficult task in engineering is that of determining the proper stage at which improvements should be introduced and of deciding to what extent improvements shall be applied to existing equipment. Theoretically, such conditions should be reduceable to terms of £ *s. d.* but, practically, the precise value of many of the factors is indeterminate and, often, consideration for the reliability of the service has also an important bearing on the matter. Any change in design that cannot be, or is not, applied to all existing plant increases the difficulty and cost of maintaining the older equipment although, of course, the cost of maintaining the whole system may be reduced. Furthermore, the cost of maintenance is always increased by the existence of variations even though they all may be of the same efficiency.

Construction.

With standard methods of construction it is still possible for the maintenance to be considerably affected by the degree of foresight exercised in the erection or installation of the plant. The choice of alternative routes or even between the two sides of a road for an overhead line may considerably affect its reliability. The size and shape of manholes, the position of the entrances thereto, the exact position of footway boxes and the accessibility of cable joints affect the cost of maintaining underground plant. The difficulties in maintaining subscribers' apparatus are increased if protectors, terminal blocks and distribution cases are fitted in inaccessible positions, or if batteries are fitted where they are liable to be knocked or kicked over, or in the proximity of radiators or stoves where evaporation is accelerated.

The telephone system is continually growing and frequent extensions and modifications of existing plant must be made: a certain amount of experimental work is also necessary: such works inevitably disturb the service, and some faults always result. Plant is sometimes provided in the anticipation that it will be required for a limited period only and temporary methods of construction are adopted: unfortunately such plant is often retained in service far beyond the period for which it was originally provided.

Standards of Maintenance.

Omission to carry out a proper amount of preventive maintenance leads to an increase in faults, hence the making of an excessive reduction in costs by reducing routine attention leads inevitably to an increase in order to deal with faults, the second condition being worse than the first as less satisfactory service is given.

A liberal and extravagant provision of staff would enable every fault to be dealt with immediately it occurred, with a consequent short duration and an absence of faults carried over to the following day. A parsimonious provision of staff has the reverse effect.

Inefficient maintenance will lead to the occurrence of a large number of faults, long fault durations and high cost.

It is easy to say that costs should be low and faults few with their durations short, but these requirements are to some extent opposed, and the exact conditions to be aimed at as representing the ideal conditions of maintenance are not easy to determine.

THIS WIRELESS BUSINESS.

BY B. S. T. WALLACE, C.T.O.

GREETING a colleague with the compliment, "You are a very good representative of public opinion, what do you first look at in the wireless journals?" I promptly got a reply (referring to a popular radio weekly), "The first two pages and the answers to correspondents. All the rest in between is the same old length of wire wound in a different way."

The first two pages of the journal referred to are composed of a medley of lighthearted gossip and banter around wireless things in general, and may be likened to the average amateur's junk box: full of rubbish, but not to be thrown away before careful scrutiny for fear of losing "just the very thing I want."

Even so with these paragraphs: they occasionally bring to light some useful information or reveal and illuminate a difficult or obscure technical point from an unusual angle. It is the same with answers to correspondents, unexpected sidelights on apparently simple everyday matters are constantly being focussed in a manner which amateurs of limited technical knowledge and experience find very helpful.

The one-time popular constructional articles seem gradually to be devolving into a stalemate. It is quickly realised that though new names are easily found for new sets, basically they are identical with hundreds of others in performance. No sooner is a design boomed as the last word in perfection when it is forgotten in favour of some "new" attraction which turns out to be an old friend of years ago.

Complete receivers, and sets of parts, are now so cheap that the average wireless man soon determines what type of instrument more or less suits his purse and purpose and thereafter rakes the wireless periodicals for those tit-bits of information which are likely to be of assistance in the maintenance, or improvement in the performance, of his own pet receiver. He wants to know more about the things which are too often taken for granted.

There is also the question of faults and failures: some of a minor nature, others leading to complete breakdown. They can at times be most elusive and baffling as the queries of correspondents frequently indicate.

It has been suggested that all these things come within the legitimate sphere of the *T. & T. Journal*. Although I do not wish to bring a millstone about my neck by inviting queries, an effort will be made in these jottings to touch upon points of general interest to the broadcast listener not too deeply versed in the practical technicalities of a subject which long experience alone can give.

With the high amplification now available in comparatively simple receivers, little consideration is given to the aerial and earth when it is found that the nearby stations come in with all the volume desired on a short length of wire suspended anyhow. If interest does not extend beyond the locals no comment need be made, but if the alternative of distant programmes is desired a great deal is being missed if the aerial and earth are not as good as they might be. Have we not all heard the story time and time again of how the enthusiastic Brown, after promising to demonstrate with his wonderful set the reception of distant stations on Jones' aerial, and failing to get beyond the local, blames everything, from the weather to evil spirits, when the only thing at fault is the aerial-earth system?

Unless one has had extensive comparative experience or knows exactly what to do and to avoid, it is impossible to say whether a newly erected aerial system is efficient or otherwise, and this will make all the difference btween getting or not getting those extra 29 stations.

Perhaps the majority at times turn in desperation to the foreign stations for a change of scene. Despite alternative programmes there remains that sameness of atmosphere, that absence of freedom and spontaneity which comes over so well from some of the foreign stations. They entertain their audience, while our own organisation appears more often to be entertaining the microphone.

So a few details not generally known about aerials and earths may be useful.

Summer time nowadays is a slack period in amateur wireless activity. Not so at one time. Before valves were discovered everything depended on the pick-up of the aerial system and the fine months were devoted to its improvement. There were no restrictions, and dotted about the country were to be found amateur lattice work masts up to 100 ft. in height with hundreds of feet of wire attached to them. Aerials of any sort were comparatively rare. If one attempted anything ambitious he was sure of a certain amount of fame among his brother amateurs, who would often ask to be allowed to hear signals they knew the larger aerial would bring in, but which would not be audible on their own limited erections. They would often travel many miles for the thrill of it.

An increase in height and length of wire always resulted in an improvement in the reception of the distant stations. True, the volume of atmospherics was also increased, but as the net average result was a better signal this consideration would be ignored. Exactly the same applies to-day. The more you put into the set the greater will be your factor of what we might term the satisfactory and consistent reception of distant stations.

An important point to note is that a number of valves do not convert a small aerial into the equivalent of a large one. If the small aerial does not pick up a signal no amount of amplification will reveal it. Valves will only amplify what your aerial has already picked up.

In case it should be argued that, theoretically, any piece of wire picks up every signal passing, so to speak, and that it only requires sufficient amplification to resolve it, the answer to this academic point is that the valve capable of doing it is not yet with us. A series of valves does not help, because only the first H.F. valve can magnify the aerial signal, the remainder merely amplifying what the first passes on.

If the reception of distant stations—and one can in this respect regard anything beyond 50 miles as being "distant"—is contemplated, then it is advisable to make the aerial and earth as good as possible.

To commence with, we are legally limited to an aerial length of 100 ft. I wonder how many broadcast listeners know the origin of and reason for this limitation? When reaction first came into use it was found that an oscillating receiver attached to a large aerial could be heard many miles away; the larger the aerial the greater the interference likely to be caused by these oscillations. This serious menace to reception and the difficulty of preventing or controlling reaction at an almost unlimited number of receiving points was early realised, and the danger minimised at the outset by the restriction of aerial length.

The dominating factor in an efficient receiving aerial is its height above the earth and surrounding earthed objects. The best broadcast aerial would, practically speaking, be a vertical wire 100 ft. in height. Failing the ideal we must attain as great a height as possible and dispose the remainder horizontally. For distant reception no advantage is to be gained by using a shorter aerial than 100 ft. The received signals will actually be weaker both on the 300 to 500 metre waveband and particularly on the higher wavelengths.

This fact in some instances may not be apparent because the shortening of the aerial will with certain old types of receiver enable reaction to be more readily obtained, and so bring in a signal that might otherwise not be heard; but this is a failure of the set and not a virtue of the small aerial. (Measurements of aerial signal strength must be made without local reaction.)

A reduction in the length of the aerial is a recommendation frequently put forward as a remedy for inselectivity in a receiver. This is wrong in principle. The apparatus should be made more

selective to enable it to make use of the greater energy available with the larger aerial.

Some of you will no doubt murmur a protest against the unsightliness of aerials in general and particularly amateur efforts to attain great heights—though I know there are a select few who will always look upon a mast of over 50 ft. in height as a "thing of beauty and a joy for ever."

The aerial wire itself is probably the most unsightly part of the system, and perhaps it will arouse a new interest when you hear that your ugly 7/22 copper or insulated ex-field telegraph aerial wire can be replaced by something which is practically invisible when suspended in the air, costs about threepence, and will not only give results equal to anything you may have but in many cases a definite improvement.

Freak wires at fancy prices have been marketed for aerial wires with glowing promises of wonderful improvement in reception, but try how you will not one of them will give you a better signal than a length of 26 S.W.G. enamelled soft copper instrument wire. It is all but invisible, can if desired be attached to light and elegant supports, stretched taut to reduce sag, and is electrically efficient.

The heavier wires on the average mast sag a foot or more, and a loss in height to even this extent is quite enough to make an appreciable reduction in a weak distant signal. These wires, whether solid or stranded, are no advantage electrically.

A 100-ft. length of 26 S.W.G. weighs 2 oz. It will stretch about a foot or more—almost like a piece of elastic—when pulled taut by the guy ropes, and allowance must be made for this when erecting. Though it is not nearly so strong mechanically as the normal bronze line wires of heavier gauge, it is quite strong enough for a single aerial length and will withstand the fiercest gales.

You will find this type of aerial well worth trying, especially if an endeavour is made to get every inch of height and length above and away from surrounding objects.

For insulation, a single small porcelain pigeon's egg insulator is fully efficient.

The earth connexion is quite as important as the aerial, but the improvement of a good water main earth usually entails a considerable amount of work; conditions are not always favourable for the making of it; and it may be inconvenient to house the receiver in the desired position.

Theoretically, the best location for the set is literally on the ground right on top of the earth connexion. In practical effect, any wire leading from the earth connexion to the set is equivalent in its height and length to that same amount cut off from the aerial. In other words, if your receiver is situated on the first floor of a house and about 20 ft. or so above the earth connexion, the removal of it down to the earthing point will be equivalent, electrically, to raising the height of the aerial.

For guidance in the improvement of an earth, your standard of perfection is the metal hull of a ship at sea. This is the best possible "earth."

Should you contemplate in your pensioned leisure, in a quiet bungalow amidst the trees and fields, the spending of many happy hours with the ideal presentation set, do not at any time be tempted to take your receiver for test on board a ship. That cottage will vanish in a flash. You will for ever after sigh for a good old copper-bottomed windjammer complete with a 150-ft. mast, anchored snugly in a backwater of Falmouth Harbour. The romance of it will appeal to you strongly, for in no other place does a wireless receiver give so well that sensation, of the "Whole world being at your feet."

The nearest approach to the ideal on dry land is a series of metal plates buried vertically immediately beneath the aerial. Zinc is perhaps the best metal to use, but well galvanised iron is a good substitute.

A precaution to be observed in running an earth lead is that if it is not insulated the wire must be prevented from making bad or intermittent contact with conducting and semi-conducting surfaces such as damp walls, rain water and waste pipes. Contact with these may have the effect of varying the earth capacity and resistance, with a consequent fluctuation in the tuning adjustments, especially on selective and sensitive receivers.

Interference from neighbouring electrical apparatus and between adjacent parallel aerials are problems continually arising. The former, generally speaking, can only be cured at the source. The use of a counterpoise instead of an earth connexion is no remedy as a general rule. At best it will only reduce both interference and signal strength. It is much the same with frame aerials. Those who tried to use the latter in the vicinity of the recently abandoned Southern overhead high-tension electric railway, found interference from this source every bit as bad on a frame as on the open aerial.

An interesting point with regard to the selectivity of frame aerials as embodied in portable receivers arises in Cornwall. Most of the early portables were in their circuit arrangements inselective and relied on the orientation of the frame for selectivity. Daventry 5XX was the only English station to be picked up readily in that area, but this also placed the frame in a line with the P.O. station at Land's End, with the result that morse was frequently superimposed on the broadcast transmissions, despite the difference in wavelength.

The mutual interference of adjacent parallel aerials causes a variety of difficulties. To some extent each is continually acting as a wavetrap to the other. There is a way of materially reducing this effect by taking the lead-in from the opposite ends of neighbouring aerials.

If your aerial is of the conventional suburban type with one end fixed to the house and the other to a mast at the far end of the garden, with the lead-in taken from the house end, and your neighbour's is of a similar type and apt to upset your tuning or cause a partial wipe-out, take the lead-in from the distant end and leave the house end free. The longer lead-in will not otherwise be a great disadvantage unless it comes back very close to the top part of the aerial. Aim at getting as wide an angle as possible between the top portion and the lead-in.

The popular type of three-valve receiver is apt to be overloaded by the local transmissions. The incoming signal can very conveniently be regulated by a simple water resistance leak connected between aerial and earth.

Obtain a small glass jar about three inches in diameter and fill with water. Suspend in this on each of two convenient supports, a carbon rod from an old flash lamp or H.T. battery, or any piece of metal. Connect one to the aerial and the other to the earth. Regulate the distance between the rods till your incoming signal is the required strength. This is an instructive little arrangement which will give a very wide range of resistance values and does not affect your tuning. With a little junk and ingenuity it can be made up in other forms, such as with a piece of glass tubing and two corks, the electrodes being made a sliding fit in the corks. The ordinary anode, or any other type of non-inductive resistance, can also be used for the purpose.

Just one more hint: The wavelength of the national transmitter was found to be too low for many old receivers and almost without exception the remedy advocated for this was either, or a combination of, a reduction in aerial size and a series aerial condenser.

There is a better method. If your aerial tuning arrangements will not get down to the short wave, place an inductance in parallel with the aerial tuning inductance. This need not be embodied in the set but can be placed outside and simply connected across aerial and earth. If, for instance, your normal aerial coil approximates to a 40-turn coil and you wish to tune below its minimum, place another basket coil, plug-in coil, or simple solenoid of from 20 to 40 turns across the aerial and earth. Conditions will vary somewhat with circumstances, but a little experiment will soon put you in the right direction. Correctly done, this will bring in the lower wavelength without the inevitable loss of efficiency incidental to a series aerial condenser or a restricted aerial.

TELEGRAPHIC MEMORABILIA.

THE telegraphic world generally is all out in its endeavours to avoid a balance on the wrong side of the ledger, and with this end in view keen eyes are eagerly looking out for some new point where economies may be effected. Wisely the American companies are never loth to catch a chance in this direction, although the telegraphs in the U.S.A. are fully solvent.

Thus one is not surprised to read in the American telegraph press that experiments are being carried out in Denver as to the longevity of the shoe-leather of its 500 telegraph messengers. Everyone of these five hundred lads have been equipped with shoes of special leather and make, and each is supplied with a reliable pedometer.

The shoes are only worn when on duty, and so far the following figures have been obtained. The average messenger walks 10 miles per day delivering telegrams. In four months he will have walked 1,280 miles. The average weight of the Denver messenger is 128 lb. From these figures it is computed that the pressure on each pair of shoes for the period mentioned amounts to three hundred million pounds, or 150,000 tons. "That is to say," finishes the report, "each shoe would receive 75,000 tons pressure, or more than the gross tonnage of the *Leviathan*."

Unfortunately that is all the information at present available. Should it subsequently transpire that as a result of these statistics a messenger-proof material has been found guaranteed to last twelve months or even longer, the writer will most gladly and dutifully pass on the information to the authorities concerned.

Meanwhile, simultaneously with the above there has come to my hand the prospectus, with sketch, of a substitute for hand towels which might possibly prove of use to our own service in reducing the length of Casual Reliefs! It is British made and may be obtained within half a mile of Charing Cross. It is known as the Electric Hand Dryer, and is designed "to dry the hands in record time,"—in 30 seconds actually—without making use of towels. Thoroughly hygienic it is guaranteed not to cause cracked or chapped hands. In fact an advanced type of this new electrical machine with its *three* jets of hot air, "has also the advantage of making the apparatus adaptable for drying the face!"

Congratulations to the employees of Standard Telephones & Cables, Ltd., who according to *The Electrical Review* have recently had a very considerable enlargement of their non-contributory pension scheme, and which now covers every employé of the company, including hourly-paid workers.

It is reported that a successful television demonstration took place in the laboratory of the General Electric Co. of New York, when a play was audible and visible in a theatre at Schenectady a mile away. No definite details of this experiment have up to the present apparently reached this country, and so much depends upon the conditions under which the experiment was made.

In the meantime, according to an actual case which was presented by a lady with a grievance before the magistrate of Tottenham (England) police-court, someone has invented a very marvellous apparatus. The lady in question seriously complained to the magistrate for an injunction against a neighbour who she alleged had a television set and was continually taking pictures of herself and her husband when they were at home together!

Promotions.—Congratulations to the, in round figures, two dozen ladies who last month received their respective promotions from Telegraphists and Telephonists, &c., to higher ranks in connexion with the C.T.O. In more than one case it can be safely said that, "she will be severely missed" from the field of other activities.

To Mr. P. Crisp of the Cable Room also upon his well-earned promotion to the Asst. Supt. Class, Telegraphs C.T.O.

Personal.—While congratulating Mr. W. Day upon his rise in the Engineering Service, it is a matter of personal regret, shared by not a few that his advance means removal to the Provinces. The T. and T. Society will surely miss him at their gatherings, which he not infrequently enlivened when he rose to contribute to a discussion—no matter upon what subject.

To Messrs. F. Poffley, Asst. Supt., A. Bing, Overseer, A. Jay, and G. Matthews sincerest wishes for a long and happy pensioned life, the latter almost the last of the Submarine Telegraph Company's telegraphists transferred to the Government service in 1889, when that company was absorbed by the British Post Office.

Obituary.—Following quickly upon the death of Mr. John B. Murray, mentioned in the last issue of the *T. and T. Journal*, came the news of the passing of Mr. R. Collihole on Sunday, June 8. Formerly of Torquay Post Office, for some years of his retirement he had been closely associated with J. B. M. in his activities at Ellacombe Church, South Devon.

Round the World.—BELGIUM.—The Fourth International Conference on Wireless Regulations is to be held at Liege from Sept. 22 to 26 next. The meetings will be officially opened by M. Forthomme, Belgian Minister of Posts and Telegraphs. It is expected that when the two high-powered stations are opened near Louvain they will secure easy reception all over the British Isles. Both, it is claimed, will be heard with greater clarity than 5 GB, and both have agreed to broadcast regular programs for British listeners, says the *Daily Express*. One of these stations is the property of the Radio-Belgique Corporation, while the other belongs to the Flemish Catholic party—which, as is known, is particularly interested in the preservation of the Flemish language. CHINA.—*The Electrical Review* states that a program of repair and improvement of all Government telegraph lines throughout China has been formulated by the Telegraph Administration Department of the Ministry of Communications. It will take six years to complete the entire program. During the first year a total of 4,773 miles will be renewed, including the Nanking—Hankow, Peiping—Tientsin, Hangchow—Foochow, and five other main telegraph lines and their various branches. During the second year 3,398 miles will be repaired, including the Hankow—Canton, Hsuchow—Tsingkiangpu, Hankow—Chungking, and Kalgan—Lanchow lines. In the third year 2,984 lines will be dealt with and the remaining three years will be devoted to the replacement of old apparatus and other improvements for the various main and branch lines. To minimise the danger of attacks by pirates when sailing in Chinese waters, Marconi automatic transmitters fitted in a fireproof safe and equipped with the necessary power have been provided for shipping. The simple closing of a switch sets the transmitter in operation, the safe is then locked, the automaton persistently signalling the ship's call sign and the request for assistance, while the continuous radiation provides an excellent signal from which directional bearings may be taken. A contract was recently signed by the Nanking Government for the erection in Nanking of a powerful broadcasting station. The Telefunken Co. of Berlin represented by the Siemens China Co. has secured the order, and the plant will be erected near the Yangtsze River with two 400-ft. steel masts. Power plant of 600 h.p. will render the station independent of power supply from the city electricity works. A cable connects the station with the studio in the centre of the Republic's capital. CANADA.—Reuter's Toronto correspondent reports the inauguration of a wireless network by the Ontario Provincial Police which will link up district police stations all over Ontario with the departmental headquarters in the city. The code to be used is to be a secret one and the wavelength will be known only to provincial police officials. Each district will have its own radio operator. FINLAND.—The number of licensed listeners now totals 90,232, of whom some 12,984 are of Swedish nationality. FRANCE.—It is understood that, in addition to the short-wave transmitting station now being erected in the Rue de Grenelle, Paris, another is to be built at St. Germain. The Eiffel Tower short-wave station is now to be used as the centre of an extensive police radio service. Receiving stations will be established all over France and at boundary towns and seaports. GREAT BRITAIN.—The number of broadcast licences continues to increase.

(See "Parliamentary Items.") In connexion with the scheme to build a national repertory theatre in London as a Shakespeare memorial, it is suggested that the Government should make an annual grant of £100,000 for a number of years to meet interest and sinking fund charges, such grant to be made from the proceeds of wireless receiving licences. There is no great public support for the scheme at present. The London *Daily Telegraph* states that the B.B.C. engineers consider that a site near Falkirk is the best for the Scottish regional broadcasting station. When completed it will mean the closing down of the stations at Glasgow, Edinburgh, and Dundee. HUNGARY.—In connexion with the reorganisation of the country's broadcasting system, the Postmaster-General has granted the necessary licence for the erection of a new transmitting station near Budapest of 120 kw. against the present station's 20 kw. power. Should it not serve the whole country adequately, relay stations may be established, and it is intended to use short waves in addition to the normal band, mainly to serve the farmers. INDIA.—The Government of India has completed its selection of personnel for the new Indian Broadcasting Board. It will have as chairman, says *The Electrical Review*, the member of the Viceroy's Council concerned, and its other members will be two non-officials and two officials. Of the last named, intimates *The Times*, one will be a financial adviser, and the other will probably be selected for his administrative experience. IRISH FREE STATE.—In the course of his Budget speech in Dail Eireann, the Minister for Finance announced that the import duty on wireless apparatus produced over £30,000 in the year under review, an increase in round figures of £4,000 on the previous twelve months. Four years ago the anticipated amount was £20,000. It had been steadily rising and it was thought that it could now be safely stated that the yield would not be likely to fall below this year's figure. When the new high-power station had been erected, the amount of the tax levied and the sum received for licences, the combined yield would be definitely devoted to improving the broadcasting service. ITALY.—A census of listeners is being conducted throughout the country. Special forms have been distributed which must be filled up by every householder, without exception, who must declare whether or not a wireless receiving set is used. The number of *known* listeners for the whole of Italy is at present only 135,000. Signor Ciano, Minister of Posts and Communications, whose broadcasting schemes include the active encouragement of short-wave transmission, is also urging forward the opening of new stations, so that listeners all over the peninsula will be able to hear with quite small sets at least one of the national programs. *World Radio* states that the new stations at Trieste and Palermo will be opened within twelve months. It will be recalled that it was originally suggested to remove the 3-kw. Rome transmitter to Palermo, but this idea has been replaced by equipping both Trieste and Palermo stations with completely new transmitters. JAPAN.—The Japan Wireless Co., says *The Electrical Review* has installed short-wave transmitting plant of the R.C.A. type in the station in Aichi Prefecture, which carries on wireless traffic with Europe exclusively, while the receiving station at Yokkaichi, in Miye Prefecture, has been equipped with beam appliances of the Marconi type. MONGOLIA.—From the same reliable source it is understood that the construction of ten radio transmitting centres in inner and outer Mongolia and Tibet is being planned by the Ministry of Communications. These will be operated by the Government, but in addition to the transmission of official dispatches will also be open for public communications. NEW ZEALAND.—From a report originating in the Trade Commissioner's Office in Wellington, it is gathered that although satisfactory results have been secured by the Post and Telegraph Department for some years, as elsewhere the telephone is rapidly superseding the telegraph as a means of speedy communication. NORWAY.—At present four private companies provide Norway with broadcasting facilities, each operating transmitters within separate and limited areas. This arrangement does not appear to have proved altogether satisfactory, and a reorganisation plan is accordingly in process of completion for submission to the Storting. *World Radio* in fact has definitely stated that the proposals recommend the formation of a new company, limited by shares, with the State as principal shareholder, to exist only until all the stations, present and prospective, have been paid for. Total expenditure anticipated to be not more than £250,000. Redemption of this amount anticipated by 1938. The further details are equally interesting but space compels brevity. Plan provides (1) for 43 transmitters (2) crystal reception to 90% population. (3) Present licence fee Kr. 20 reduced to Kr. 17. (4) Total licence income to go to new company, who will pay program company one third. (5) New company also to pay £11,000 per annum to State. (6) Program company to be organised by Press Association, Telegraph Bureau, Norwegian Association of Newspaper Owners including Oslo papers. (7) Local program councils in all important towns plus chief program council for nation. (8) Latter council will be drawn from Department of Church and Education, Commerce, University, High Schools, Press organisations, theatres, music organisations, authors' organisations, and last but not least LISTENERS. PORTO RICO.—There are now 1,072 miles of telegraph line in operation in Porto Rico. SWITZERLAND.—At the annual general assembly of the International Broadcasting Union held at Ouchy, the Broadcasting Section of the Portuguese Postal Administration and also the Radio-Ljublijana, of Yugo-Slavia, were admitted to active membership and the Columbia broadcasting system of the U.S.A. to associate membership. The Union now represents 330 transmitting stations, serving 22½ million families or about 90,000,000 individuals. An agreement for the establishment of a special wireless station for the League of Nations in times of emergency was signed on May 22 last at Geneva by Sir Eric Drummond on behalf of the League and by M. Motta on behalf of the Swiss Government. The station is to have a world-wide radius. U.S.A.—On May 2 the Federal Radio Commission suspended until July 31 its recent order changing the frequencies of 26 radio stations, but at the same time has withdrawn the concession to grant any dissatisfied station a hearing on June 17. URUGUAY.—By virtue of a recently passed law, says *World Radio*, an official Uruguaian broadcasting service has been made possible, and is to be placed under the ægis of the Department of Public Education. An honorary commission appointed by the National Administrative Council will prepare, broadcast, or re-broadcast programs for the use of public schools. The expenses of the service will be met by receipts from a duty of 60% on the value of all radio sets and accessories—and also on gramophones and gramophone records imported into the republic. The licence fee for each receiver will be £2 per annum, while "a fine of £20 will be imposed upon any theatre or public hall which refuses to allow performances to be broadcast." WEST AFRICA.—According to Reuter's Lisbon agency the new wireless station at *Monsanto (near Lisbon)* and that of St. *Thomé* (West Africa) have given excellent results. A great saving of both time and expense is anticipated, seeing that up to the present all official messages have had to be exchanged over privately-owned cable companies. It is believed that the Government will later on authorise private messages to be sent by these military stations.

Amy Johnson.—"Where the women are heroes, what must the men be like"?—C. Kingsley in "Hypatia."

J. J. T.

PARLIAMENTARY ITEMS.

ON June 3 Mr. Lees-Smith, Postmaster-General, informed Capt. P. MacDonald that the Prime Minister had recommended the Rt. Hon. J. H. Whitley for appointment as Chairman of the British Broadcasting Corporation.

On the same date, in reply to Mr. Day, Mr. Lees-Smith also stated the number of wireless receiving licences in force on April 30 last, was 3,117,000. There were no statistics available showing how many licensees used portable receiving sets.

Also, on June 3, Mr. Graham White asked the P.M.G. if he would state the number of employees in the Engineering Department of the Post Office on Jan. 1 1930, and the corresponding figures at the latest convenient date.

Mr. Lees-Smith said that the figures fluctuated considerably according to storm conditions. The number of employees in that Department on Jan. 1 last was 31,544. The corresponding figure on May 1 was 32,128.

J. J. T.

RETIREMENT OF W. J. MEDLYN, M.I.E.E.

MR. MEDLYN retired from his position as Superintending Engineer of the South Lancashire District, after a period of service extending over more than forty years. The South Lancashire District includes both Manchester and Liverpool, and for the past seventeen years Mr. Medlyn has been in control of the provision, development, and execution of the works involved in the continuous extension of telegraph and telephone services.

In 1926-27 Mr. Medlyn was Chairman of the North Western Centre of the Institution of Electrical Engineers. He has for some years served on the Council of the Manchester Geographical Society. In consequence of his official position he has also served as Chairman of the Institution of Post Office Electrical Engineers.

A remarkable gathering took place on the evening of May 31, which was Mr. Medlyn's last day of service, and during the evening he performed his last official act in investing Mr. H. Martin, a member of the staff, with the Imperial Service Medal. A company of over 400 assembled and were received by the Chairman, Mr. T. E. Herbert, Mr. W. J. Medlyn, and Colonel Sir Thomas F. Purves.

After a light meal speeches in honour of the guests of the evening were made by: Col. Sir Thomas F. Purves; Messrs. J. W. Atkinson, Superintending Engineer of the North Eastern District; H. Downes; J. G. Maddan, Postmaster Surveyor of Manchester; T. McLeod; F. N. Harrop; C. H. Smith, General Secretary of the Post Office Engineering Union; G. H. A. Wildgoose, A.M.I.E.E.; H. Broadhead; H. Hepplestone, A.M.I.E.E.; and finally by Sir William Noble.

The presentation was then made by Mr. T. E. Herbert. The speeches had all of them in common the very high appreciation of Mr. Medlyn as an official and as a man, and universal regret was expressed at the termination of a long period of very happy associations.

The presentation took the form of a portable wireless set, a gramophone, a camera, and a handbag for Mrs. Medlyn. The ladies of the staff had, on an earlier occasion, given Mr. Medlyn a motoring picnic case, but perhaps one of the most striking testimonies to Mr. Medlyn's work in the district was provided on the occasion of the last Whitley Committee meeting, when the Chairman of the staff side presented a little token of regard for Mr. Medlyn, in appreciation of the kindly consideration and fairness of judgment which he had always delivered.

REVIEW.

"Commercial A.C. Measurements," by G. W. Stubbings, B.Sc. (Lond.), F.Inst.P., A.M.I.E.E. 320 pp. Published by Messrs. Chapman & Hall Ltd. Price 15s. net.

Measurements of A.C. quantities involve many more complications than are found in D.C. work, and a book of this nature must be distinctly welcomed. The usual book on this subject is either a treatise on testing or a more or less amplified summary of maker's lists. The scope of this book, however, is considerably broader than is indicated by the title, dealing largely, as it does, with the theory underlying the design and use of the various types of measuring instruments included. While not concerned in any way with details of manufacture, sufficient information is given as to the general construction of the instruments to enable the reader to understand their performance and the principles involved in the design, while the errors entailed by the various methods of measurement are also discussed.

The book, therefore, will be found of service to both users and designers of measuring instruments, while it will also prove to be a good text book for students taking the subject of electrical measurements in the examination for B.Sc. (Eng.) London.

A preliminary chapter is included on elementary A.C. theory, and subsequent chapters deal with the measurement of Current and Voltage, Power, Instrument Transformers, Energy, Power Factor and Frequency and Determination of Phase Sequence, Reactive Power and K.V.A., the final chapter dealing with Test Room Equipment.

This chapter gives a great deal of useful information, especially as regards plant for altering phase relations so as to obtain various power factors, &c.

The short Appendix included, dealing with the Trigonometry of A.C. Theory will probably serve as a useful refresher in many cases, as a book of this nature must of necessity involve a considerable amount of mathematics, but this has been simplified by the use of vectorial methods where possible, and the diagrams are of considerable assistance.

References are given to various authorities at the ends of the chapters so that particular points may be followed up if desired. Altogether it is considered a well-thought-out book and one that may be thoroughly recommended. J. McG.

TRADES AND PROFESSIONS.

UNTIL one happens to peruse a classified Telephone Directory, one does not realise the varied number of trades and professions that go to make up a telephone system.

Happening on one for the Liverpool and District was quite interesting. I found there were between a thousand and eleven hundred different classifications. One would think this must embrace every trade and profession in existence, but of course it does not. It seems, however, a pretty wide range for a district which is mainly known for its docks, shipping and port activities.

Among the professions, accountants and solicitors are well represented, the former rather exceeding the latter, but both are considerably behind the number of physicians and surgeons who outnumber the dentists by about two to one. What perhaps strikes one, in a district of this nature, is the number of farmers,

Besides being a great commercial and industrial centre, Nanking abounds in many spots of natural beauty and historic interest, which are visited by many thousands of tourists annually.

C.T.O. NOTES.

Promotions. Miss A. B. Nottidge, Asst. Supervisor (Telegraphs) to Supervisor (Telephones). Miss F. A. Roe, Asst. Supervisor (Telegraphs) to Asst. Supervisor, Class I (Telephones). Miss E. Westover, Telegraphist to Asst. Supervisors (Class I) (Telephones). Miss H. R. Roseberry, Telegraphist to Asst. Supervisors (Class I) (Telephones). Mr. E. F. Bing, Asst. Supt. to Superintendent (Lower Grade). Mr. T. W. Pallett, Overseer to Asst. Superintendent.

Retirements.—Mr. D. M. Ford, Deputy Controller. Mr. R. H. Shoyer, Asst. Supt. Mr. F. W. Polley, Asst. Supt. (Cable Room). Miss J. M. Rintoul, Supervisor, Higher Grade. Miss J. M. Black, Telegraphist. Mr. W. G. Cobden, Inspector.

Obituary.—We regret to record the deaths of the following old comrades:—Messrs. W. J. H. Joyes, J. N. Geary and J. B. Murray. All these gentlemen had passed the allotted span of threescore years and ten and to their relations we extend our heartfelt sympathy.

Ramble.—The "F" Division enjoyed a ramble in Hertfordshire, starting at Cuffley and taking a route through Bedwell Park to the old-world village of Essendon.

Sport.—Bowls.—The C.T.O. lost their first match in the Civil Service League to the Savings Bank Department by 50 to 77. The L.T.S. were, however, beaten in the next league match by 66 to 50.

SUMMER REUNION OF C.T.O. PENSIONED OFFICERS.

THE tenth summer gathering of Retired C.T.O. Pensioned Officers took place at the usual *rendez-vous* on June 11 last—the Palm House, Kew Gardens.

It did not pass unnoticed by the more frugal-minded that entry to the gardens was now FREE; in fact, the knowledge of this may have been noised abroad beforehand, for the attendance of 161 was a record.

Under the able partnership of Messrs. C. S. Keen and H. E. Adams, the organisation of a most satisfactory "5 o'clock" left nothing to be desired. The weather was ideal, bright, warm, with a gentle breeze sufficient to temper a real June sun, but not enough to raise the dust.

It is hoped that by the usual courtesy of the managing committee of the *T. and T. Journal* room may be found for the publication of the exceptionally long list of those present.

Once more Mr. J. Bailey, I.S.O., "young and *debonnaire* as ever," as someone remarked, filled the chair, and ably controlled the elderly Demosthenes.

So lovely was the evening that the hour was quite late before quite a number of the assembly could tear themselves away from the eventide charm of Kew Gardens at its best.

Wending one's way homeward one would not help yearning, for "the sound of a voice that is still." Adam Gordon, the much-beloved, was with us yesteryear!

Present: Messrs. W. W. Abery, H. E. Adams, T. J. Allison, Miss E. Ampleford, Mrs. W. H. Ampleford, Miss S. M. Ashdown, Messrs. B. G. Askew, J. Bailey, I.S.O., T. Banks, Miss E. A. Barker, Misses E. A. Barnard, M. Barnfield, Mrs. H. E. Bath, Mr. and Mrs. A Bathurst, Mr. and Mrs. O. Bathurst, Messrs. W. Beaney, H. E. P. Bell, G. T. Bennett, J. R. Berry, E. Bird, Mr. and Mrs. H. A. Bolton, Miss A. E. Booth, Messrs. H. Boothby, S. Boshell, C. J. Boulton, Misses E. J. Bowden, S. E. Briault, F. J. Brown, Mr. F. W. Butler, Misses J. E. Cameron, M. Camp, L. Carr, Capt. A. J. Cherry, M.C., Miss E. S. Clarke, Messrs. E. J. Clarke, H. Clarke, A. J. Condy, Misses A. E. Cook, P. L. Cooper, Mr. J. H. Couldrey, Mr. and Mrs. C. T. Crisp, Mr. and Mrs. E. Crook, Mr. E. Croxford, Mrs. Dennison, Messrs. E. M. Diaper, H. G. Dicks, C. Elphick, H. T. Elvey, H. W. Evans, C. J. Faunch, W. S. Fisher, Mr. and Mrs. F. W. and Miss Fryatt, Messrs. E. Fulcher, F. J. Furby, Mr. and Mrs. R. A. Furness, Messrs. W. E. Gibbins, F. Goldsack, Mr. and Mrs. J. G. Goldsack, Mr. A. T. Good, Mr. and Mrs. J. Gough, Misses A. E. Gower, M. Grealey, A. M. Grimmette, Messrs. T. W. Gunter, E. L. Hilton, Misses G. M. Henderson, A. M. Hutt, E. M. Iresin, Mr. and Mrs. A. E. Johnson, Messrs. D. W. Jones, W. E. Jones, A. W. Judd, Mr. and Mrs. C. S. Keen, Mrs. F. Keen, Messrs. R. E. Kemp, H. W. Kent, A. E. Kings, Miss A. A. Kitts, Mr. G. F. A. Lange, Miss F. A. Le Pla, Mr. E. Lewis, Mrs. E. D. Lyle, Mrs. A. C. MacEwan, Mr. and Mrs. A. W. Malein, Mr. G. Meyer, Misses B. M. and E. S. Miles, Messrs. F. W. Miles, C. J. Minors, F. Mitchell, Miss E. Moore, Mr. F. Morgan, Mr. and Mrs. S. Morris, Messrs. F. J. Muller, R. H. Mulock, Misses E. B. M. Nash, J. Nuttall, Mr. S. F. Pace, Miss B. St. C. Page, Messrs. S. Pearce, W. Plumer, E. F. Poole, L. W. Powell, J. Rees, Mrs. C. Ritty, Mr. and Mrs. C. L. M. Rowan, Mr. and Mrs. A. J. Rowlands, Mr. T. Sadler, Mrs. A. Saunders, Messrs. J. E. Sayers, F. Seager, Mr. and Mrs. H. W. Senhenn, Miss A. A. Shacklock, Mr. R. H. Shoyer, Misses F. A. Simkins, Simpson, E. J. Sleeman, Messrs. S. J. Smith, H. C. Stelbom, F. T. Stimpson, Misses L. Strachan, M. L. Tatton, Mr. G. E. Taylor, Mr. and Mrs. E. Tibbles, Mr. W. J. Town, Miss B. L. L. Trundle, Messrs. W. Turner, W. J. Twyman, J. J. Tyrrell, Mr. and Mrs. E. Veale, Messrs. E. Walton, A. E. Ward, A. A Watts, Miss F. J. Watts, Messrs. T. E. Weston, C. W. Wheeler, Mrs. A. White, Mr. F. J. White, Mr. and Mrs. H. B. Winder, Messrs. C. W. Winn, W. G. Wood, Misses E. R. Wright, A. Wyatt and Mr. and Mrs. R. Young.—J. J. T.

nearly 300, thus showing that agriculture still holds an important place even in the midst of a large manufacturing district, and that the farmer is alive to the value of the telephone.

The tea merchants and the brewers about balance: this must afford some comfort to teetotalers. There are no less than twenty-three types of engineers and eighteen types of brokers. There is a manufacturer of iridium pivots, and one of garters, another of skewers, while one makes curled hair, and so one could go on; but there would appear to be little difficulty in finding on the telephone exchange one or more to satisfy any want of any kind.

W. E. G.

PROGRESS OF THE TELEPHONE SYSTEM.

THE total number of telephone stations in the Post Office system at the 30th April, 1930, was 1,889,193, representing an increase of 7,083 on the total at the end of the previous month.

The growth for the month of April is summarised below:—

	London.	*Provinces.*
Telephone Stations—		
Total at April, 1930	678,742	1,210,451
Net increase for month	2,959	4,124
Residence Rate Subscribers—		
Total	168,170	261,713
Net increase	1,048	1,293
Call Office Stations (including Kiosks)		
Total	6,078	25,386
Net increase	62	311
Kiosks		
Total	1,762	6,451
Net increase	53	120
Rural Party Line Stations		
Total		9,983
Net increase		—
Rural Railway Stations connected with Exchange System		
Total	17	1,671
Net increase		57

The total number of inland trunk calls dealt with in February, 1930 (the latest statistics available) was 8,638,363, representing an increase of 161,463, or 1.9% over February, 1929. Outgoing international calls numbered 43,241 and incoming international calls 46,971, representing increases of 1,531 (3.7%) and 2,379 (5.3%) respectively over February, 1929.

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

LONDON—Addiscombe (automatic), Loughton.

PROVINCES—Aberlemno, Charlton-on-Otmoor, East Langton, Good Easter, Hale, Kinlet, Linley, Morland, North Waltham, Salmonds Muir, Tow Law (all rural automatic).

and among the more important exchanges extended were:—

LONDON—Wembley.

PROVINCES—Jesmond, Langside, Rhyl, Slough, Sunbury, Uxbridge, Willenhall.

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

Coatbridge—Bathgate.
London—Leatherhead.

while 73 new overhead trunk circuits were completed, and 85 additional circuits were provided by means of spare wires in underground cables.

GLASGOW TELEPHONE NOTES.

IT may be of interest to mention that 25% of the Glasgow District Telephone Accounts are paid over the counter at the District Manager's Office. We understand that Glasgow is exceptional in this respect. At all events, during the period of greatest pressure, the Cash Office is reminiscent of the barriers at an international match between Scotland and England, when special staffing arrangements have to be made to cope with the rush.

Miss Janet F. G. MacBryde, Clerical Officer, has put off the ties of official life to enter the bonds of matrimony. Miss MacBryde entered the service of the late National Telephone Company as a telephonist in August, 1909, and came over to the clerical side in April, 1914. She is held in the highest esteem by her colleagues, who could not, and did not, allow the occasion to pass without tangible proof of their regard. She was the recipient of many individual gifts and a handsome electric standard lamp and shade, with best wishes for her future happiness.

We take this opportunity of acknowledging our indebtedness to Miss MacBryde for her valuable work as Secretary and Treasurer of the Glasgow Office National Savings Association, the success of which, in no small part, has been due to her efforts.

We wish God-speed to Miss M. Mowat (Douglas), Miss M. D. Whiteford (Central), both of whom have resigned the service to take up residence abroad; also to Miss L. V. Fisher (Queen's Park) on her transfer to Belfast.

The first inter-office golf match between the Glasgow and Scotland West District Office staffs was played on June 13 over the Caldwell course. The match, as all such games should end, resulted in a draw, each side having four wins and one game halved.

The idea that telephone exchanges are also general information bureaux still persists:—

Telephonist: "Number, please?"

Caller: "Don't want a number, Miss; want to remove the stains of travel after a long train journey; can you direct me to the nearest Turkish baths?"

Telephonist: "At . . ."

Caller: "Thank you: knew that the telephone girls would best be able to help me."

A Day with Pepys.—Monday: Monday is the day on which to study the cost of living and to buy everything under price.—Waked up early this morning with a very high wind, and said to my wife, "I pray I hear not of the death of any great person, this wind is so high!" After reading a little in Cicero (whose eloquence is beyond all comparison, and I verily beleeve, that none shall ever equall it) I made me ready and to my office. Did pass the gate-porter, and he did salute me, and I do notice that his salutations are in exact ratio to his estimation of the standing and condition of the various officers. As I approached my room, a chamber-maid, with a room-cleaning air fluttered near by; she threw open the door, drew out a duster, and waved it without using it. I did also notice that my windows are made clean to-day. By and bye comes Captain Cooke, Sir W. Batten, Sir W. Coventry and Duncomb; and we all to Sir J. Minnes, and I did give them a barrel of oysters I had given to me, and there had good discourse about the getting and spending of money. And we all did agree that it was not the salary of any place that did make a man rich, but the opportunity of getting money while he is in the place. Among other merry discourse about spending money, and how much more the cost of living is now than it was heretofore, Duncomb did swear that hitherto he did live of £100 a year with more plenty and with greater pleasure than he can now for £200. Then we did discourse about the preparing of reports, and Sir W. Coventry did advise me in what I write to be as short as I can, and obscure, saving in things fully plain; and that the greatest wisdom in dealing with reports is to say little and let them get out what they can by force. At noon to the exchange, and so home where my wife had got ready a very fine dinner—viz., a dish of marrow bones; a leg of mutton; a loin of veal; a dish of fowl, three pullets, and two dozen larks all in a dish; a great tart, a neat's tongue, a dish of anchovies, a dish of prawns and cheese. After dinner did play bill-yards for an hour and did win 8s. of Captain Cooke and my Lord Bruncker. Did score 98 in one brake, the most I ever did score in one brake in my life; but my conscience troubling me for fooling away the time. Then the rest of the afternoon mighty busy at the Office till about six o'clock. It do seem that it is only a legend that there are waste-paper baskets in in Government Offices, as the floors are littered with dead papers. Then homewards, and on my way did see a fellow insult my wife. So I did give him a cuff or two on the chops, and seeing him not oppose me, I did give him another; at last found him drunk, of which I was glad. Then to Sir W. Batten's, where very merry, good cheer, and up and down the garden with great content to me. So to the Wardrobe, where I found my Lady had agreed upon a lace for my wife of £6, which I seemed much glad of that it was no more, though in my mind I think it too much, and I pray to be kept and to so order myself and my wife's expenses that no inconvenience in purse or honour follow this my prodigality. After this Mr. Butler, Captain Cooke and I to a tavern hard by where we sat till eleven at night. There Captain Cooke did give us a song or two; and without doubt he hath the best manner of singing in the world. And so home and to bed, but could not sleep all night, and being overheated with wine I made a promise next morning to drink no more strong drink this week for I find it puts me out of order. This do remind me that when I mind my business my mind is in good ease, and I sleep well, which methinks, should be a good argument to me never to do otherwise.

PICTURE TRANSMISSION.

BY E. S. RITTER, M.I.E.E.

(Abstract of paper given before the Telegraph and Telephone Society.)

PICTURE Telegraphy may be defined as the transmission of print, drawings and sketches in black and white or facsimile, which is one type of transmission; and the transmission of photographs and half-tones, which is the second type. Both types may be transmitted over a telephone line, radio service or perhaps a long submarine cable. All the systems which are mentioned require a sending apparatus, a receiving apparatus, and means for keeping the movements of sending and receiving apparatus in synchronism; i.e., the two drums on which the sent and received pictures are mounted, must be rotated at exactly the same speed. In addition, arrangements are required for starting and stopping the apparatus at the commencement and finish of the picture transmissions. It was not until the advent of the thermionic valve and the photo-cell that the early picture systems could be developed to their present state of comparative perfection.

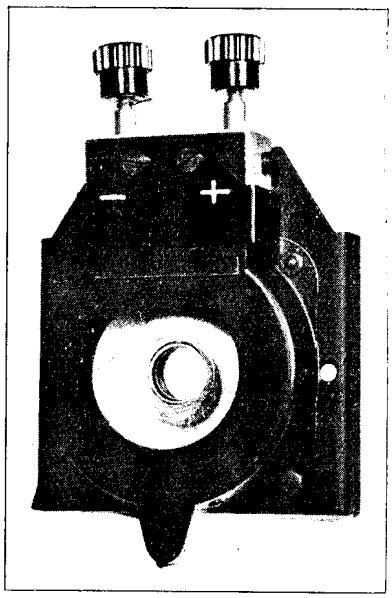


FIG. 1.

Now as to the means for transmitting the pictures. The sending apparatus has got to scan the picture or print to be sent, line by line, in the form of a spiral and originate an electric current proportional to the whiteness or blackness of the picture. A distinction must be made between those systems which send the current proportional to the whiteness of the picture, thus rendering intermediate tones, and those systems which only send a current for white and no current for black, thus giving no half tones, but only black and white. A system working on the latter lines would transmit print and diagrams but would not be suitable for pictures or photographs containing a range of tones. The picture to be transmitted is usually mounted on some form of drum which is rotated and traversed in the same manner as a nut upon a screwed thread, so that all parts of the picture are brought consecutively under the influence of the sending device in the form of a long spiral. In some systems the drum the picture is mounted upon rotates and traverses, whilst in others the drum rotates and the sending device traverses; or, alternatively, the sending device rotates and the picture traverses.

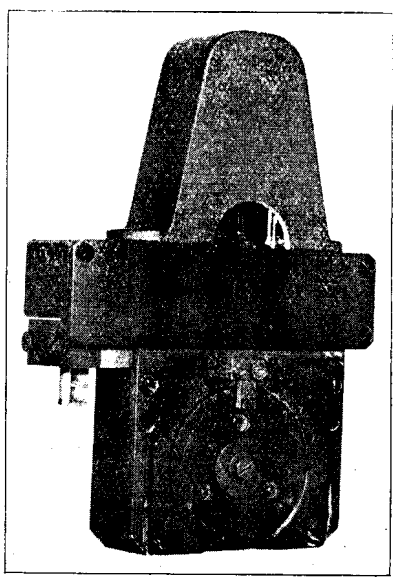


FIG. 2.

The device used for converting the tones of the picture into electric current is known as the photo-cell, and it consists of an evacuated or partly evacuated glass vessel with two electrodes and the necessary leading-in wires. One electrode, the anode, consists of a plate of metal or a grid of wire, the other electrode, the cathode, being a very thin film, generally of potassium deposited on the glass. When suitably treated this deposit emits electrons when light falls on it, the number of electrons being proportional to the quantity and intensity of the light. Its sensitivity follows that of the ordinary photographic plate—insensitive to red light but sensitive to the ultra-violet. By special treatment the colour sensitivity may be changed. The glass bulb may have a trace of hydrogen or other gas left in it.

On the table was a photo cell, also battery and galvanometer. The movement of the light spot on the galvanometer indicated the amount of current flowing through the galvanometer. When light from a pocket torch acted on the photo cell, the galvanometer light spot deflected, indicating the current flowing in the circuit. With red light from the torch no measurable deflection was observed; changing to green, an extremely small deflection was seen, thus showing that the photo-cell is relatively insensitive to the red light but sensitive to white, and slightly sensitive to green light.

The photo-cell shown was one manufactured by the General Electric Company at Wembley.

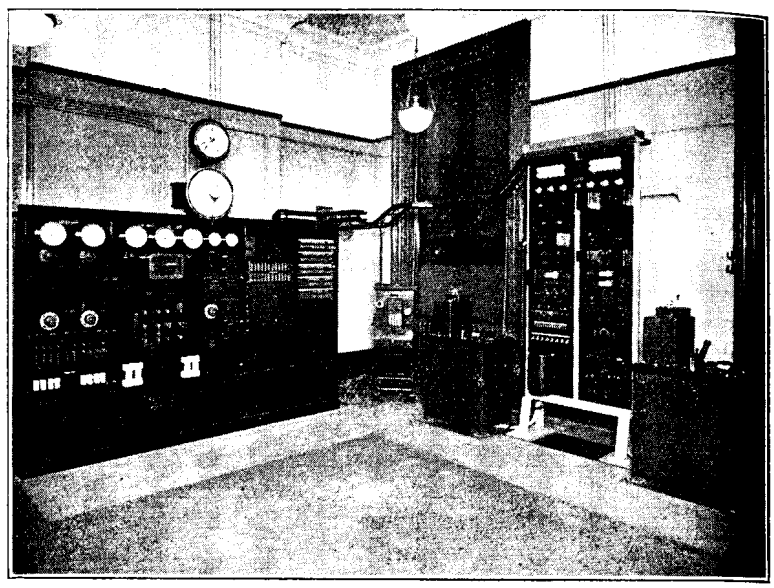


FIG. 3.

Fig. 1 is a view of the Siemens' photo-cell in its mounting. Showing the wire grid or anode. The light goes through the hole and is reflected back from the picture.

Sending.—The light from the sender lamp may be projected either on or through the picture to be sent. In other words, transmission either by reflected light in the case of the positive prints, and by means of transmitted

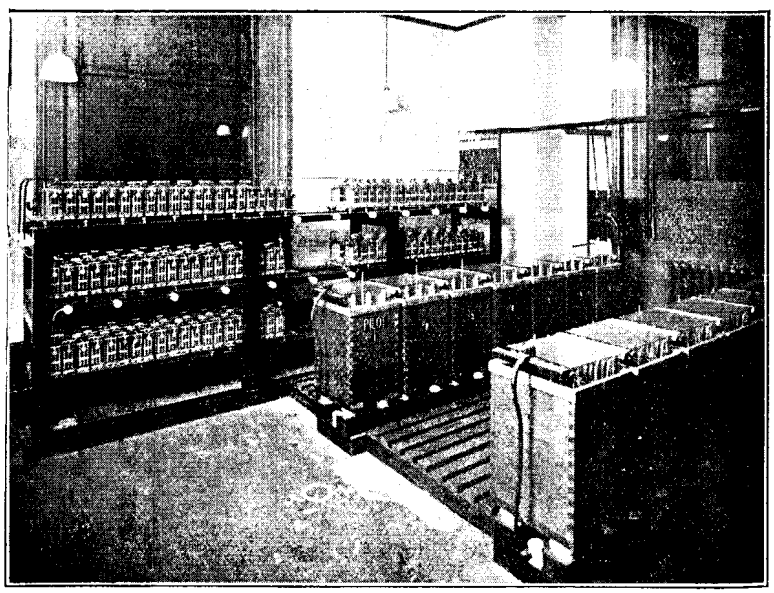


FIG. 4.

light, that is the light passes through the picture into the photo-cell in the case of films, negative or positive. In every case the reflected or transmitted light acts on the photo-cell. In one system the light is projected from a small spot on the picture and the reflected light is caught in the photo-cell; in another system a larger spot is put on to the picture and a small spot of the picture focussed on to the photo-cell.

In all cases a battery draws off the electrons from the photo-cell in the form of electric current, which is extremely small, 1 micro-ampere or less. It is necessary that this small current should be amplified before it can be put on to a telephone line in order to be transmitted from one place to another. Therefore the photo-cell is connected to the grid of an amplifying valve or valves in order that it may be amplified to any desired extent. The type of valve is similar to those used in wireless sets.

Care must be taken that the voltage applied to the photo-cells is not too great, as although the higher the voltage the more sensitive it is, too great a voltage produces ionisation glow. One generally uses as much voltage as one can—about 150 volts is quite a usual voltage, but the exact value depends on the photo-cell. Working 10 or more volts below ionisation point is satisfactory.

With a photo-cell there is an almost instantaneous response to the light in the form of electric current, so long as ionisation or glow does not take place in the cell. In earlier systems selenium cells were used but the response is not instantaneous.

One can either project on to the picture interrupted light, in which case the current that has to be transmitted to the line will have a frequency corresponding to the number of interruptions of light per second; or on the other hand, the amplified voltage from the photo-cell may be used to decrease or increase the intensity of an alternating current produced by some means such as a valve oscillator. In either case the strength of the current sent over the telephone line will be proportional to the whiteness of the picture, and its frequency in accordance with the number of light interruptions, or the frequency of the oscillator in cycles per second.

The reason for using alternating current in the line is in order to use a current of such a nature that it can be transmitted over a telephone line; frequencies within the voice range are suitable. The carrier frequencies generally used vary from 800 to perhaps 1,300 alternations or cycles per second.

At the receiving end of the line the reception is generally, but not always, done on either photographic paper or film. The *modus operandi* consists in having a light spot going over the film in the form of a spiral in the same way that the sending light spot went over the picture in the form of a spiral, and at the same speed; and being able to control the intensity of this light spot proportionally to the amplitude of the received electric current. If at the transmitting end a large current is sent for white, then at the receiving end the maximum amount of light is given to the light spot on the film, then when the received film is developed and fixed, where the light has come on it with a strong current will be black, and where in the original some portion was black the received film will be clear. Hence the reception is negative. If a positive is to be received on bromide paper, then the strong current received has got to cut off the light and a weak received current has got to make the light strong. So where the light is strong the picture comes out black; and where the light is weak the picture comes out white, or alternatively, a small current may be sent for white and a strong current for black, so that the control at the receiving end is as for the reception of a negative. It is in the photographic side where a good many of the troubles reside. One reason for this is that if the electric current is made absolutely proportional to the whiteness or blackness of the pictures being sent, and the light spot control proportional to the current received. It does not follow that a faithful reproduction in tone value will be given on a print. In the case of a print from a received negative, provided the exposure is right, the development is correct and the paper suitable, the tones may be nearly correct. But if a positive is sent and a positive received it is possible that the tones will be quite wrong. Therefore there

TABLE I.

COMPARISON OF SYSTEMS.

The following table compares the various systems. Some of the information may not be exact, but it is the best available.

System.	*Sending System.*	*Receiving.*	*Synchronisation.*
(1) SIEMENS KAROLUS ...	Interrupted light, light spot focussed on picture as spot 0.2 mm. dia. reflected into photo cell. Interrupted light to fixed photo-cell for altering contrast in picture. Scanning disc geared to picture drum. Picture drum rotates, photo-cell traverses. Fixed photo-cell carrier added to picture carrier or picture carrier may be subtracted when receiving positive from positive sent.	Amplified A.C. to Kerr Cell, Sealed Multiplex type. No D.C. bias. Bias provided by fixed carrier. Drum rotates light spot traverses. Machine in daylight.	Valve driven tuning fork, thermostat control, drives alternator which controls D.C. motor. Phasing necessary.
(2) BELL	Fixed light through special aperture. Transmitted through prepared transparent film. Battery coupled amplifier. Picture current modulates oscillator produced carrier.	Amplified A.C. operating vibrating ribbon light valve, slow film used for receiving. Drum rotates and traverses. Machine in dark room with a red light.	Contact driven tuning fork drives phonic motor. Also modulates driving carrier sent to line along with picture carrier. Separation by ba d filters. Automatic start.
(3) BELIN	Interrupted light, large spot on picture, reflected light, small spot taken and focussed in photo-cell. Scanning disc independent drive. Picture drum rotates and traverses.	A.C. carrier amplified and rectified operates oscillograph light projected through specially shaped aperture. Drum rotates and traverses. Machine in daylight. Can receive positive or negative by reversing aperture.	Contact driven tuning fork operates phonic wheel motor. Automatic start.
(4) FULTOGRAPH	Pin point on copper foil with prepared picture modulates carrier.	Pin point produces image by electrolysis carrier amplified and rectified. Drum rotates pin point traverses.	Gramophone motor drive, mechanical governor, mechanical detent released electrically each revolution.
(5) MARCONI FACSIMILE...	Interrupted light, spot focussed on picture, spot reflected and focussed on photo-cell. Independent drive of scanning disc. Light spot rotates, picture traverses.	Amplified carrier to Simplex Kerr Cell. No. D.C. bias (black and white only) or Neon lamp. Reception on bromide paper. Spot rotates and paper traverses. Machine in orange light as paper exposed.	Valve driven tuning fork, thermal control, drives alternator holds D.C. motor in synchronism. Phasing required.
(6) NIPPON ELECTRIC CO.	Interrupted light, can use either transmitted or reflected light. Picture drum rotates and traverses.	Oscillograph movement vibrating with carrier frequency, special apertures for receiving positive or negative from either positive or negative sent. Machine works in daylight.	Phonic wheel control of D.C. motor either 100 cycles per sec. transmitted over line with picture beat frequency between 350 and 450 cycles per sec. used. Automatic start.
(7) BART-LANE	Five prints prepared on copper foil with different exposures, pin points make contact and operate 5 selectors which punch up 5-unit code telegraph tape for transmission. Pictures rotate and traverse. Now uses the photo-cell to operate the 5 relays which operate the punch selectors.	Five-unit code cross punched tape received from telegraph office put in machine. Light controlled by tape. Film on drum rotates and traverses. Machine works in daylight.	Machine motor driven. No synchronism. Tape started at correct position. End of line indicated by punching holes 1, 3, and 5 in succession.

TABLE II.

COMPARISON OF SYSTEMS.

System.	Carrier frequency ( ) indicates adjustable.	Scanning Speed Cm. Sec.	Scan mm. per cycle.	Traverse. mm. per rev.	Traverse. Revs. per cm.	Drum. Revs. per min.	Drum. Drum mm.	Picture. Round cm.	Picture. Along cm.	Picture. Area cm.²	Time min.	cm.² per min.	Tuning fork frequency cycles per sec.	Single space typewriting at 9.15 letters per square centimetre letters per minute transmitted by phototelegraph apparatus.
(1) Siemens Karolus	1,125	21.6	0.192	0.2	50*	47	88	25	18	450	20	22.5	1020	206
	—	—	—	0.25	40	—	—	—	—	—	16	28.2	1020	258
	—	—	—	0.33	30	—	—	—	—	—	12	37.5	1020	343
(2) Bell ...	1,300	22.8	0.175	0.254	39.4	90	—	12.7	17.8	226	8	28.3	60	259
(3) Belin ...	(1,000)	19.8	0.198	0.185	54	72	—	15	10	150	8	18.8	32	172
(4) Belin ... (as altered by the *Scotsman*.)	(900)	25.9	0.288	0.185	54	72	—	20.1	15.1	302	12	25.2	32	230
(5) Fultograph	(500)	12.9	0.258	0.4	25	50	—	11.5	8.9	102	4.25	24		219
(6) Marconi ... (Various combinations of speed and traverse available.)	(5,000) to (10,000)	—	—	0.318 0.254 0.212 0.182	31.5* 39.4 47.3 55	20 30 40 60 80 120 150	88	26.7	25.4	678	—	—	300	—
(7) Nippon ...	1,500	15.7	.105	0.167 0.250 0.125	60 40* 80	60	50	14.7	11	162	13	13.8	100 or 350 and 450	126
(8) Bart-Lane	—	—	.339	0.509	19.7	—	—	10.2	8.9	90.5	32	2.8	When transmitted over Western cable at 1,620 letters per min.	25.6
(9) Proposed International Standard ...	1,300	20.7	—	0.1875	53.33	60	66	18	13	234	12	19.5	—	
Will work to		27.6	—	0.25	40	60	88	25	18	450	12	37.5	1020	—

*Alternative traverses.

is quite a lot in connexion with the photographic side of the business as well as in the electrical side. Unfortunately in a photographic negative, if there is white and black in the original positive and grey is defined as being made up of an equal number of small black and white spots, then the grey in the negative reproduced is not the grey of the original. In other words the law between black and white on the negative is not straight line law, and this has to be taken into account in photography. Of course, photographers know all about this and their work cannot be criticised here.

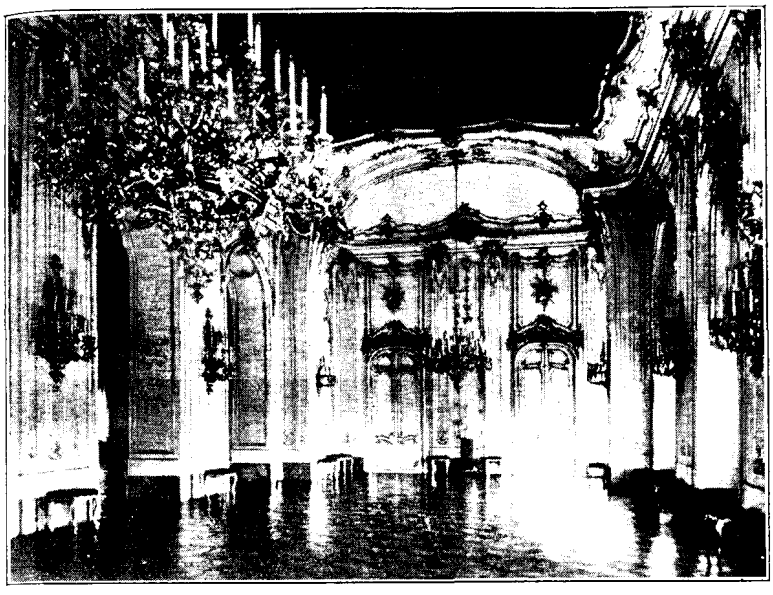
There are several ways of controlling the small light-spot at the receiving end. One is to project a light on to a small mirror and wobble the mirror by the received current over the line amplified as necessary. Then in another system a thin metallic tape is caused to vibrate in front of an aperture through which the light is projected on to the film. The stronger the received current the greater the amount of wobble on this tape and the more light goes on to the film. In the system which the Post Office are using at the moment - Siemen's Karolus -the light is controlled by a purely electrical method. There is no question of moving anything at all. Polarised light is passed through the plates of a Kerr cell (see Fig. 2) when voltage is applied across these plates in proportion to received current ; the light is increased and decreased, but unfortunately not in exact proportion. There are practically no adjustments to be made, and it is therefore simple to operate, having no moving parts to go wrong.

Then there are non-photographic methods of reception. A method of reception used on some of the radio services. A stream of hot air, controlled by the received current, impinges on waxed paper. The wax is more or less removed by the heat, and where the wax is removed the paper will take up ink.

Another method which has been used is to have a pin running over moistened chemically-treated paper, and the greater the current through the pin point the darker the picture. The electric current decomposes the chemicals and produces coloration more or less proportional to the current received.

The real trouble with picture transmission is the keeping of the two drums of two machines at exactly the same speed. It is necessary to drive the drums at exactly the same speed because if this is not done the pictures will look a bit peculiar at the receiving end. Accuracy is therefore necessary.

In the case of the Siemens' Karolus system the length of the spiral measured round a full-sized picture is 813 feet. The length of spiral of light-spot travel round the receiving drum must not exceed by more than $\frac{1}{100}$ths of an inch, plus or minus the length travelled by the sending spot ! It takes



VIENNA—LONDON, FEB. 8, 1930. SCHÖNBRUNN PALACE.

about 20 mins. to travel the 813 feet. It can be seen that these drums are going at substantially the same speed.

There are various methods of driving the drums and keeping them at the same speed. One is by sending some tone over the line or using a tuning-fork drive—either device is used according to the system. Generally speaking, they work very well.

PROBEBILD. FRANKFURT—LONDON, MAR. 10, 1930.
AT BACHARACH ON THE RHINE.

Sample pictures transmitted by the various systems the Bell, for instance, which is much used in America, the Belin, and the Siemens' Karolus and Marconi's, &c.—were on the walls of the room for inspection.

* * * *

An experimental set of the Siemens' Karolus system was installed in the Post Office two years ago. In this system the sending and receiving was done on the same machine.

Fig. 3 shows the existing Siemens' Karolus set installed in G.P.O. West for working to the Continent. On the left is the power switchboard for charging the batteries, &c., next comes a small P.B.X., then the sending machine, control panels and receiving machine.

Fig. 4 shows the battery room with filament and anode batteries.

PROBEBILD. FRANKFURTMAIN—LONDON, FEB. 3, 1920.
RHENS ON THE RHINE.

Tables showing the characteristics of machines in use will, it is hoped, furnish useful information.

Table 1 gives the general characteristics and Table 2 speeds, sizes of pictures, &c., in so far as they are known to the author: in some cases the figures are only approximately correct.

At the present moment Public Picture Services exist between: London and Berlin, Frankfort-on-Main, Munich, Copenhagen, and Vienna, and in addition between Stockholm and stations, with the exception of London. A direct London—Stockholm service may be opened in the near future, the system used being the Siemens' Karolus. Also in Australia between Sydney and Melbourne.

Private newspapers have sets on either the Bell, Belin, or Siemens' Karolus systems at Paris, Hamburg, Milan, Leeds, Manchester, Glasgow and Liverpool.

In America public service on the Bell system is given between New York, Atlanta, Boston, Cleveland, Chicago, St. Louis, San Francisco, Los Angeles.

In Japan the Siemens' Karolus and Nippon Electric Co. systems are in use by newspapers between Tokio, Nagoya, Osaka, Kioto, Okayama, Hiroschima, Fukuoha.

LONDON TELEPHONE SERVICE NOTES.

Contract Branch Notes.

THE business done by the Contract Branch during the month of May resulted in a net gain of 4,189 stations. The net increase in stations for the quarter ending March, 1930, was 11,966.

Telephones in London Hotels.—For some years determined efforts have been made to convince hotel proprietors that the telephone service is an essential part of the equipment of the modern hotel, and during the past 18 months some encouraging orders have resulted, especially in the Kensington district. Nineteen hotels have placed orders with the department, the average number of circuits being six exchange lines and 110 extensions per hotel. There is still a wide field for this class of business, which is being actively explored. Hotel proprietors are gradually becoming convinced that an up-to-date service of message transmission is as necessary as an efficient service of water or lighting.

Of the above-mentioned 19 hotels, 13 have discarded the use of bell signalling and are using the telephone for all services.

Marriage.—Mr. S. Hodgkiss, Clerical Officer, at the West District Contract Office, was married on May 24. His colleagues, in wishing him and his bride happiness and health in their married life, presented him with a canteen of cutlery suitably inscribed.

Retirement.—On June 13, 1930, Mr. W. C. Burrows, Contract Officer, attached to the West Contract Office, retired from the service. Mr. Burrows entered the service of the National Telephone Company in 1906, and, with the exception of the war period, during which he rose to the rank of colour sergeant, was throughout the whole time connected with the Contract Branch.

The staff at the West Contract Office presented him with a wrist watch (for Mrs. Burrows) and a cheque. The presentation was made by the District Contract Manager and Mr. G. G. Rogers (First-class C.O.) also said a few words of eulogy.

Obituary.—We regret to announce the death of Mr. A. F. T. Burrowes, Contract Officer, Class II, who passed away on May 26, 1930. Mr. Burrowes, who was 56 years of age, died suddenly from septic pneumonia. He joined the National Telephone Company at Brighton in 1900 and was transferred to the London Telephone Service in 1906. During the Great War he served in the Navy.

Mr. Burrowes was very highly esteemed by his colleagues and his untimely death came as a shock to his many friends. Our deepest sympathy is extended to his widow and daughter in their sad loss.

Contract Branch Cricket. Two matches have been played in the Shield competition, both against the Accounts Branch. The first resulted in a win for the Contracts, the score being: Contracts 128, Accounts 103. It was an interesting match, and only some vigorous hitting by Murfit, who went in at the fall of the 7th wicket with the score 91 made victory possible. Fitzgerald was top scorer with a useful 34 and Doody secured 5 wickets for 28 runs.

The return game ended in a draw. Batting first, the Accounts compiled 93 runs in 2½ hours. Widdup and Vacher batted stubbornly without adding many runs. The Contract Branch were left with only 65 minutes in which to get the necessary runs. In the circumstances they did well to reach 80 for 6 wickets. Doody batted brilliantly in compiling 54 not out and Channing secured 4 wickets at small cost.

London Telephone Service Sports Association.

The first annual athletic meeting is to be held on the Civil Service Sports Ground at Chiswick, on Friday, July 18, at 5 p.m. The committee have arranged an excellent programme of events, full particulars of which can be obtained from Mr. G. W. R. Robinson, T.T.K.I., L.T.S., Cornwall House, Waterloo Road, S.E.1. A dance in the Pavilion will follow the sports, tickets for which at 1s. each can be purchased from Mr. George Lewis, AR4E, L.T.S., Cornwall House, Waterloo Road, S.E.1. Early application is desirable as dancing accommodation is limited.

Refreshments will be provided at moderate prices.

Football.—The annual general meeting was held in Cornwall House on Friday, May 30. In the report of the past season reference was made to the success of the team in winning the championship of the 2nd division of the Civil Service League without losing a match. Next season the team will be competing in Division I. Mr. Evans, who has so ably filled the position of Secretary for several years, has resigned, and Mr. Culley, of the City Contract Office has been appointed to the position.

Mr. Futerman will again be the captain and will be supported by Mr. Thomson, vice-captain. It is intended to run two teams next season and arrangements will be made to fix up a number of friendly games on opponents' grounds for a 2nd eleven. If the venture is successful, application for membership of the 2nd division of the Civil Service League will probably be made in the following season.

Personalia.

Promotions to Assistant Supervisor, Class I.

Miss E. A. Whythe, of Abercorn.
„ L. E. Spencer, of North.
Miss E. M. Elford, of Park.

Promotions to Assistant Supervisor, Class II.

Miss E. M. Burtenshaw, of Kensington.
„ D. F. Vince, of Wimbledon.
„ A. L. Curtis, of Tandem.
„ F. L. G. Adams, of Clissold.
„ W. G. French, of Trunks.
Miss A. H. Loutit, of City.
„ E. A. Messenger, of Regent.
„ C. G. Cousens, of Reigate.
„ W. M. Dunstone, of Emberbrook.

Resignations on Account of Marriage.

Assistant Supervisor, Class II.

Miss F. A. G. Schofield, of Erith.

Telephonists.

Miss H. K. Arney, of Victoria.
„ P. E. Heseldin, of Victoria.
„ E. S. Carey, of Willesden.
„ E. Hambleton, of Willesden.
„ M. V. Phillips, of Terminus.
„ J. P. Burgess, of Park.
„ B. E. Cutler, of Riverside.
„ F. E. Ferrier, of Riverside.
„ H. Nield, of City.
„ G. E. Eddiford, of City.
„ M. E. Holmden, of City.
„ E. E. Francis, of Wimbledon.
„ J. M. Tuck, of Metropolitan.
„ N. E. Gearing, of Bexley Heath.
„ R. A. Wells, of Flaxman.
„ E. E. Hardy, of Brixton.
Miss D. J. Warner, of Richmond.
„ L. Forrest, of Tandem.
„ E. G. Russell, of Gerrard.
„ D. M. G. Roberts, of Central.
„ V. M. Watson, of East.
„ E. Miles, of Clissold.
„ A. L. Hardy, of Avenue.
„ E. M. Fuller, of Avenue.
„ I. M. Howard, of Bushey Heath.
„ M. P. Jennings, of Hop.
„ E. N. Randall, of Hop.
„ E. A. Joiner, of Streatham.
„ M. E. White, of Trunks.
„ A. E. Skelton, of Trunks.
„ H. Herron, of Trunks.

LEEDS DISTRICT NOTES.

IT is usual to visualise a Traffic Officer as a lynx-eyed, lantern-jawed individual, closely related to Sherlock Holmes, who dabbles in decimals, and carries a slide rule in his pocket. This description, however, cannot be applied to Mr. W. Tate, Traffic Superintendent, Class II (known to his friends as "Billy"), who has just retired under the age limit, and whose genial personality and breezy ways will be very much missed in the Traffic Office.

MR. W. TATE.

Mr. Tate is one of the fast disappearing "sixpenny telegram" staff. After graduating on the telegraph side, where he became a technical overseer, he transferred his activities in 1913 to the telephone service, and joined the Leeds traffic staff in 1914. He did his bit during the war training telegraphists at Aldershot, and since the war he has had the oversight of the transfer of 40 automatic and manual exchanges. The popularity of Mr. Tate, and his fellow officer, Mr. Goodwin, who recently preceded him into the state of well-earned leisure, was demonstrated by the large attendance at a "Tea" which was held at the Y.M.C.A. on June 3. The Postmaster-Surveyor, Lt.-Col. Jayne, D.S.O., O.B.E., M.C., presented Mr. Tate and Mr. Goodwin, each with an easy chair on behalf of the staff, and expressed his pleasure

at seeing Mrs. Goodwin and Mrs. Tate present, not his surprise, at finding that one easy chair was regarded in both cases as sufficient. Tributes to the regard felt for both officers was also conveyed in neat and humorous speeches by Mr. Lawrence, Mr. Walker, Mr. Jowett, and Mr. Murray, who, in the absence of Mr. Bates, took over the duties of Chairman. Messrs. Tate and Goodwin suitably responded in characteristic fashion. Mr. Tate's reply was cheery, short and snappy, whilst that from Mr. Goodwin was longer, carefully worded, and drawing from his long experience, gave good advice to the younger members of the Traffic Section. A pleasant and enjoyable evening was tempered only with regret that it meant farewell to two very popular officers.

An interesting civic ceremony took place on June 3 at Hebden Bridge when the new post office was formally opened by Councillor E. Hartley, J.P., Chairman of the Hebden Bridge Urban Council. Mr. J. E. Barlow, in asking Councillor Hartley to open the new Post Office, said that he had felt the occasion was so auspicious in the daily life of Hebden Bridge that it should not be allowed to pass without some public ceremony. As the new building had fallen upon the birthday of His Majesty the King, Mr. Hartley and his colleagues on the Council forwarded a telegram of congratulation to His Majesty. Later in the afternoon the following reply was received from Buckingham Palace:

> "I am commanded to convey to you, and to all who joined in your message, the King's sincere thanks for the good wishes to which it gives expression.—Stamfordham."

Lt.-Col. Jayne, D.S.O., O.B.E., M.C. (Postmaster-Surveyor), on behalf of the Department, thanked Councillor Hartley for his services and encouraging speech and hoped that the trade and prosperity of Hebden Bridge would increase so largely that he would at no distant date have to ask Councillor Hartley to open a new wing. Mr. Atkinson, Superintending engineer, also spoke, and asked those present to become missionaries for the telephone service. He asked them to praise the service when it was good, and if it was not good, to say so without any embroidery. A new C.B. switchboard which is being installed in the post office was equipped to enable demonstration calls to be made, and Mr. Murray (Traffic Superintendent) explained the operating methods which applied to the new system. During the tea which followed much interest was created by a demonstration Continental call from Rotterdam, Holland, to Mr. Pickles, one of the guests who were present.

We have to record with an expression of deepest sympathy the passing of Mrs. Bates, the wife of our District Manager, in a nursing home in Ewell, Surrey. Although of late years, because of illness, Mrs. Bates was unable to take any active part in social functions, it was known that she still took a close and personal interest in all matters connected with the telephone staff, and the staff feel that they have lost a sincere friend. The interment was conducted at Ewell and floral tributes of respect and affection were forwarded from the Leeds Exchange and the District Office staffs, and also from the staff of the Bristol District, where Mr. Bates had been stationed before coming to Leeds.

LIVERPOOL NOTES.

AN interesting function took place at the end of May at the Orrell Park Sports Pavilion, Liverpool, in connexion with the leaving, on promotion, of Messrs. Harding and Duxbury. A social evening was spent at which many of the clerical and traffic staff were present. Although perhaps the weather was more conducive to outdoor than indoor amusement everyone thoroughly enjoyed the singing of Miss G. Jones, of the Engineering Branch, and the dancing did not lack energy. During a break for refreshments, admirably served by the Ladies' Committee, the opportunity was taken to present each of the guests of the evening with a parting gift from their colleagues. This was done by Mr. Gauntlett, the District Manager, in a few well-chosen words. There was also a gift for their respective wives. Messrs. Harding and Duxbury thanked their colleagues for their gifts and their good wishes and both remarked that it was a considerable wrench for them to leave a district where they had spent the major part of their lives but they hoped they would be as happy in their new surroundings both so far as colleagues and environment were concerned as those they were leaving.

An event of interest took place in Liverpool on Whit-Monday. Chicago, U.S.A., have built a Temple of Commerce for the Corn Market and the President of the Liverpool Corn Trade Association was invited to participate in the opening ceremony by wire. This he did by pressing a key on a special circuit in the Liverpool Corn Exchange provided by the Western Union Telegraph Co., which had the effect of throwing on a screen in the Chicago Temple of Commerce the words "Greetings from Liverpool Corn Exchange." Simultaneously a telephone call from the Liverpool Corn Exchange was effected to the Chicago building and the President of the Liverpool Corn Association, Mr. Alex. Slater, junr., and several of Liverpool's civic and commercial leaders had conversation with Mr. John A. Bunnell, the President of the Chicago Board of Trade and others.

At the conclusion of the opening speech a great burst of cheering by the Chicago gathering was heard in Liverpool.

Considerable satisfaction was expressed at the very successful results and the Post Office officials were complimented on the arrangements made for the ceremony.

On Wednesday, June 11, the Liverpool Post Office Golfing Society again met in friendly rivalry their doughty opponents, the Manchester staff. The meeting was at Warren Hill Golf Course, Warrington. On this occasion the honours went to Manchester, who won the greater number of games. This is, perhaps, as it should be, as Liverpool won last year.

Most of the games were keenly contested and everyone voted it was a most enjoyable meeting.

These interchanges of social meeting are all to the good of the service where all meet on common ground and one gets to know the other fellow outside officialdom. Long may they continue.

A Birkenhead telephonist, Miss Dorothy Mather, has been selected from 50 candidates to represent the "Spirit of Progress" at the Manchester-Liverpool railway centenary celebrations at Wavertree in September. It is one of the only two speaking parts for women in a pageant of 4,000 players.

MISS D. MATHER.

She will wear an English sports costume of modern design and lead an international group against landed proprietors, tradesmen, and others who opposed the introduction of the steam engine. In a scene demonstrating how each change of transport disturbed the settled mode of living and affected recreation she will harangue the "stagnationists."

Miss Mather has had both footlight and microphone experience as an amateur.

She is delighted with the distinction of having secured one of the only two speaking parts for women, and hopes to play her role well, as she is in entire sympathy with it.

LONDON ENGINEERING DISTRICT NOTES.

AN interesting function took place on May 30 last in the Refreshment Room, Denman Street, under the Chairmanship of Mr. Gomersall, when we bade farewell to our old friend, Mr. C. H. Rodway. There was a large attendance from all branches and sections of the District. In his opening remarks the Chairman recalled his long and happy association with a valued servant of the Department. Tributes to his sterling qualities, kindness of heart, and capacity for hard work, were paid by Mr. Hart, Captain Hines, Mr. Freeman and several other colleagues, and his ever-ready willingness to give others the benefit of his wide experience was particularly emphasised. The Chairman then made the presentation, consisting of an up-to-date wireless set and loudspeaker, and a cheque for the purchase of an arm-chair. In felicitous terms Mr. Gomersall expressed the kindly feelings of the whole staff to Mr. Rodway, and expressed the hope that he would have many years to spend in his retirement. Mr. Rodway excelled himself in returning thanks for the gifts, and with a touch of humour recalled the many lessons he had learnt in the Engineering Department. There could be no mistaking the warmth of the ovation that was given to Mr. Rodway at the conclusion of the meeting.

Haddocks' Eyes.

I THINK it probable that the White Knight was an income-tax official, for, despite his mild, blue eye and a kindly smile that lit up his foolish face, he put the Aged, Aged man through a severe examination as to his ways and means. He succeeded, no doubt, in concealing his true occupation from Alice, because he makes it appear that while the old man was talking he was thinking out schemes for dyeing whiskers, living on batter and preserving the Menai Bridge from rust. But all the time he was evidently making mental notes as to the Aged Man's occupation and profits and by his rigorous methods he secured not only facts but figures. One hopes that the old fellow had been honest in making his last return.

The Aged, Aged Man was surprisingly versatile and was a cunning craftsman. Who else but a poor man would—

" . . . . hunt for haddocks' eyes
Among the heather bright,
And work them into waistcoat-buttons,
In the silent night.
And these I do not sell for gold
Or coin of silver shine
But for a copper half-penny,
And that will purchase nine."

One could almost have furnished two waistcoats for a copper half-penny—no wonder he "seemed distracted with his woe, and rocked his body to and fro." It sound like a fresh version of the "Song of the Shirt" or another facet of the conditions under which match-boxes used to be made.

The patience of the very poor is amazing, and can only be understood by remembering that they cannot afford to be otherwise. Their ingenuity also in fashioning use out of the seemingly unusable is remarkable. Have you ever been to a jumble-sale? I have—there were no bids so I was returned—and some of the things I saw there were so awful that I marvelled—at the patience and ingenuity of the poor and at the impracticable optimism of the donors. One imagines that the original owners must have said: "There is a soiled, worn and useless article; it has been lumbering up my place for years. I really must—no, I'll send it to the jumble-sale. Some poor soul will be glad of it." And by the look of it the said soul would need to be very, very poor to be even the slightest bit glad. Framed texts, old dresses, battered books, derelict shoes, 1890 hats, bronchial bellows, rackets minus the trellis-work, bipedal chairs with lumbagic backs, whatnots and what not—but it all goes, somewhere. Truly, oh *so* truly, has it been said, "It is more blessed to give than to receive"; but the man who lives by haddocks' eyes cannot afford to be a vegetarian.

PERCY FLAGE.

"The Honourable Banana."

(From "*The St. Helen's Reporter.*)

A Chinese schoolboy recently wrote the following essay on the banana. His facts appear to be indisputable! "The banana are great remarkable fruit. He are constructed on the same architectural style as the honourable saugage. Difference being skin of saugage are habitually consumed, while it are not adviceable to eat rapping of banana. Perhaps are also intrissting *the following differences between the two objects:* Banana are held aloft while consuming; saugage usually left in reclining position. Banana are first green in culler, then gradual turn yellowish. Saugage start out with indeffinit culler (resemble terrier cotta) and retain same hue indeffinitely. Saugage depend for creation upon human being or stuffing machine, while banana are pristine product of honourable mother nature. Both article resemble the other in that neither have pit or colonel of any kind. In case of saugage both conclusions are attached to other saugages; honourable banana on opposite hand are joined on one end to stem; other termination are intirely loose.

"And finally banana are strictly member of vegitable Kingdom, while affiliation of saugage is often undecided."

Courtesy, Accuracy and Speed.

This triple maxim of the past
Proud watchword of the L.T.S.—
Some latent virtue doth possess
Where'er our lot in life is cast.

Make courtesy your constant aim,
Howe'er beset by verbal strife—
'Twill serve to oil the wheels of life
And earn for you an envied name.

Be accurate—and none will then
Have cause to doubt your slightest word;
But everything by you averred
Will be as Gospel unto men.

Then practise speed. To those distressed
Be swift to lend a helping hand
To sympathise, and understand
So shall your path through life be blest.

C. A. S.

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.1.

CORRESPONDENCE.

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

SIR,—Lovers of the beautiful will not be envious of "Percy Flage" in his possession of the pipe-rack, "a work of art, which consists of seven heads—monks' heads, to judge by the cowls." He says "the faces are wickedly ugly, and are stated to represent the Seven Deadly Sins."

I would not dare say that the faces are those of the Seven Bishops, the Seven Sleepers, the Seven Wise Men of Greece, or the Seven Champions of Christendom; but the heads certainly do not represent monks' heads, as monks are not wickedly ugly of countenance, any more than supervisors are wickedly ugly, and those monks who bear a cowl—not all do—do not wear that garment *on the head*.

There are numbers of monks in England, and despite their severe mode of life, their looks do not suffer in comparison with their peers of the cultured classes. *Some are actually among the handsomest of men*; and I have in mind one—the titular Abbot of an ancient Scots foundation—a graduate of Oxford, and a noted author and journalist, who looks what he is in worldly title—a distinguished Scottish Baronet of long and noble lineage.

The Seven Deadly Sins are Capital Vices, in that they are the sources of many other grievous sins; and I hope Camou Flage does not find a resemblance to Percy, in the face of the leader on the left.

The Capital Sins are named in one of to day's best sellers—a little booklet published by Burns, Oates & Washbourne; but therein one may also find information regarding the beautiful attributes—the principal Virtues, the Seven Gifts, the Eight Beatitudes—the knowledge of which might have an excellent effect on one's philosophy of life and on one's writings.

The title is "A Catechism of Christian Doctrine," and the price is 2*d.* net.

June 18. FRA ANGELICO.

FOR OUR ADVERTISERS.

Australia, Melbourne, Postmaster-General's Department. July 8. Supply of telephonists' telephones (Ref. B.X. 6352). Also, same Department, Aug. 19. Supply and delivery of telephone jacks (Ref. B.X. 6477). Victorian Railway Commission. July 30. Supply of renewals for caustic soda primary cells (contract No. 43701) (Ref. B.X. 6441). Radio Research, Special Report No. 9 (Department of Scientific and Industrial Research, published by H.M. Stationery Office, price 5*s.* net), reviews the design of radio-receiver amplifiers and includes a general bibliographique of the literature of the subject from 1916 to April 1929. The work has been prepared at the National Physical Laboratory on behalf of the Radio Research Board. The New Zealand Trade Commissioner at Wellington, in his reports, remarks that "British radio manufacturers do not appear to have been very successful in the Dominion, although the trade has grown considerably in the last two or three years." J. J. T.

WESTERN DISTRICT NOTES.

Rural Automatic Exchanges. Travellers by road and holiday visitors to rural areas will probably notice, sometimes alongside the open road, and sometimes in a small village or even hamlet, a telephone kiosk in front or by the side of a small brick or stone structure about the size of, and resembling in outward appearance, a private garage. A peep inside the building would disclose the latest thing in rural telephone practice, the R.A.X. (rural automatic exchange).

Within the last year a considerable number of this type of exchange has come into being, and there can be no doubt that they have considerable advantages from the subscriber's and telephoning public's point of view. They afford the best possible grade of service for subscribers during both *day and night, and the kiosks (having pre-payment, multi-coin boxes) provide* facilities which would not, in other circumstances, be available.

In Devon and Cornwall about a score of these tiny automatic exchanges are either in service or in course of construction, so when visitors *from the cities and towns seek their annual repose in quiet country farmsteads* let them not be surprised if, after a two-mile walk from the nearest railway station the first thing that meets their gaze on entering by the low doorway is an up-to-date telephone instrument complete with dial.

It is highly probable that the penetration of the most modern type of telephone equipment into rural areas will in time produce an outlook in the minds of the inhabitants that will induce them to feel the need for equally modern lighting, drainage and water systems, as conspicuous at present by their absence. If this prove to be the trend of events, then R.A.X.'s will be able to claim to their credit far more than the rendering of their own particular service.

The following is a letter received from a farmer in one of the remote parts of Cornwall when his telephone was out of order:

"Dear Sir,

"Our 'phone is dead for last 9 days. I quite understand it has been a gale and will put up with it. But this is the third week since I paid up last.

"The last time a young chap came, he put right in three minutes.

"Two chaps came on Wednesday last left said nothing came in my front gate and left it open, in came my pigs and did considerable damage.

"I suppose it is the same with you as it is with me.

"My workman been with me 28 years—he is Bill Brewer and I am Peter Gurney going on for 80 years old. I can't well do without the 'phone.

"Your attention will oblige

Yours faithfully,

P. G.

The famous Bath and West and Southern Counties Agricultural Show was held this year at Torquay and was visited by H.R.H. *Prince of Wales*, who arrived by air, landing at Haldon Aerodrome (between Exeter and Torquay).

The show was provided with telephone facilities in the form of kiosks, which proved to be much appreciated by those attending the show, the kiosks being continually in use. The load on the Torquay Exchange on the second day of the show was the heaviest since the installation of the automatic plant a few years ago, considerable use being made of the trunk lines.

A short time ago some motorists apparently spending their holidays by touring "Glorious Devon" decided to try conclusions with one of our telephone poles. We have not heard what happened to the motor exactly, but the *Hartland Exchange, in the north-west corner of Devon*, was put out of action for 3½ hours.

Miss N. Frood, Writing Assistant in the Registry of the District Manager's Office, resigned after 7 years' service, and was presented by the staff with a handsome oak clock on the occasion of her marriage. Miss Frood was originally at Plymouth, being transferred to Exeter on the formation of the Western District in 1925.

F. J. F.

SECRETARY'S OFFICE GOLFING SOCIETY.

THE annual Spring Meeting of this Society was held on May 30 on the course of the South Herts Golf Club, at which 20 members competed. The result of the Medal and Bogey rounds, played simultaneously in the morning, was a tie at 80 net for the Medal round by Messrs. De G. Gavey and W. H. Smith, the latter also winning the Bogey Competition with 3 down. A spin of the coin to decide the winner of the Medal round for the Captain's prize resulted in favour of Mr. Smith, the Bogey prize going to Mr. Gavey.

The Bogey Foursomes in the afternoon were played under very moist conditions, practically all competitors being wet through. As a result only two of the matches were completed, the winners being Messrs. A. Wakely and H. H. Kilby with 6 down on Bogey.

A BRIEF CHRONOLOGY FOR STUDENTS OF TELEGRAPHS, TELEPHONES AND POSTS.

BY HARRY G. SELLARS.

[*These dates should follow the items for July*, 1897, *on page* 163, *and precede those for* 1899 *on the same page.*]

1897, August ... Popoff established wireless communication between a ship aground 47 kilometres from the mainland and the ice-breaking ship *Ermack*. The installation worked well through snowstorms and bad weather.

Popoff, Ribkine and Troitsky introduced a telephone into a telegraph circuit and found that the signals could be read. Popoff thereupon removed the relay *and automatic decoherer from his wireless installation.*)

Automatic Wheatstone working introduced on the telegraph line between Odessa and Teheran.

Writing, other than the address, permitted on the face of postcards.

International Postal Union, in Washington, dealt with payment for transit by land and sea.

1897, Oct. 1 ... Scale of charges for connexions with telephone exchanges made £8 to £14, instead of £8 to £10.

Telegrams delivered free up to a distance of three miles from delivery office. For places beyond that distance, 3*d.* a mile charged from the delivery office door. Delivery free at all hours in the metropolitan district.

Automatic telephone system introduced into the United Kingdom by Strowger and exhibited at Winchester House, Old Broad Street, London.

Automatic telephone installation employing primary and secondary switches, and introducing the principle of grouping and trunking, produced by Keith and the brothers Erikson and opened for service at Augusta, California.

Railway letter limit of weight raised to 4 oz.

Regular delivery of letters given to every house in the kingdom.

Imperial Penny Postage scheme introduced.

Contractors commenced using motor vans for conveyance of mails.

Tweedmouth revision of Post Office wages.

1897, Dec. 31 ... Telephone licence for 14 years granted to States of Guernsey.

1898, Jan. 11 ... W. P. Thompson (of Strowger's) patented a dial sending apparatus for automatic telephone working.

1898, Jan. 31 ... New switchboard with accommodation for 150 trunk telephone lines brought into use in the Cable Room, G.P.O. (West), London.

1898, March ... Emile Baudot and M. Montoriol installed the Baudot multiplex telegraph in the Cable Room, General Post Office, London, for communication with Paris.

1898, April 1 ... Long debate in the House of Commons on the question of municipal telephone licences.

1898, May 1 ... Limit of compensation for an Inland registered packet raised to £120. Tariff ranging from 2*d.* for £5 to 1*s.* 2*d.* for £120.

Ballycastle and Rathlin Island connected by a wireless installation.

East Goodwin lightship connected with the shore by wireless telegraphy.

Wireless communication established between Flatholm Island and Lavernock Point.

1898, May 9 ... Select Committee appointed to consider telephone questions and to examine the relative evidence taken in 1895.

1898, May 11 ... Lodge's wireless telegraph with Muirhead automatic *transmitter and siphon recorder exhibited at a Royal* Society conversazione.

1898, May 17 ... Select Committee on Telephones met, Mr. Hanbury presiding.

1898, June 28 ... Telephone exchange opened at St. Peter Port, Guernsey.

Common battery system introduced in telephone exchanges.

1898, July ... Wireless telegrams sent from a vessel at Kingstown Regatta to the Dublin *Daily Express* by Marconi system.

1898, Aug. 2 ... Government authorised to raise further £1,000,000 for trunk telephone wire purposes.

Wireless telegraphic communication established between Osborne House, Isle of Wight and the royal yacht *Osborne*.

Select Committee on Telephones reported and recommended that the Post Office should establish a telephone service.

Rovelli constructed an iron filing detector for wireless communication.
Tissot, of France, with a detector of steel filings, exchanged wireless signals between Ouessant and I'Ile Vierge (42 kilometres).

1898, Oct. 1 ... Minimum charge for Telegraph Money Orders reduced to 6*d.* and compulsory repetition abolished.
Konrad Gulstad devised a vibrating relay for high-speed telegraphy.
(E. Lack applied the Gulstad vibrating relay principle to the Post Office standard relay.
Using a Gulstad relay adjusted to give a standard rate of vibration, Bille dispensed with correcting mechanism and special segments on multiplex distributors.)
Slingo's Telegraphists' School of Science closed.

1898, Nov. 1 ... Telegraph Money Order service instituted with Germany with fees fixed at 2*d.* in excess of ordinary foreign money orders, in addition to the charges for the telegram.
Sir William Crookes, an authority on electrical matters, became President of the British Association.
Colonial Penny Postage established.
Customs charges on parcels going abroad paid by the sender.
Official redirection of letters undertaken after 12 months for a fee of one guinea a year.

1899, Jan. 1 ... Great Britain accepted the Postal Union Insurance Agreement. Letters for certain foreign countries insurable up to £120, with fees 5*d.* for the first £12 and 2½*d.* for each additional £12, registration being included.
Limit of compensation in the British Office for parcels to colonies and foreign countries (except France and Spain) fixed at £1.

1899, Feb. 12 ... Express delivery of letters on Sundays introduced in London.
Rowland devised a multiplex telegraph system with duplex balance, synchronous motors for distributors, typewriter keyboard perforators and page printing receivers.
Donald Murray constructed a typewriter keyboard tape perforator punching a five-unit code. His receiving perforator punched tape similar to that used for transmitting, and this was run through a printer of typewriter design.
(Western Electric Company produced (*a*) a five-unit keyboard perforator for use with their multiplex telegraph system, (*b*) a typewriter keyboard, typewheel printing telegraph for short lines, and (*c*) a telegraph printer in which the whole of the type unit moves across the page as printing proceeds.
Dr. Louis M. Potts, of U.S.A., devised a perforated page transmitting multiplex telegraph system, and, in his telegraph receiver, arranged mechanically for simultaneous printing and re-perforating.
Meray Horvath invented a method for switching the perforator out when only the printer is required in a combined Baudot printer-perforator telegraph system.
T. B. Caswell, Sacco and Giacomini devised telegraph type printers.
Pollak and Virag introduced a telegraph system with keyboard perforator and automatic transmitter. The perforator tape had six rows of holes of different sizes and in different positions which passed to line three different current strengths of each polarity. The received currents actuated a small mirror which reflected a beam of light producing written words on a photographic paper tape which was afterwards developed and fixed.
Siemens produced an automatic, duplex, five-unit, printing telegraph, with keyboard perforators.
Forbes, a retired Scottish schoolmaster, constructed a five-unit printing telegraph apparatus.
H. H. Harrison devised a five-unit printing telegraph on which Baudot or Murray perforated slip can be used.
Automatic Telephone Manufacturing Company constructed a five-key keyboard, typewheel printing, telegraph with a distributor.
Dr. L. M. Potts, S. R. Smith, W. G. Campbell and Dubreuil Freres devised means of locking telegraph keyboards when a signal is set up, so that transmission is assured.
McNab devised a form of automatic telegraph distributor.
A. F. Dixon devised a means of providing a start-stop system of telegraphy between a central office and a number of small offices, whereby distributors at the small offices were dispensed with.)
Kirk Himrod invented an electrical translator for use in connexion with typewheel telegraph printing apparatus. To store telegraph signals, Himrod used two sets of relays which were connected to line alternately. Siemens and Halske adopted this method in their automatic high speed printing telegraph.
(P. Rainey used two groups of storing relays on single channel telegraph circuits to obviate loss of line time.
Ehrhardt, of Siemens and Halske, indicated a means of using condensers for storing telegraph letter signals.
Rainey invented a rotary repeater for multiplex telegraph installations.
J. Hume Bell introduced a rotary repeater for quadruple multiplex telegraph circuits.
Benjamin and Pfannenstiehl designed a transmitter for the five-unit telegraph code.
Geneva introduced mechanism for producing intermittent rotation in one direction, which has been used for paper feeding on telegraph tape printers.)

1899, March ... Murray automatic typeprinting telegraph exhibited in New York.

1899, Mar. 6 ... House of Commons agreed that it was expedient to authorise expenditure of two million pounds for the improvement of telephonic communication.

1899, Mar. 9 ... Government Telephone Bill read for the first time in the House of Commons.

1899, Mar. 27 ... South Foreland, Kent, communicated with Boulogne-sur-Mer by wireless telegraphy.
85 miles of sea covered successfully by wireless telegraphy during naval manœuvres.
Wireless telegraphy first used for military purposes in the South African war.

1899, April ... Report of Royal Commission appointed in 1896 to discuss All-British Canada-Australia cable made public.

1899, May 8 ... Treasury minute laid down principles on which telephone licences could be granted to municipalities, and announced that a Post Office system would be established in London. Loan of £2,000,000 authorised for telephone purposes of the Postmaster-General.
Erskine-Murray made experiments in long-wave directional wireless transmission.
(H. H. Beverage, of U.S.A., devised an earthed aerial for directional wireless reception.
Feddersen used an aerial consisting of a vertical jet of water expelled through a metal pipe wound spirally.)
Blondel, Ferrié, Jegou and Meunier, of France, devised various kinds of wireless detectors. Ferrié also introduced a wave-meter. Carpentier and Ferrié invented a frequency-meter.
H.M.S. *Egeria* surveyed the Pacific cable route between Vancouver and Fanning Island.

1899, July 4 ... Joseph Chamberlain, at a conference held at the Treasury, said: "The Home Government must insist that the route the whole way between this country and Australia should be absolutely 'All-British.'"
Volta's original electrical apparatus destroyed by fire at Como.

1899, July 17 ... H. Bremer patented the incorporation of arc lamp carbon with the fluorides of magnesium, barium, calcium, &c., for the purpose of varying the tint of the light and of increasing the luminous efficiency.

1899, Aug. 6 ... Robert Wilhelm Bunsen died.

1899, Aug. 9 ... Government Telephone Bill much amended received Royal Assent.

1899, Sept. 26 ... Conditions laid down as to number of subscribers justifying intercommunication, and the levying of terminal fees.
Hughes duplex telegraph installed between London and Frankfurt-on-Main, Emden and Magdeburg.
American Bell Telephone Company merged with the American Telephone and Telegraph Company.
British Post Office purchased a number of Creed's keyboard perforators.
Post Office commenced laying an extensive underground system of telephone lines in London.

1899, Dec. ... Dr. Michael Idvorsky Pupin, of New York, patented a "loading coil" for telephone circuits on which he had been experimenting since 1895.
Uniform rates of postage for parcels to certain British Colonies introduced. Tariff from 1*s.* for 3 lb. to 3*s.* for 11 lb.
Rates of charges for some foreign countries made on similar lines and in some cases reduced.
Telegraph Money Order service extended to Austria Hungary, Belgium, Holland, Luxemburg, Norway, Roumania and Switzerland.

[*Here follow the items for* 1899 *and* 1900 *on page* 163.]

(*To be continued.*)

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CONTENTS.

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TELEGRAPH AND TELEPHONE MEN AND WOMEN.

LXXVII.

MR. D. J. BARNES.

THE subject of our sketch, Mr. D. J. Barnes, first made a name for himself in the telephone world at Brighton, in those stirring days when the Corporation ran a telephone exchange system of their own in opposition to that of the National Telephone Company. This system was purchased by the Post Office in 1907, when Mr. Barnes entered the service of the State with the rank of Assistant Superintendent. Since the acquisition of the National Company's system by the Post Office on Dec. 31, 1911, Mr. Barnes has occupied the position of District Manager of Telephones in different parts of the country, North, South and Midland. Beginning at Bradford in 1912, he was transferred to Blackburn in 1914, to Guildford in 1915, and to York in 1920. At York he stayed over eight years, and during his period of management the York and Lincoln districts were amalgamated, and the number of telephones in the combined districts rose from 13,000 to over 22,000.

Mr. Barnes was transferred in 1928 to the more important district of Nottingham, where he is still in charge. He is a genial personality, fighting in recent years against bad health, but yet ever cheerful and possessed of a vein of quick humour which eases the strain of official life.

The Telegraph and Telephone Journal.

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

Editing and Organising Committee - - - Lieut.-Col. A. A. JAYNE. J. STUART JONES. W. D. SHARP. W. H. U. NAPIER. J. W. WISSENDEN.

Managing Editor - - W. H. GUNSTON.

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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ECONOMIC RESEARCH.

WE gather from a report in a provincial journal that in one of a series of pamphlets on "Progress and Plenty," issued by the Pollak Foundation for Economic Research of Newton, Massachusetts, Mr. Robert Caldwell, of New York, delivers himself as follows:—

> "Until Europe installs modern automatic dial telephones she might as well give up the fight. The odds against her are too great. In New York I commonly get a telephone connexion in one-fourth of a minute. In Europe half an hour is not uncommon, and then it is all but impossible to hear on their ancient devices in use. America will take any world trade she goes after against Europe while Europe permits herself to be so handicapped."

This, of course, reads more like the outpouring of some free lance journalist of the more irresponsible sort than the considered opinion of the author of a paper issued in the interests of economic research. We do not know Mr. Cardwell, nor have we any information of the standing of the Pollak Foundation. We can only deduce from this specimen that its pamphlets on Progress and Plenty are plenteous in misstatement and progressive in erroneous deduction. The author's remarks on European telephone service are those of a traveller who, still nursing a grievance born of slow telephone service endured in some backward European town, returns home to compare its conditions with those of New York. His observations on the development of the automatic system are equally dispassionate and well informed. His attitude is precisely that of the guileless person who, having found the dial system working in some foreign town, writes to the papers saying "Why don't we have the automatic telephone in England?" We know him of old, but we had never hitherto regarded him in the light of an economic researcher.

From the first sentence we have quoted the uninstructed reader would imagine there were few, if any, automatic telephones in Europe, whilst in America they were, if not universal, at least in a majority. The fact is that while in both continents the automatic system is well established or in process of introduction in most of the principal cities, the manual system is nevertheless still largely predominant. In the United States 26% of the telephones owned by the Bell Company's system are working on the dial principle. In the British Post Office system the percentage is over 22. We cannot give the percentage for France, Germany and other leading European States: we only know that the same process of change is going on.

If Mr. Caldwell's premises are wrong, what becomes of his deduction. What reliance is to be placed in his statement that he obtains connexion in New York in a quarter of a minute? The time for obtaining a subscriber in London, taking the average over long junction lines and short ones, is 38.5 seconds. This is a recorded average. We know that the New York service is most efficient, but we do not know if the figure quoted is a conjecture or the impression of a slipshod mind. Mr. Caldwell may even be comparing a New York local call with a European trunk call.

Our apology for referring at some length to an unimportant document is that it affords us an opportunity of rebutting a frequently expressed erroneous impression of the development of automatic telephony in this country.

HIC ET UBIQUE.

WE have received a copy of an attractively printed booklet which Messrs. Joseph Lucas, Ltd., of Birmingham, have issued to their staff. It is entitled, "Helping the Telephone to fulfil its Function." It is correctly described as "issued in the interests of everybody," and lays down some sound rules for the guidance of the general telephone user. It pours proper scorn on what it describes as the "ping pong" method of question and reply—the "Hello." "Hello." "Yes." "Who are you?" "Whom do you want?" cycle of enquiries. Some good mottoes appear in the book such as "Don't make a mystery of your identity." "Visualise the person at the other end of the line." "Help to make telephoning a pleasure," and so on. It is certainly an effort to be recommended for imitation.

We borrow from our "wireless" contemporary, *The Signal*, which in turn has lifted it from a New Zealand paper, the following:—

> A story is told of a member of a certain organisation who forgot to pay his subscriptions thereto, and one day in the forest whilst on leave a terrible storm arose. An accommodating hollow log which just fitted his body almost proved his undoing, for after many hours' rain the swollen log held him fast so that he could not get out and he was thus faced with death by starvation. In a state of panic all the omissions and commissions of his past life flashed before his mind when suddenly he remembered he had not paid his association subscriptions. This made him feel so small that he was able to release himself and thus save his life.

We are not sure, however, that this is not an argument in favour of dilatory payment of one's subscriptions.

"New York City," says *The World To-day*, "now has as many telephones as all Great Britain, and Chicago has as many as France." Both these statements are incorrect. The first is 75,000 out.

A genial contemporary, referring to the British Post Office, says: "Details as to the numbers of new subscribers are readily proclaimed. No particulars as to the number giving up lines would seem to be available.

If the suggestion is that published figures of the increase of telephone stations take no account of "ceased subscribers," it is quite erroneous. The figures represent net growth. There is nothing of particular interest to the public in the number of subscribers who discontinue owing to death, failure or removal to other addresses. This last factor accounts for a considerable number of apparent "ceasements." Our contemporary would probably be surprised to learn that while in 6 months recently in New York 120,000 new telephones were connected, no less than 90,000 were disconnected—most of them due to removals.

The following description from the *Manchester Guardian* of how the Test Matches are "watched" at Manchester will be found of more than passing interest:—

Hundreds of Manchester men were able to "watch" the Test Match to-day on the Flat-iron Market by Blackfriars Street. The scoreboard erected there by the "Johnnie Walker" whisky company is a miracle of ingenuity. Against a background of green, with a white oval ring painted round it, and two wickets in the middle, a white ball suspended by wires moves down the "pitch" as the bowler delivers it as far as a coloured tab which represents the batsman, and thence over the "field" in the direction of his hit. If a run is scored, the coloured tabs at either end of the pitch change places. The batsmen's scores are indicated in the usual way, and other tables show who is bowling and what fieldsman stops each hit.

The secret of the machine is continuous communication by telephone with observers at Trent Bridge. Five men are needed to work it. The resulting spectacle is extraordinarily exciting. The crowd at the Flat-iron Market cheered Chapman's lusty drives and Hobbs's discreet cuts as enthusiastically as if they had been at the ringside. With some knowledge of the batsmen and bowlers engaged it is possible to envisage the kind of ball bowled and the stroke made at it. But, of course, one cannot guess anything of the quality of the play. The interest is purely statistical, though the statistics are shown in visual form, like diagrams.

One point which the machine brought home was the amount of time spent between one over and the next.

For the sake of variety we hail the new caption brought forth by the *Evening World* apropos of the introduction of automatic working at Bristol. Instead of the usual "Hullo Girls Doomed" we get "Wrong Numbers Doomed!" By an effort of genius the inventor of the phrase manages to combine the journalists' "wrong number" complex with the prevailing idea of someone or something being doomed when an automatic exchange is opened.

We clip the following testimonial from the *Essex Weekly News*:—

SIR, When we read so much abuse of the Post Office, it may be of interest to your readers to know how smart the telephone authorities are to create new business.

We were surprised to have a representative call and state that a check had been kept on our two telephone lines at Harold Wood Ingrebourne No.'s 84 85, and it was found that 14 customers had tried to get through but the line was engaged. Not only did they give the number, but they had got the names of the callers, so there could be no shadow of doubt.

Result:—We were so impressed and immediately agreed to have an extra line, making 3, and really we cannot help but feel that it was very smart on the part of the telephone authorities in showing that they are looking after their job, and we personally are glad, as otherwise we should not have known our need of another line.—Yours faithfully,

For James & Geo. H. Matthews, Ltd.,
GEO. H. MATTHEWS, Director.

Harold Wood, July 1.

Contract Officers who have not already seen it may like to digest the following paragraph from the *Daily Express*:—

This is the story of a voice—a voice called Extension 123.

Every day hundreds of people ring up City 2040 and ask for Extension 123 in tones ranging from the more or less calm to the frankly agitated.

"Yes, *sir*?" or "Yes, *madam*?" says Extension 123.

"I want to sell my piano quickly," answers the caller, or else, "My cook has left me in the lurch," or else, "The landlord has given me notice and I must find another flat at once."

Promptly and soothingly Extension 123—who, with her colleagues, comprises the Small-ad. Department of the *Evening Standard*—assures the callers than an advertisement announcing their requirements will appear in that day's paper. If they desire it, Extension 123 drafts the advertisement herself. Then, having read it over to them, she sends it to the printer. . . .

The *Evening Standard* is the only newspaper that will accept telephoned Small-ads. up to 1.30 p.m. *for publication on the same day.*

Keep City 2040 (Extension 123) in mind, and next time the parlourmaid gives notice you will be able to say with baffling nonchalance, "Very well, Jenkins. Kindly pass the telephone."

The new Central Battery Telephone Exchange equipment at Hastings, Sussex, was successfully brought into operation on Monday, July 14. This exchange, which was manufactured and installed by Standard Telephones and Cables, Ltd., has been designed to accommodate 3,600 lines initially, with an ultimate capacity of 7,400 lines.

THE TELEPHONE AS LOVE INDEX.

BY OSSIP DYMOW.

(*A feuilleton in a Swiss contemporary.*)

IN the street I met the young daughter of my old friend. "Why this sad countenance?" I asked. "He loves me no longer," she answered, with an expression which a film star might have envied.

"Why do you think that?"

"He is no longer interested in me. He doesn't even find time to telephone to me. It's all quite clear."

I could not counter this last argument. Not to telephone her! Well, well!

In the Spring I met her again. Her eighteen-year-old eyes shone, her movements were gracious, an unconscious smile played about her lips. "All is right," she called out. "I am happy. He loves me—Oh, how he loves me! At present he is not in Berlin he is spending his holidays at Buchholz."

"Oh, in Buchholz?"

"It appears he was ill last winter and therefore could not telephone me. But he rings me up from Buchholz every morning as soon as I open my eyes. Often he telephones me twice—and three times on Sundays!"

"That is very nice of him. And whereabouts is this Buchholz?"

"Somewhere far away in the South—in Baden, I think. But I know one thing for certain—a telephone call from there costs three shillings for three minutes! On Saturday we talked for 23 minutes! On Thursday for 18. And so it is every day. Oh, how he loves me!"

One evening in the autumn I saw her again in the entrance of a cinema. She was accompanied by a good-looking youth. I whispered to her: "He is certainly a charming young man. I'm very pleased."

She answered disdainfully: "But that's Karl—another one. The one I spoke to you about has turned out quite a shameless deceiver."

"How is that?"

"It appears that he was not at the Buchholz I imagined, but at a different one altogether. It was quite close to Berlin, not in the South at all, and a telephone call from there only costs three-halfpence! A fine heroic deed to telephone for a few pence! And twice on Sundays! Mean wretch!" And she added, in soft tones: "Karl has promised to ring me up from Paris!"

W. H. G.

THE DEVELOPMENT OF THE ADVISORY SIDE OF CONTRACT WORK.

By "SHERWOOD."

WITH the adoption of the automatic system there are certain aspects of contract work which take on an added importance. I propose to deal mainly with the holding time on calls and its possible reduction by the scientific arrangement of medium size P.B.X. installations, to the mutual advantage of subscribers and the Department. At the present time additions are made to an installation without reference to the possible effect on its general efficiency, and unwieldy arrangements of poor efficiency are bound to result.

If maximum efficiency is to be attained, every P.B.X. installation must be regarded not only as a detached unit of the main exchange, but also as an entity in itself. This fact involves, as a prime consideration, that the general arrangement of the installation should be left with the Department. The first point therefore to be aimed at is to gain the confidence of subscribers and induce them to place the whole of their telephone arrangements in the hands of a specialist.

Let us consider what advantages would accrue to the subscriber in the event of his agreeing to this proposition :—

(*a*) Disposition of the instruments in the most convenient position for answering and operating.

(*b*) Particular exigencies of the subscriber's business, or premises, catered for in the best possible way.

(*c*) Reduction in lost calls and speedier intercommunication.

(*d*) Extended use of parallel extensions, affording an expeditious means of handling enquiries at an alternative point where either point is not constantly staffed.

(*e*) Full data as to subscriber's probable future requirements would enable a comprehensive and flexible scheme to be drafted at the outset and additions made in pre-determined positions.

(*f*) Satisfaction that he was getting the maximum facilities for his expenditure.

Turning to the advantages from the Department's point of view, these may be summarised as :—

(*a*) Reduction in the holding time on calls.

(*b*) Reduction in Busy Tone cases.

(*c*) More accurate data for development purposes.

(*d*) Retention of smaller P.B.X's often made possible by taking full advantage of parallel extension facilities.

(*e*) Position of instruments can be definitely chosen with a view to ease of wiring and allowance made for additions in pre-determined positions.

(*f*) Installations can be graded in efficiency and canvassing prospects.

To explore the subject a little further, it is obvious that the rate of working at any P.B.X. is dependent on the extension points being in the most suitable position for attention. Thus a compact and skilfully arranged scheme will result in much higher efficiency than a haphazard disposition built up to meet the demands of the moment.

The fact that the provision of additional facilities alone will not necessarily solve a subscriber's telephone problems, and that only by instant response to calls can he obtain the full benefits of the service, is one that should be constantly pressed. This point leads to one of the main items in these suggestions, i.e., the reduction of holding time.

As any technician is aware, trunks, or connecting circuits between switches, are graded, i.e., are arranged on a mathematical basis to carry traffic, as near as possible, to the limit of their capacity. The number of switches is also dependent on the maximum traffic requirements during the peak period. The switches used in a normal call are the 1st code, group, and final selectors, together with the director used for routing the call, plus the trunk circuits involved, and possibly a junction with other selectors. On a busy call all this apparatus and associated circuits is taken into use and held for a definite time, during which period its revenue earning capacity is nil. Other subscribers may receive busy-tone at some point in the train owing to the engagement of this apparatus with the resultant loss of remunerative traffic. Such calls form a considerable proportion of the traffic for which provision has to be made in traffic and exchange equipment arrangements.

As the release time of a switch may be reckoned in fractions of a second, every second gained in the answering of exchange calls and the early release of the connexion by subscribers enables more effective calls to be completed with the same amount of equipment. If the answering and holding time can be reduced even by a few seconds on a fairly large proportion of calls, the expansion of exchange equipment to meet traffic growth may be restricted. The subscriber is available to receive more calls and the caller does not get the impression that the system is inadequate owing to receipt of the busy-tone.

Reverting to another point, provided that a large number of P.B.X. renters will state their anticipated requirements, say for 12 months, and this information can be co-ordinated with other relative facts, reliable data could be furnished as to the anticipated demand in the several types of switchboard and enable the stocks to be held at a minimum. Reservation of numbers becoming spare, and which could be used to expand groups for auxiliary working, could also often be made, avoiding a change of number later.

Parallel extensions can often be utilised to avoid the fitting, and consequent expense, of a larger switchboard where further development is unlikely. Their use may enable a switchboard of more convenient size to the subscriber to be retained, thus simplifying the work of the operator with less overhead expenditure to the Department.

Grading of installations might be applied in regard to the contract aspect, using say three categories :—

"A"—Additional facilities urgently necessary: action, persistent canvass.

"B"—Early prospect of additions: action, canvass in ..... months.

"C"—No prospect of early development: action, record, canvass in 12 months.

The adoption of this principle would allow some idea of canvassing prospects in definite areas to be obtained.

I need not enlarge upon the other points as they are obvious and subsidiary to the main suggestion.

The question then arises as to how these suggestions might be carried into effect. It is clear that the primary purpose of the Contract Branch is to obtain stations but a very important fact is, that subscribers look on the branch accepting their order as being the advisory section of the service. Admitting this fact, it is obviously desirable that expert technical advice should be available in that branch. Having established the point that the advisory function should be associated with contracts, and as it is obviously impossible that every officer could possess the peculiar qualification, I submit that much might be done by the appointment of a trained advisory specialist in each D.C.M.'s office, whose duties would be primarily of a consultant nature.

Such an officer would require to have an intimate knowledge of contract work and technical qualifications would obviously be

essential. Opportunities for gaining practical knowledge of P.B.X. layout schemes, wiring of subscriber's premises, various routine tests, traffic, and exchange procedure would be a necessary part of his "specialist" education. A wide knowledge of fixed time, trunk, subscription calls, express, and lesser known services is also desirable, as the type of subscriber with which he is particularly concerned is one to which these services can be of great utility.

The duties which I conceive such an officer would perform would include :—

(1) Visit subscribers, endeavour to gain their confidence and interest them in the points enumerated.

(2) Induce subscribers to consider a reorganisation of their installation where higher efficiency would result, draw up the necessary scheme and give any advice required.

(3) Impress on subscribers the utility of the subsidiary services.

(4) Compile a card index of all installations visited. The cards showing details of subscribers, premises, nature of business, rough sketch of installation, anticipated expansion, whether change of switchboard involved and when, efficiency of installation, grade in canvassing prospects and any other useful information.

(5) When card matures for attention pass to relative section for canvass in the normal way.

(6) Prepare half-yearly returns for development and traffic data.

The card index system would result in a valuable record being gradually compiled, and by periodical visits kept up to date in the main essentials of the type of P.B.X., probable development, efficiency of system and canvassing possibilities.

The subject of advisory work is a wide one, but I believe that its development on the right lines, with the constant application of the "personal interest touch," would remove much of the misconception which exists in the minds of the telephone public and bring about a wider appreciation of the Service and of the amenities it provides.

TELEGRAPHIC MEMORABILIA.

A COPY of the evidence tendered to His Majesty's Royal Commission on the Civil Service on behalf of the Overseas Telegraph Superintending Officers' Association has reached me, for which I would wish to thank the unknown sender. Although this is neither the place nor occasion for a review of such a document, one cannot refrain from recording one's personal and experienced opinion that never yet has the case for the Government Foreign Telegraph Service been better presented.

Judging from comments and an article in the *South African Postal and Telegraph Herald*, entitled "The Humour of Machine Telegraphy," it would appear that the S.A. authorities have also found that the mechanisation of the Telegraph Service is not without its own particular difficulties. However good a machine may be it is no better than the *human* touch, in that it is not infallible, and therefore when the fallibility of the human *touch* of a telegraphist is added to the fallibility of a machine, plus the recognised super-fallibility of overhead lines in tropical or sub-tropical parts of the globe, it is no doubt true that, "by the mere clipping of a dash, the dropping of an impulse, the running of a mark and many other runs, clips and dots, the sale of 1,000 bags of mealies at 12*s*. 6*d*. instead of 14*s*. 6*d*." is more likely than not to bring down the wrath of any distracted merchant. The South African writer is, however, scarcely just to the makers of machine telegraph apparatus when he quotes an experience of "the good old days"—not unknown much nearer home—when, "if a good telegraphist got approximately 50% of the dots and dashes in any one telegram he was quite capable of completing that telegram out of his imagination." Speed is the keynote of successful modern telegraphy, and neither machine nor hand telegraphy can deliver the goods with the necessary celerity and accuracy if conductors are below a reasonable electrical standard. Speed has to be paid for in many ways; on the high roads or in our daily press, where the typographic errors, due to rushing out first editions, are much more evident than they were 30 or 40 years ago. Telegraphy is not, cannot expect to be, immune. The Head Postmaster of Neath, in *St. Martins Magazine*, quotes a case where a telegram reached him as "Dead Postmaster Neath," and our friend S. W. B. assures us all that it is not true and that, like Mark Twain, the rumour of his decease has been very much exaggerated! Telephony? Was it not in a phonogram that "Postmans Park" was recorded in the address of a message for the Continent, instead of "Poste Restante"? *Inter alia*, it should be mentioned, for the information of our South African colleagues, that owing to heavy telegraph traffic the Great Western Railway Company's engineers are installing teleprinters on their London—Swindon lines, each capable of dealing with 60 telegrams per hour.

However, in case it should be thought that the writer has not yet awakened to the strides which telephony has made, is making, and is yet to make, as against the slower progress of an older industry, let me quote the following comparative figures regarding "Telephony versus Telegraphy," from statistics published by the American T. and T. Company :—

Country.	*Telegrams per Head per Year.*	*Telephone Conversations per Head per Year.*
Canada	0.3	241
U.S.A.	1.9	230.7
New Zealand	4.7	209.1
Denmark	0.6	143.5
Japan	0.7	56
Germany	0.5	38.1
Great Britain	1.2	30.6

Companies.—Great Northern Telegraph Co.'s Holding Co., Ltd.,—total dividend for second financial year 20%. Anglo-American Tel. Co.—interim dividend, quarter June 30, 15*s*. per cent. ordinary, less tax. W. Union—quarterly dividend Comm. stock $2 per share. Telephone Construction & Maintenance Co.—interim dividend 2½%. W. T. Henley's Tel. Works Co.—final dividend 12½% ordinary, plus bonus 10%. Total for year 30%. Carried forward £572,630.

Obituaries.—The death of Sir Joseph Ward, ex-Premier of New Zealand, last month was received with the deepest regret in this country, and not least by those in telegraph circles, where, it is recalled, the first job of this statesman was that of a telegraph messenger. Strange to relate, in the same issue of my daily paper's Stop Press containing the brief statement of his passing, there appeared an ordinary cablegram announcing that Sir Joseph was engaged in formulating a scheme for the improvement of the telegraph and telephone services (see below under NEW ZEALAND).

The first mechanic to be associated with the commercial development of wireless telegraphy passed away on June 14 last, in the person of Mr. Jack Cave, in his 58th year. This much respected master instrument maker, whose special knowledge of the technique of glass blowing led to his appointment in 1897 to the personal research staff of Marchese Marconi, was, among other qualities, noted, even in the early days of the coherer, for a very high degree of precision and the general high standard of his work.

ARGENTINA.—The Direccion General de Correos y Telegrafos informs us that the telegraph system at the end of 1929 had reached a line-length of 75,625 miles. 700,000 poles are used to carry this network, and are nearly all made from native-grown trees. During the present year the construction of a large number of new lines is being undertaken, extending to all parts of the country. Telegraph communication with the southern part of the country will be given preference, in order to relieve pressure on the international line, which at present handles most of the southern traffic. A new telegraph line is proposed that will join Bio Bio,

thus reducing the traffic over the international line by 50%. BELGIUM.—The Senate recently passed the Government Bill authorising the setting up of autonomous control of the telegraph and telephone services hitherto administered by the State. CHINA.—The shareholders of the Shanghai Mutual Telephone Co. have agreed to sell their undertaking to the International Telephone and Telegraph Corporation. The company serves about 36,000 subscribers in the settlements. Later news published by the *Electrician* and *The Electrical Review* as we go to press throws some cold water on the scheme by the statement that "The Chinese Telephone Subscribers' Association has warned the I.T. & T. Corpn. that the purchase will result in a boycott." CZECHO-SLOVAKIA.—The Ministry of Posts and Telegraphs is erecting in Prag a building which will be the headquarters of broadcasting in Czecho-Slovakia. The new national broadcasting station, which is under construction near Cesky Brod, east of Prag, will be of 60 120 kw. At first the communication with the Prag studio will be by wireless, but eventually an underground cable will be the permanent arrangement. Tests are to take place early in 1931. About 25% of the country's population utilises the service. 67% of these use crystal sets. EAST AFRICA.—The Portuguese Marconi Co. have petitioned the Minister of Colonies for the installation of a wireless central station at Beira (East Africa), thus making possible direct communication with Lisbon, says Reuter's Agency. GREAT BRITAIN.—At the sixth plenary session of the Colonial Office Conference in London the submarine cable and wireless telegraphy services received special attention. On this occasion it was announced that Imperial and International Communications, Ltd., says *The Electrical Review*, had submitted a comprehensive scheme for the organisation of the cable service throughout the Colonial Empire. The scheme had not yet been considered: before any definite decision could be reached it would have to be referred to the Colonial Governments. It was recommended that the scheme should not be considered piecemeal, but as a whole. On behalf of the Post Office it was stated, continues the *Review*, that after much experience the conclusion had been reached that for long distance services of over 2,000 miles wireless was distinctly cheaper than cables, but certainly not so efficient. With cable services a 24-hours per day service could be kept up, but that was not the case with short-wave wireless. *Broadcasting.*—It is reported by the *Electrician* that as soon as permission is obtained from the Post Office the erection of the Scottish regional broadcasting station will be commenced at Falkirk. When it is completed the stations at Glasgow, Edinburgh and Dundee will close down. It is possible that the Aberdeen transmitter will remain in commission. The third annual report (1929) of the B.B.C. states that the problems in connexion with the provision of a regular Empire broadcasting service have been considered in detail and that a full review—technical, character of programmes, times of same, probable overseas response and cost—was submitted to the Government near the end of last year. Marconi's short-wave station at Chelmsford (G5SW) had done good experimental work in relaying programmes for the benefit of overseas listeners. This should be of great use in the establishment of a 24-hour Empire service. The crux at the moment, so one gathers, is, who shall pay for the service? *I.E.E. Wiring Regulations, Radio-receiving and Valve-amplifying Apparatus.*—A revised supplement to the ninth edition of the I.E.E. Regulations for the Electrical Equipment of Buildings has been issued, and copies may be obtained, free of charge, on application to the Secretary of the I.E.E., Savoy Place, London, W.C. This is in substitution of the corresponding supplement of June, 1928, regarding radio apparatus. GERMANY.—The German State Broadcasting Company has just lost a case in which it claimed copyright for its news services on the ground that *part* of the news had already appeared in the Press. INDIA.—*Broadcasting Advisory Committee.* The personnel of the new Indian Central Broadcasting Advisory Committee was gazetted on June 14. It will consist of the member of the Government of India for Industries and Labour (Sir J. W. Bhore), who will be Chairman, says the *Times*; two officials from that department: two non-official Indian Members of the Legislative Assembly from Bombay and Calcutta respectively; and two non-official Englishmen from the same cities. The duties of the Committee will be to advise the I. and L. Department, which, it will be recalled, has had charge of the broadcasting service since the State purchased it in March of this year. The small sum of about £20,000 has been allocated for working expenses for the year April 1 to Mar. 31, 1931. At the moment there are less than 10,000 licenceholders. IRISH FREE STATE.—*Telegraph Traffic still declining.*—The telegraph traffic still continues to decline, says an official statement. The estimated number of telegrams, excluding Press messages, originating in the I.F.S. last year was 2,069,000, compared with 2,411,000 during the previous year. The expenses of the service had, however, been curtailed considerably. After a full investigation the Department was satisfied that the increased minimum charge imposed in August, 1928, had resulted in a saving in the cost of the service. The volume of traffic, it is added, compares favourably with that in many other countries. ITALY.—The Italian Broadcasting Company, according to *The Electrical Review*, has caused to be erected near Rome what is probably at the moment a "last-word" short-wave station, which will enable transmissions to be heard in the Italian Colonies and in overseas countries which are outside the range of the stations operating on the normal broadcast wave-band. The new station was manufactured at Chelmsford by Marconi's Wireless Telegraph Co., Ltd. The wave range of the transmitter is from 25 to 80 metres, provision being made for readily changing over from one wavelength to another. There are four panels, the first contains the main magnifier operative over the whole wave-band of 25 to 80 metres, the second contains the intermediate magnifier and drive units for the wave-band of 25 to 40 metres, the third comprises the intermediate magnifier unit and drive units for the wave-band of 40 to 80 metres, the fourth being the modulator and sub-modulator unit. Mr. C. S. Franklin, the well-known expert, is responsible, it is understood, for the special two separate transmitting aerials. Speech and music received from the Rome studio over the land lines will be amplified by two separate speech amplifiers, to bring it up to a sufficient level to modulate the transmitter fully. NEW ZEALAND.—One of the last acts of the late and much lamented Sir Joseph Ward was to signify his intention of establishing a commercial branch of the Post and Telegraph Department. Active salesmanship was to take the place of waiting for orders in the State's telephone service. New Zealand has now a density of 10.2 per 100 inhabitants, as against 3.8 per 100 telephones in Great Britain. PORTUGAL.—A credit of 24,000,000 escudos (about £230,000) has been granted for extending and remodelling urban and inter-urban telegraph and telephone lines and the installation of radio stations, says Reuter's Lisbon Agency. RUMANIA.—A month ago the *Times* reported that the contract between the Roumanian Ministries of Public Works and Finance and the I.T. and Telegraph Co. had been confirmed. The contract gives the company a monopoly of the Rumanian public telephone system, for which it is to pay about £980,000. In addition, the company is to arrange loans totalling £1,646,000 for the Rumanian Government. The State reserves the right to repurchase the system after 20 years. SIAM.—As the telegraph lines down the Peninsular are subject to considerable interruption, the Chambers of Commerce of both Siam and British Malaya are trying to get wireless communication established between Bangkok and Singapore, or Bangkok and Penang, says information through Reuter's Bangkok Agency. The scheme has the strong support of the Siamese Government, but so far the Straits Settlements Government has not seen its way to agree to take the necessary steps. The proposal remains under consideration. It is, however, announced that whenever there is an interruption of the land lines of more than one hour, urgent telegrams (at triple rate) will be sent by wireless! SOUTH AFRICA.—For additions to and extensions of the telegraph and telephone systems £600,000 will be spent during the next year, of which £150,000, says *The Electrical Review*, will be for farmers' lines. The plans include an extensive programme for the installation of automatic telephone exchanges. SOUTH AMERICA.—*German Cable and Radio Traffic.*—At the annual meeting of the German-Atlantic Telegraph Company it was mentioned that the Company's participation in the Compania Telegrafico-Telefonica del Plata had recently been disposed of to the Siemens & Halske Co. The

arrangements made by the latter would guarantee to German cable and radio traffic a connexion with the telephone and telegraph company in South America, which is worked by the Siemens group. U.S.A.—Should any of our British telephonists or telegraphists in the course of their meanderings through American literature light upon the letters "D.O.D." following the name of a lady or gentleman, it may be useful to know beforehand that these letters signify "Doctor of Dials," and that this new degree is to be associated with automatic telephony. Thus we read that "The degree of D.O.D. was conferred on Geoffrey Proctor Nock, District Traffic Superintendent, of Portland, Oregon, in the Pacific Telephone and Telegraph Co., being Class Instructor of a Dial Management course." Further information records that "the diploma was presented at a dinner by the 'Board of Regents' of the *Universitus Telephonus*." One can only leave so wonderful an innovation to the pen of our much-admired "Percy Flage," who will surely prove most competent to deal with the D.O.D. degree! It is stated through Reuter's New York Agency that a regular photo-radio service is to supplement—not to supplant—existing ship newspapers on the U.S.A. liner *America*. The apparatus is expected to be effective up to about 3,500 miles. *More Internal Telegraph Competition for the U.S.A.*—An extension of the operations of the Radio Corporation of America was forecast by General J. G. Harbord, its president, who stated that plans have been made for the immediate establishment by the Corporation of "a domestic wireless system to serve the U.S. through stations in 14 strategic cities, the number to be increased later." The system is to compete with leading telegraph companies. The recent grant of ten exclusive wireless channels (? wavelengths), with five jointly-shared channels, will be operated by the Radio Corporation's subsidiary concern, Radio Corp. American Communications, Inc., which is expected to act as a United States connexion for the Radio Corporation's service to Europe, South America and the Orient. *The Radio Metropolis.*—This proposal for New York City has now, says *The Electrical Review*, become a definite project, and the clearance of the site is to begin this fall. This new centre is to be completed by 1933, and is the joint project of the Radio Corporation of America and its subsidiary companies and Mr. J. D. Rockfeller, jun., and is estimated to cost £90,000,000 for land and buildings, according to the *Times*. The latter authority adds that shops will be housed on the ground floor, on the roof a restaurant, &c. On one side of this *metropolis* there will be a 60-storey building containing 27 broadcasting studios, some of them two to three stories high. Four theatres are to be built within this area, all being equipped with broadcasting apparatus. A symphony hall will be added. The Radio Corp. will lease all four theatres and extensive space for office and studio. It is to use the studios and the theatres to provide entertainment for the audiences in them and also for wireless listeners. At the same time they are to be used as experimental stations for the technique of stage production, broadcasting and television.

The *T. and T. Age* states that A. B. Dumont, Chief Engineer of the De Forest Radio Corporation, has asked the Federal Radio Commission for a construction permit for a Television station at Passaic, N.J., using 20,000 watts and operating on 2,000-2,100 kc. Mr. Dumont, in making his application, stated that "television is developing very rapidly and no one can tell what will happen within the next six months." (Quite true!) The De Forest Corporation has joined forces with the Jenkin Television Corporation, which has already spent more than $500,000 in experimental work at Passaic.

South Carolina is the first American State to levy a tax upon wireless receivers. The tax amounts to 50 cents on sets valued at 50 dollars, increasing *pro rata*, says *The Wireless World*.

Short-Wave Wireless.—We have in the short wireless wave a new problem of extra penetrating power. Nobody knows as yet where its limitations are or what it is destined to reveal. We are like a blind man who has just acquired the use of his fingers and is feeling in the dark.—E. E. Fournier d'Albe.

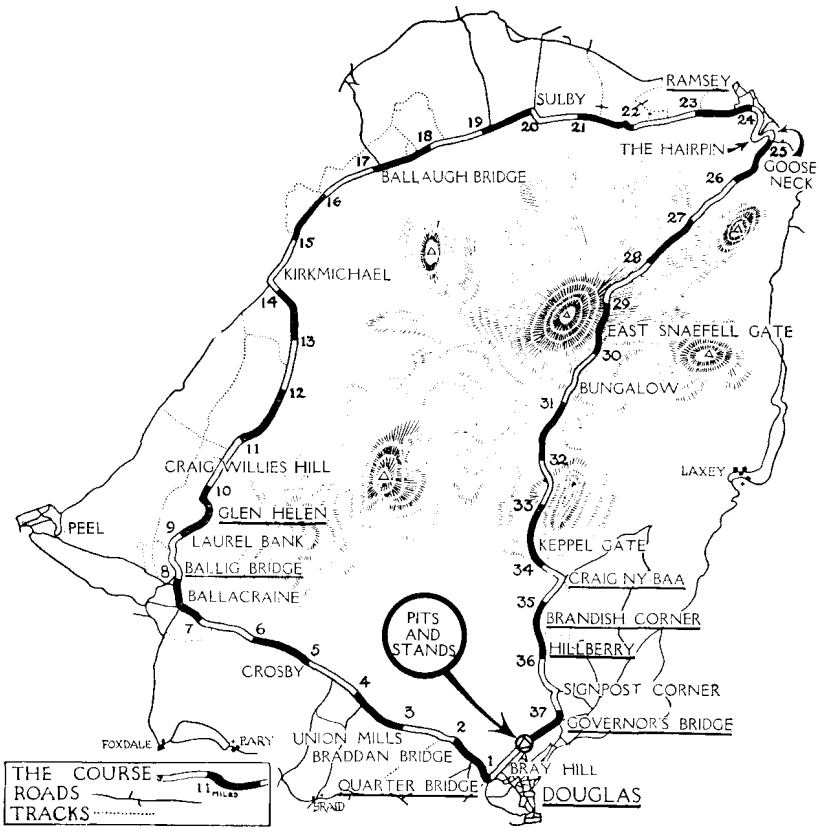
J. J. T.

THE TOURIST TROPHY RACES AT DOUGLAS, ISLE OF MAN.

BY R. A. DAVID, LIVERPOOL.

ANOTHER T.T. Race week has passed off very successfully. The greatest T.T. ever. Many records have been broken—record speed, record weather, record crowds and record attendance by the Press. These are the headlines given in the Motor Press, but there is very little reference to the records made by the telephone side. I shall, therefore, try to describe what part the telephone plays in this great game; in fact, but for the telephone the race itself would be almost impossible.

Apart from the technical side, the races have another aspect—and one that probably appeals more to the general public than anything else—sport. They embody every condition essential to



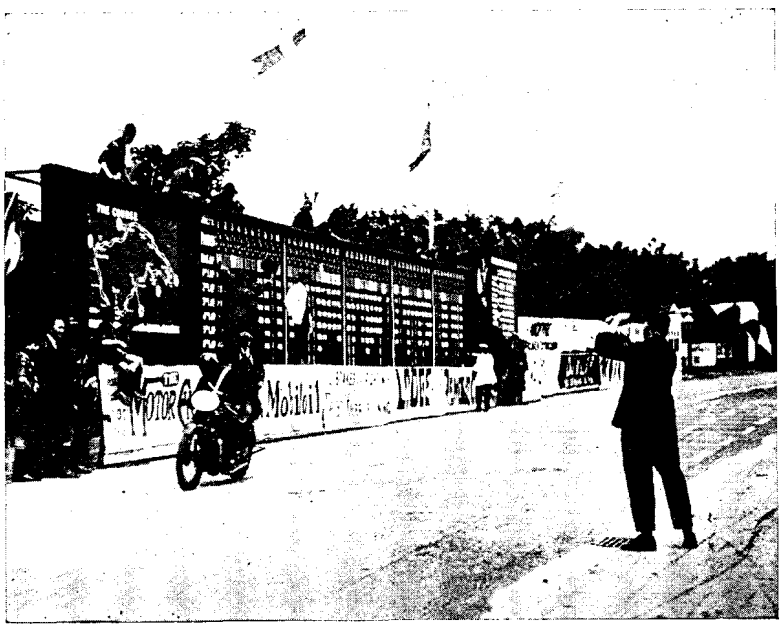
[*Reproduced by courtesy of "Motor Cycling."*

FIG. 1.

the ideal sporting contest. Courage, endurance, physical fitness, coolness and superb judgment. To be successful in the T.T. Races a rider must combine all these qualities, and must add to them the technical knowledge that will enable him to extract that last ounce from his machine which may mean success; to forego that extra ounce may bring breakdown and defeat. To see the T.T. is to witness one of the most breathlessly exciting spectacles the human mind can conceive. As each successive machine, with its rider crouching low over the tank, whirls round the course, leaping the hump-backed bridges, twisting up the narrow mountain roads, racing "all out" down the straight stretches, the onlooker unconsciously tenses to the thrills and excitement of it all; feels a lump come into his throat as the favourite hurtles by, still going well with half the last lap completed; knows also that dread anxiety which settles on the silent, watching crowds as the minutes creep by and the leader does not appear. The T.T. Race is beyond description; there is only one way of appreciating the races at

their true value as one of the outstanding sporting spectacles of modern times, and that is to see them, and it is here that the telephone plays its part to make this race a sporting event for the crowds who attend, and without it very few details regarding the progress of the riders could be obtained.

In the July issue, 1928, of this journal a brief description of the control board is given, also showing points at which the telephones are fitted round the 37½-mile course—see Figs. 1 and 3. At the starting point is a dial, round which are certain initials



"Reproduced by courtesy of "Motor Cycling."

FIG. 2.

representing six points on the course. The actual position of these is clearly indicated on a large map displayed by the board—see Fig. 2. When the competitor passes each of these points the hand of the dial is moved round to the letter representing that particular place on the course. Progress of each rider in the race can, therefore, be followed as accurately as though one were actually pursuing him round the island. To accomplish this, telephones are placed at the various points indicated. The circuit is terminated at the Grandstand, at points called North and South Control. Here officials listen with headphones to the Marshal, who report, as each rider passes his point, i.e., "Kirk Michael 16." "Ramsey 25." These are then passed on by telephone to the score indicator boards where there are a number of scouts each listening-in by headphone receivers. They in turn move the indicator to the position of the rider. Again, as each rider reaches Governor's Bridge, a bare half-mile from the finish, his number is 'phoned to the Control Tower and his number on the board lights up, and within a few moments the rider himself appears, either to flash by on another lap or to pull up at his replenishment pit for petrol and oil. There are other points fitted with telephones. These circuits work as emporary exchange lines and are called "Special Information Circuits," and it is from here special reports are received from the Marshals in charge, i.e., at first we get the reports as to the crowds, weather conditions and, as the race proceeds, reports such as "Sulby Corner, No. 20 crashed, rider O.K., machine damaged, not proceeding, Mountain No. 14 has just passed touring." This information is conveyed to the crowds in or about the Grandstand through loudspeakers.

The island offers ideal facilities for this kind of sport, as Douglas out of season can accommodate with ease all those who desire to see the race. The course runs close through many points having permanent telephone routes and direct communication with the Douglas Exchange. The keen interest taken by the local inhabitants results in business being brought almost to a standstill, and in consequence it is possible to utilise a number of junctions to form "The round course circuit" and individual circuits to other points on the course. These junctions are controlled by switches at places on the course and at the various exchanges, and are thrown off just before the races are due to start and back to normal immediately they are over. The other points on the course are made up by extensions on rural call office circuits or by running temporary rubber-covered wire thrown over trees and hedges. There is a 10-line switchboard fitted in the Control Tower with exchange lines and extensions to various parts of the Grandstand area. It will, therefore, be obvious to the reader that all these circuits are more or less of a temporary nature, and it is interesting to note that only two faults occurred during the week and these were caused by riders crashing into the telephone boxes on the mountain. This year, on account of communication being available with the mainland, seven direct exchange lines were provided from the Press stand for various Press agencies. The A.C.U. also provided four lines fitted in cabinets in the Press enclosure, to be used as call offices by those representatives of the Press not having their own lines.

Every paper of importance in the British Isles, and a large number on the Continent, were represented. It was for the first time in the history of the T.T. Races that London papers were reporting full details in their evening editions. In fact, the winners of the various races were known in Fleet Street and other news centres immediately they had crossed the line.

To give one some idea to what extent the Press used the telephone, on Friday, the day of the Senior Race, there were 154 calls booked to various parts of the British Isles and the Continent, 80 of which were "fixed time" calls. A rather interesting event occurred on Friday, just after the race. The weather had changed rather suddenly when a representative of the German Press, who had flown to the Island in his own monoplane, and was about to return, made enquiries as to whether he could obtain information regarding the weather conditions on the other side. It was suggested he should try the "Imperial Airways, Manchester

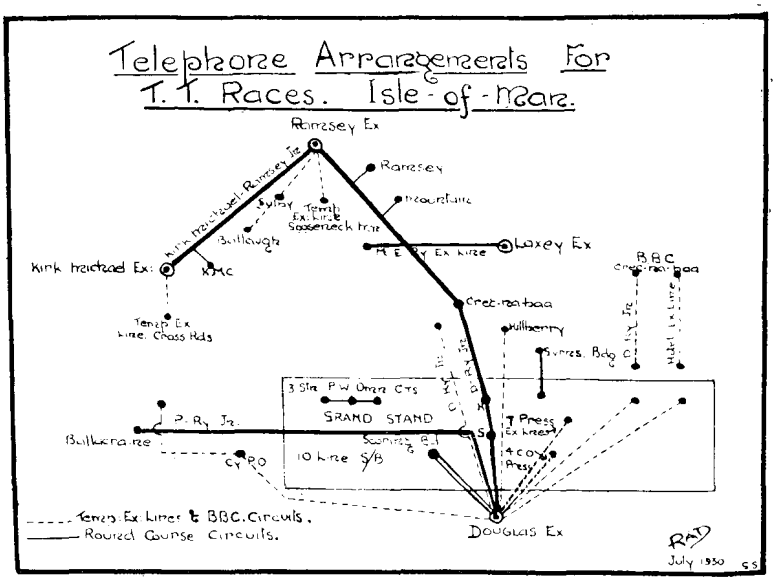


FIG. 3.

and Croydon." Calls were booked to these places and within 15 minutes he had all the information required. He was delighted with the prompt service he had received and the alacrity with which the Department's officers were able to help.

The Press expressed their appreciation of the telephone arrangements and the manner in which their calls were handled. The following is an extract from one paper :—

> "The Engineers and Traffic Staffs of the Post Office Telephones had worked like galley slaves to give an efficient service. *They did*, and they are very proud of their 'Record.'"

"Yes, the Isle of Man's all right," a competitor in the greatest road race in the world was heard to remark. "It's a fine place," he went on, "but why on earth the Land of T.T. should have such a stupid and entirely inaccurate motto as *Quocunque jeceris stabit* I cannot understand. Just fancy—"Whichever way you throw it, it stands."* What a motto for a T.T. rider!"

It may be of interest to know that "The Manx Grand Prix" will be held on Sept. 9-11, 1930. These races are run over the T.T. course, and the same conditions apply.

TELEPHONE DEVELOPMENT OF BRITISH TOWNS AT THE BEGINNING OF 1930.

By W. H. GUNSTON.

At the beginning of this year there were 1,886,726 telephones in Great Britain and Northern Ireland, or 1 for every 24 inhabitants. Put in another way, there were 4.15 telephones per 100 inhabitants.

The subjoined list shows the development of all British cities and towns with not less than 20,000 inhabitants, at least 1,500 telephones, and not more than 26 inhabitants per telephone. As the ratio of telephones for the whole country, including the less developed rural districts, is 1 to 24 inhabitants, it would perhaps be expected that all the large centres of population would be above this average. This, however, is not the case: e.g., Newport, Coventry, Stockport, Newcastle-on-Tyne, Norwich, Southampton and other important places, all fall below the average development.

It should be borne in mind that the first half-dozen towns on the list, with their 700,000 telephones at a ratio of 1 to 11 or 12 inhabitants, account for considerably more than a third of all the telephones in Great Britain. It will be observed that they are actually twice as well developed as the country as a whole. In Germany, also, the largest cities are more than 100% better than the country as a whole, while in France we find Paris nearly four times as highly developed as the whole country, so that the phenomenon of the telephonically more advanced cities being the dominant factor in their country's development is not peculiar to Great Britain. In the United States, however, the disparity between the whole and its parts is not so great.

It will be seen from the following list that the residential country towns and health resorts are well to the fore. The high figures shown for some of the places with less than 50,000 inhabitants should be accepted with some reserve, in view of the fact that the population figures (the latest available) are drawn from the census of 1921 and there is no doubt that in towns of this class the population has increased very substantially since that date. Naturally an increase of 30% in the number of inhabitants in such places would materially affect the averages shown, while the inter-censal increase in the average town, which may be only 5 or 6%, would have no such marked effect on the telephonic ratios. It is nevertheless an undoubted fact that the telephone development of places like Guildford, Harrogate, Eastbourne, &c., not to mention Bournemouth, is very good. Twenty-five of the first 50 towns of the list are in the South, 2 in Wales, 5 in the Midlands, 6 in Scotland and 12 in the North of England.

It should be mentioned that in the area operated by the Corporation of Hull there are 16,235 telephones, or rather more than 21 inhabitants per telephone.

* This obviously refers to the three-legged emblem of the Island.—(ED., *T. & T.J.*).

TELEPHONE DEVELOPMENT OF TOWNS WITH NOT LESS THAN 20,000 INHABITANTS AND 1,500 TELEPHONES.

		Population.	Number of telephones. Dec. 31, 1929.	Inhabitants per telephone.
1.	LONDON Administrative County (*London Telephone Area, including the above and Croydon, Walthamstow, East and West Ham, Leyton, Willesden, Tottenham, &c.*	4,483,200	487,927	9.2
		7,406,000	661,977	11.2)
2.	Guildford	24,987	2,564	9.7
3.	Harrogate	38,938	3,674	10.6
4.	Bexhill-on-Sea	20,363	1,713	11.9
5.	Eastbourne	62,030	5,137	12.1
6.	BOURNEMOUTH (including Poole and Christchurch)	142,422	11,672	12.2
7.	Southport	76,644	5,832	13.1
8.	Tunbridge Wells	35,568	2,716	13.1
9.	Worthing	35,224	2,657	13.3
10.	Torquay	39,432	2,861	13.7
11.	Chester	40,794	2,942	13.9
12.	St. Albans	25,588	1,800	14.2
13.	Woking	26,430	1,857	14.2
14.	BRIGHTON and Hove	188,946	12,671	14.9
15.	Watford	45,910	2,894	15.1
16.	Oxford (including Headington)	62,380	3,983	15.7
17.	EDINBURGH	420,281	26,670	15.7
18.	Cambridge	59,262	3,764	15.7
19.	Blackpool	114,681	7,225	16.0
20.	CARDIFF (including Penarth) ...	217,359	13,319	16.3
21.	Folkestone (including Hythe, Cheriton and Sandgate) ...	54,573	3,293	16.5
22.	Southend-on-Sea	106,021	5,984	17.6
23.	MANCHESTER (including Salford, Eccles and Stretford) ...	1,055,473	59,338	17.8
24.	Aldershot	28,756	1,611	17.8
25.	BRADFORD (including Shipley)	314,268	17,309	18.2
26.	Ayr	35,751	1,914	18.7
27.	Cheltenham	48,444	2,578	18.8
28.	Luton	57,077	3,040	18.8
29.	Bedford	40,247	2,134	18.9
30.	LEICESTER (including Wigston)	242,780	12,810	19.0
31.	Perth	33,208	1,737	19.1
32.	Warwick and Leamington ...	38,808	2,018	19.4
33.	Shrewsbury	31,030	1,588	19.5
34.	LIVERPOOL (including Birkenhead, Bootle and Wallasey)	1,115,939	55,173	20
35.	NOTTINGHAM (including Arnold and Carlton)	292,969	14,610	20
36.	Huddersfield	110,120	5,408	20.4
37.	GLASGOW (including Clydebank, Rutherglen and Renfrew) ...	1,119,489	54,293	20.6
38.	Maidstone	37,448	1,812	20.8
39.	Exeter	59,608	2,967	20.9
40.	Reading	92,274	4,292	21.5
41.	BIRMINGHAM (including Smethwick and W. Bromwich) ...	1,068,956	48,932	21.9
42.	BRISTOL (including Kingswood)	390,018	17,623	22.1
43.	Hastings	66,496	2,956	22.5
44.	Aberdeen	158,969	7,059	22.7
45.	LEEDS (including Morley) ...	482,255	20,701	23.3
46.	Preston	117,426	4,991	23.5
47.	Dundee	168,217	6,929	24
48.	Newport	92,369	3,712	24.5
49.	Coventry	128,205	5,155	24.9
50.	Doncaster	54,052	2,164	25
51.	Stockport	123,315	4,940	25.2
52.	NEWCASTLE-ON-TYNE (including Gateshead, Gosforth and Wallsend)	458,201	18,134	25.3
53.	Norwich	120,653	4,736	25.5
54.	Southampton	160,997	6,287	25.6

The following is the development of the areas with upwards of 10,000 stations, expressed in terms of telephones per 100 of population :—

London (Administrative County)	10.9
London (Telephone Area)	8.9
Bournemouth	8.2
Brighton	6.7
Edinburgh	6.3
Cardiff	6.1
Manchester	5.6
Bradford	5.5
Leicester	5.2
Liverpool	5.0
Nottingham	5.0
Glasgow	4.9
Birmingham	4.5
Bristol	4.5
Leeds	4.3
Newcastle	3.9
Sheffield	3.5
Belfast	3.5

PROGRESS OF THE TELEPHONE SYSTEM.

THE total number of telephone stations working at May 31, 1930, was 1,901,905, representing an increase of 12,712 on the total at the end of the previous month.

The growth for the month is summarised below :—

	London.	*Provinces.*
Telephone Stations—		
Total at May 31	683,295	1,218,610
Net increase for month	4,553	8,159
Residence Rate Subscribers		
Total	169,371	263,953
Net increase	1,201	2,240
Call Office Stations (including Kiosks)—		
Total	6,147	25,729
Net increase	69	343
Kiosks		
Total	1,828	6,603
Net increase	66	152
Rural Party Line Stations—		
Total	—	9,923
Net increase	—	—
Rural Railway Stations connected with Exchange System		
Total	17	1,710
Net increase	—	39

The total number of inland trunk calls originated during the year ended Mar. 31, 1930, was 117,130,213, representing an increase of 7,575,766, or 6.9% over the total for the previous twelve months. Outgoing international calls for the year numbered 535,977, and incoming international calls 581,831, the increases over the corresponding totals for the year 1928/29 being 81,673 (18.0%) and 91,662 (18.7%) respectively.

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

LONDON—Downland (Hooley), Shepherds Bush (automatic).

PROVINCES—Ardwick, Collyhurst, and Moss Side (Manchester) (automatic); Bressingham, Broadelyst, Bubwith, Callaby, Farnell, Gt. Bardfield, Gt. Wakering, Inchture, Lea, Lhanbryde, Lochranza, Lower Guiting, Milborne St. Andrews, Sacriston, Stickney, Walcott, Wendling, Yetminster, Mareham-le-Fen (rural automatic); Poole;

and among the more important exchanges extended were :—

LONDON—Wallington.

PROVINCES—Basingstoke, Canterbury, Didsbury, Farnham, Louth, Solihull, Warwick.

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

Bexhill—Hastings (section of Brighton—Hastings—Eastbourne cable).
Salisbury—Basingstoke.
Maidenhead—Reading.
Carluke—Lanark.
Windsor—Egham.

while 76 new overhead trunk circuits were completed, and 87 additional circuits were provided by means of spare wires in underground cables.

REVIEW.

"*Autobiographical and Other Writings*," *by Alan A. Campbell Swinton.* (*Longmans, Green & Co.* 181 *pp.* *Price* 10*s.* 6*d net.*)

It is sad to record that whilst this book was still in the hands of the printers the author, Mr. Alan Campbell Swinton, distinguished for his radiological and wireless researches, passed away. The book is divided into three main sections, "Biography," "Verses" and "Addresses." The first section provides, perhaps, the most entertaining reading. Mr. Campbell's account of his ancestry, his training, his professional work and the people he met being both lively and instructive. He traces his descent from the Swintons of that ilk, the earliest known owner of which was Liulf de Bamburgh and de Swinton, a vice-comes of the Northumbrians, who died about 1118 A.D. He touches on the deeds of his forbears in history, and has some interesting anecdotes concerning the distinguished visitors to his home during his youth. Indeed, the whole of the first part of the book is enlivened with good anecdotes. Amongst them is one of Sir Frederick Bramwell, who was knighted about the same time as he was elected F.R.S. A client who had employed him before, complained that Bramwell's bill was unduly heavy. Bramwell explained that F.R.S. meant "fees raised since," and pointed out that he has now to pay for "knight" work. Another is of Sir Wm. Crookes, the great chemist, who was also a believer in spiritualism. When knighted he adopted the motto "Ubi crux ibi lux," the "crux" being a pun on his name. Some dinner-table wit, however, altered the motto to "Ubi Crookes ibi spooks."

Always of a scientific bent of mind, Swinton was attracted very early towards photography. He has no fond recollections of Fettes College, where he was educated, but complains of the unceasing round of compulsory games and uninspiring Greek and Latin verses which left the boys destitute of all originality. Even a telephone which he contrived to construct in 1878 or 1879, after reading an account by an American Professor of Bell's invention, was ordered to be sent home, and his housemaster refused to permit the dispatch to him of a box of photographic apparatus, although his father had written signifying his approval. He had to get up two hours before school commenced to pursue his scientific studies before anyone else in the house was about.

After an apprenticeship to Sir Wm. Armstrong, Mr. Swinton set up for himself in London as electrical contractor in the early days of electric lighting. He was one of the first to experiment with X-rays and to use them for taking photographs. He was also one of the pioneers of television and wireless telegraphy, and at an early date had a wireless telephone at work between his office in Victoria Street and his house in Chester Square. We may remark, in passing, that Mr. Swinton, like many who have touched on the subject, has very vague ideas about the telephone in the "eighties." He believes there was only one telephone exchange for the whole of London. There must, in fact, have been at least 15 at the time of which he writes.

An interesting chapter is that on Mr. Swinton's recollections of notable scientific men whom he met. There are excellent portraits

of Huxley, Poulsen, Pedersen, Duddell, Sir Oliver Lodge, Lord Amesbury, Sir J. J. Thomson, Lord Rayleigh, Sir Wm. Crookes, Prof. Silvanus Thompson and a host of others. He is careful to claim Graham Bell, the inventor of the telephone, as a fellow Scotsman. Sir Joseph Swan, he says, was before Edison in the invention of the carbon filament electric lamp, although he admits that they were neck-and-neck when it came to commercial lamps.

All the addresses included in this book are well worth reprinting, that on "Discovery and Invention" containing much food for thought. In it Mr. Swinton points out that many of those who made the greatest scientific discoveries were amateurs pure and simple. The writer of the present review recently saw the same theory developed more fully in a small German work entitled "Kultur-Curiosa," in which numerous instances were cited of inventions discovered by dilettanti and amateurs.

Mr. Swinton instances Dr. Gilbert, author of "De Magnete," who was physician to Queen Elizabeth, Herschell, an organist, Franklin, a printer, Joule, a brewer, Humphry Davy, a surgeon's assistant, Faraday, a bookbinder's apprentice, Morse, a sculptor and painter, Graham Bell, a teacher of the deaf and dumb, while Professor Hughes was not a professor of engineering or physics, but of music!

We have, perhaps, said enough to indicate that this readable book forms a most interesting record of a cultured and adventurous mind.

RETIREMENT OF MR. P. F. CURRALL, DISTRICT MANAGER, BIRMINGHAM.

A REPRESENTATIVE gathering of Accounts, Contract and Traffic Branches met in the District Manager's Office on June 26 to bid farewell to Mr. P. F. Currall the District Manager, who was retiring after some 44 years' service.

The Postmaster-Surveyor, Lt.-Col. Brain, presided, supported by the Assistant Postmaster and the chief officers.

Several Head Postmasters and the head officers of the Survey, Postal and Engineers Branches attended.

The Surveyor, in a happy speech, drew attention to the long and varied career of Mr. Currall as District Manager, and at the close presented to him gifts from the Staff of a Compactum wardrobe and a sheepskin hearthrug, together with a beautiful bouquet for Mrs. Currall, who was unfortunately unable to be present through ill-health.

Several officers from the District Manager's Staff, including ladies, voiced their appreciation of Mr. Currall's qualities as District Manager, and expressed the hope that his retirement would bring him a greater measure of health than he had hitherto enjoyed. On behalf of the Head Postmasters, Mr. Noble (Walsall) and the Head Office, Mr. Grindley (Survey Branch) made appreciative speeches.

Mr. Murray (Contract Manager) made humorous reference to Mr. Currall's remarkable feats on the Golf Green, but no reference to the 19th hole.

Mr. Currall, who spoke feelingly, thanked all for their tribute to his service and to himself, and in the course of his remarks he instanced the great growth telephonically (35,000 stations to 75,000) in the district during his period of eight and a half years as District Manager in Birmingham, and his deliberate opinion was that the Telephone Service rendered to the public in Birmingham compared favourably with any other district in the country.

THE TELEPHONIST AND THE PRESS.

PAPER READ BEFORE THE LONDON TELEPHONISTS' SOCIETY BY W. H. GUNSTON.

THE link between telephonists and the Press begins, so far as I can ascertain, in the year 1883. As most of you are aware, telephone operating was originally performed by boys, and it was not until 1889 that women telephonists became practically universal. Nevertheless, in the early eighties Mrs. Claxton, the wife of one of the chief officials of the National Telephone Company, studied operating and is said to have trained the first girl operator (a Miss Ling) at Liverpool. She then undertook the training of female operators in London, where they were apparently introduced about 1882, and by 1883 were fairly well established.

In 1883, therefore, we come upon references to telephone operators in the Press: and I am sure you will all be gratified to hear that one of the first newspaper paragraphs extant dealing with telephonists gives you a handsome certificate of respectability. The *Pall Mall Gazette* of Dec. 6, 1883, has the following description of an exchange:—

"The wires which represent the subscribers of the East Indian Avenue Exchange are guided down from the derrick above into neat mahogany cabinets or cases, in front of which the young ladies are seated. The alert dexterity with which, at the signal given by the fall of a small lid about the size of a teaspoon, the lady hitches on the applicant to the number with which he desires to talk is pleasant to watch. On the day of our visit there had been in this one office no less than 2,400 calls. Here, indeed, is an occupation to which no 'heavy father' could object: and the result is that a higher class of young woman can be obtained for the secluded career of a telephonist as compared with that which follows the more barmaid-like occupation of a telegraph clerk."

The writer's intention is good, even if his grammar is weak: but why a telegraph clerk's occupation is stigmatised as barmaid-like I have been unable to discover with any certainty. Possibly he meant that a girl clerk at a telegraph counter was exposed in the pursuance of her duties to coarse contacts with my own sex, and that the more convent-like seclusion of an exchange staffed entirely by women guaranteed that sheltered existence so prized by fathers—if not by their daughters—in the 80's of the last century.

Well, then, the Press, having discovered the telephonist in the middle eighties, contented itself with occasional references to her, references increasing in number as the service grew more widespread and of greater national importance, and indeed since the Great War becoming quite numerous.

The telephonist appeals to the Press under two main aspects:—

1. As a woman, a girl or member of the fair sex.
2. As a servant of a much-criticised public administration.

1. *As a Member of the Fair Sex.*—The Press, as you know, is a mighty organ, and when it plays for the benefit of over a million people it must devote more of its efforts to light music than to classical themes—jazz must predominate over symphonies and fugues, or what is rather vaguely known as "high-brow" music. In other words, with circulations of over a million, newspapers quickly realise that amongst their readers the wise are greatly outnumbered by the otherwise, and they cater for them accordingly. They realise also that the majority of people would rather be amused than instructed, and consequently they adorn their papers with frequent representations of the ornamental and lighter side of women's life. You all know that when the first sunny day of spring appears, perhaps when the first crocus lifts its yellow head, you are confronted with a picture of "Merry bathing girls at Margate." (I may remark in passing that bathing girls are always merry in the pressman's point of view.) You are equally familiar with merry girl haymakers, merry girl students, merry hospital nurses, merry millgirls and other groups whose pictures make a very proper appeal to the susceptible hearts of man. All these are, of course, in addition to the lady golfers, lady tennis stars and oarswomen who share with the male exponents of sport such a large proportion of the columns of your newspapers. The fact is that the journalist knows, of course, that the picture of a bathing beauty makes a greater appeal to the general public than one of a female senior wrangler or even a poetess, that questions of long or short skirts, cigarette smoking and cocktail drinking by women, and the like, are more amusing than serious discussion of woman's avocations, woman's economic position, woman's future, and so on, although these subjects do not go altogether uncared for. You see, therefore, that in the first place you are interesting to the Press purely as women. Therefore, when the journalist learns that there are, we will say, upwards of 13,000 telephone operators he says, Hallo! here are 13,000 potential romances, 13,000 potential bathing beauties, 13,000 potential flapper voters, 13,000 potential subjects for pithy paragraphs and picturesque illustrations: and he embraces you (metaphorically, of course) with open arms.

2. *As a Public Servant.*—Having touched briefly on the first aspect of the telephonist in relation to the Press, we will now consider how the Press reacts to her as a public servant. I might divide this section of my discourse into several sub-sections, as for instance:—

(*a*) The telephonist as an efficient and hard-working official, fulfilling exacting duties with tact, speed and dexterity. This is the common view of those who have taken the trouble to visit an exchange working at full pressure.

(*b*) The telephonist as heroine, who rises to the occasion during bombardments, flood, fire and on similar occasions.

(*c*) The telephonist as disappearing "Hello girl," threatened with extinction by the "girl-less telephone." This is an inexhaustible theme and has aroused the tender solicitude of the journalist since the beginning of this century on almost every occasion when a new auto-exchange was opened.

(*d*) The telephone girl as the haughty and unbending minion of a stiff-necked government monopoly, who is not amenable to reasoning or reproof, much less eligible for such a drastic disciplinary measure as the "sack."

(*e*) The telephonist as dispenser of wrong numbers and engaged calls, who is "sorry you are tr-roubled." We are here getting back to the province of the humorist who is always with us in the daily press, whose efforts do not only fill up odd corners, but who now also spreads himself at large across the editorial pages.

I could go on developing these sub-sections to a tenthly and lastly in the manner of a sermon, but I think you will absolve me, before I have finished, of any intention to preach. I will therefore deal with these sections of my subject not one by one but in a general manner, and endeavour to show what has been the varying attitude of the Press to the telephonist during the past 30 years or so.

I may say at once that it has in the main been sympathetic, with a general tendency to take the important public service she renders more and more seriously. The patronising and bantering tone of some of the earlier references is well exemplified in a cutting from the *Star* newspaper of August, 1896, which I have come across. It seems that a Russian gentleman with the promising name of Apostoloff had invented an automatic system. An Apostoloff Syndicate appeared in London, and the name and idea at once appealed to the Press humorist.

The *Star* reporter must be likened to the man in Goldsmith's poem who came to scoff and remained to pray. He begins thus with a few well-chosen words of scorn :—

"The days of the telephone girl are said to be numbered, and one of the most maddening irritations of the modern business man to be on the eve of abolition. Her calm superiority, her leisurely indifference, her sublime stupidity, her absolute reliance on the fact that you can't get at her and mustn't swear at her, will not much longer protect that still small scornful voice. For a benefactor of his species has invented an automatic telephone, which is to enable subscribers to communicate directly with one another without the intervention of 'human aid'—by which flattering term the inventors designate the telephone girl. A *Star* man who has inspected the machine at the offices of the Apostoloff Syndicate in the City reports it perfection itself."

I will spare you the description which follows of the disc you have to revolve and the bells you have to ring; I will merely remark that, unfortunately, nothing more seems to have been heard of this perfect system in England.

The article concludes :—

"Under the present system a 'telephone young lady' is employed for every 50 subscribers. And there are over 30 exchanges in London alone. An exchange with 3,000 subscribers, such as that at Lime Street, in the City, has therefore 60 telephone young ladies. And if one telephone young lady can drive the average man into a frenzy, what cannot 60 drive him to? It is their own fault that mankind prays for their suppression.

"These were the *Star* man's views till he looked further into the matter. He called at the offices of the National Telephone Company to inquire if the Apostoloff system would be adopted.

"The secretary admitted he had heard of it, which, as monopolies go, was making a big concession, but referred the inquisitor to the general manager. The general manager's representative agreed that the general manager had inquired into the new system, and made a report upon it to the directors, but as to the nature of the report or the practicability of the invention he could say nothing. But when the *Star* man was courteously conducted over one of the exchanges, and saw the sweet girl operators with their muzzles on, his heart went out to the telephone young lady. 'Are not these neat suburban girls of more account than machines?' he asked himself, 'and is it to be wondered at that sitting here all day, with the apparatus strapped upon their devoted heads, to be nagged at by fifty thousand impersonal cads and curmudgeons, they learn the feminine trick of "answering back"?' He would have liked to get their views of the Apostoloff machine, but you musn't talk to the girl at the telephone."

You will see that the reporter, with his "sweet girl operators" and "neat suburban girls" means to be kind. He was not using the word "suburban" in the patronising sense in which it is sometimes employed nowadays; I think he meant to imply that the exchanges were not staffed with wild bachelor girls from Soho or Pimlico, but only with young ladies from the best residential suburbs. This is one of the first references to the abolition of the telephone girl I have come across. After that date various automatic exchanges were successfully opened in different parts of the world, and as I have already mentioned, on every occasion, as soon as the fact was thoroughly grasped by the journalist, one saw the headlines: "The Doom of the Hello Girl," "Hello Girl must go," "A Girl-less Telephone," or something similar. This cry seemed, in my recollection, to reach its crescendo in 1909, in the middle of which year an American consular report discovered that a flourishing automatic exchange was at work in Hildesheim, in Germany. As a matter of fact, not only had this exchange been then working for some time, but there were other and larger machine-switched exchanges in operation elsewhere. But the news became broadcasted by the Press bureaus and there was a perfect outbreak of both commiseration and rejoicing with regard to the doomed telephone girl. The following lines appeared in the *National Telephone Journal* on the subject :—

The automatic evergreen appears
And fills our buoyant Press with hopes and fears.
"A Girl-less Telephone" their headlines show,
"Doomed operators," "Hello Girls must go."
Whether the fear was greater or the hope,
We do not know, but (parodying Pope)
Of operators it may be assumed
They never *are* but always *to be* doomed.

Paradoxical as it may seem, the more the telephone girl is "abolished" the more she increases in numbers. The more "girl-less" telephone exchanges there are in the world the more "girl-ful" (if I may be allowed the expression) become the other large and ever-growing exchanges. You may be surprised to hear that there are employed in this country in 1929 as nearly as possible treble the number of operators that were employed in 1909, despite the rapid spread of the machine switching principle in all directions during those 20 years.

The way of the prophet is not always easy; but perhaps I may be permitted to quote a modest and successful effort which I made in this direction in the *National Telephone Journal* of October, 1909, when I said: "The operator will go on being doomed periodically until she has left the service, married and possibly brought up daughters who, if they become telephonists, will no doubt be doomed in their turn when some newspaper discovers that there is an automatic system in full swing at Timbuctoo or Tehuantepec."

I may add that I know of at least one operator who was in the London Telephone Service in 1909, whose daughter is now in the same service. This young lady, if she reads the papers, will have learned on several occasions that she is doomed. I have no doubt that many other cases could be found, if the subject were worth closer enquiry.

If I may turn aside for a moment from the main current of my theme, I should like to warn you, ladies, against taking seriously the views you find aired in the correspondence columns of your newspapers. Of course, newspapers take no responsibility for the vagaries of their correspondents, but still they do allot valuable space to the ill-informed and the unbalanced. There was a time, perhaps, when the people who wrote letters to the editors of journals were those who had something to say, some special knowledge to impart, some intelligent criticisms to offer on the subjects they discussed—their letters, though not the work of expert journalists or literary men, did give useful expression to the common-sense opinions of the average intelligent citizen. But the popular daily newspapers nowadays cast their nets far wider, and no subject is too trivial, no opinions are too shallow or ill-considered, to find acceptance in the Correspondence column. As an example, there was a letter not long since in the *Daily Express* from an engaging person who suggested the entire abolition of women telephonists and their replacement by ex-service men, who she (or he) was sure would be both more expert and more obliging than the present staff. You will be interested to learn that in this dispassionate observer's opinion, operators were a snobbish class (and she claimed to have worked with them) and in the majority of cases—mark, the majority of cases—they worked only in order to obtain extra money to spend on Continental holidays. One may hope that this acute and discriminating observer is now adorning some other sphere, where her singular talents have freer and fuller play.

Having jumped ahead in our historical researches from 1896 to 1909 and 1929, we will now go back to 1903, where we still find the Press divided in its mind about the character of the telephonist. A paragraph was then going the rounds to the effect that the German Administration had warned operators "that in all intercourse with the public through the telephone they are to be careful to be polite, and if subscribers become impatient or excited, the officials are never to give a hasty or impolite reply under any circumstances whatever." The weekly journal *Truth* comments on this: "The National Telephone Company and its staff might take a hint from Berlin with advantage." (Of course, the Company's orders had always laid down that under any provocation whatsoever politeness to subscribers must always be maintained, and it is difficult to conceive how any exchange could be worked by a staff which was permitted to "answer subscribers back.") Nevertheless, according to *Truth*, "the mildest remonstrance addressed to the young lady at the exchange generally produces a 'cheeky' reply and what would happen to an English subscriber who allowed himself to become 'impatient' or 'excited' I tremble to think of. Probably the wires would not hold the young lady's language."

I think my hearers, with their knowledge of a long tradition of standard expressions and unvarying politeness to subscribers, will best appreciate from which end of the lines the strongest language originates. This reminds me of a short, and, I could wish, true story. A subscriber fiercely bellowed :—

"Is there a blithering idiot on the line?"

and there came the soft reply, of the kind that turneth away wrath :—

"Not this end, Sir."

In the same year, however, 1903, I find a very appreciative article on the Telephone Girl in the *Daily Telegraph*. He is describing the then new Post Office exchange in Queen Victoria Street :—

"Entering this sanctum, the impression is not easy to dismiss that one has strayed into a classroom, in which the girls, occupying high stools, sit facing calculating blackboards, and that they are having a chattering time of it, regardless of the monitors at their desks in the centre of the hall. The majority of the girls come from the middle class and are trained in a telephone school. Fancy may picture pleasingly the telephone girl as neat and comely, dark or fair, with a pride in her coiffure, and a taste for dainty blouses, and fancy would not be far wrong. Attention is at once drawn to the bright band which makes a not unattractive headdress encircling the hair. It purpose is simply to support conveniently the earpiece of the telephone, the mouthpiece being also ingeniously kept at constant range, or fixed focus, so to speak. The buzz of conversation is not between the girls themselves, but between them and the distant subscriber, and, playing the part of eavesdropper, one perceives that the interchange of ideas is strictly limited, not to say monotonous. Every user of a Post Office telephone knows that when he takes it off the rest a gentle voice will be heard inquiring, without a shadow of personal interest : 'What is your number, please ?' You tell the owner of the voice your requirements, and you are 'put through.'"

The article on the whole is quite a serious and sympathetic description of exchange working. It is comforting to find that the breastplate transmitter is no longer referred to as a muzzle, but you will probably be amused to hear how the vexed subscriber "may be switched on to one of the monitors, who are ladies of mature years, not possibly more accustomed to masculine language, but possessed of authority to soothe a ruffled temper by tact and discretion." I do not know what the writer's idea of mature years may have been ; one can only say that it is not an expression which would be applied nowadays to people of the average age of the monitor.

The next item I come across in the old press cutting books which have furnished me with much of the matter for my paper to-night is an important one. It is the telephonists' strike of June, 1904. You can imagine how the *Daily Mail*, the *Daily Mirror* and the *Daily Express* rejoiced in such headings as "Hello Girls on Strike," "Telephone Girls Revolt," "Hard Chairs, Long Hours and Heavy Instruments," "Slaves of the Ring," "Fair Telephone Operators threaten to go on Strike," and so forth. It is only fair to say that they were thoroughly sympathetic to the girls' grievances, and by putting their case before the public at large it is quite possible they helped them materially in getting their way with the Company, who eventually yielded to their demands and reinstated all the telephonists who were under notice of dismissal for standing out. The grievance was that they were asked to work longer hours without additional pay ; but here we are in danger of getting one of those "Headaches for Historians" of which *Punch* is so fond of giving amusing specimens. Some accounts say that the operators were to be required to work an extra half-hour a day, some one hour, and some two hours. The facts seem to be that the staff had signed on for 45 hours a week, but had not hitherto been required to work that time. They were now asked to work the full time and more—as to the amount of which accounts vary—as I have said.

Six months later another strike, though on a smaller scale, was threatened, which was promptly averted by the good sense of the Company's General Manager, Mr. Gaine, or by the persuasive powers of ladies who waited upon him to discuss the question. The authorities had rashly presumed to dictate what the telephonists were to wear whilst on duty. It was to be limited to black and white, the official explanation being that the object was to prevent the girls dressing beyond their means. Mr. Gaine wisely gave way and colours won the day. The only report I have before me is a humorous account from the *Referee*, probably written by the late G. R. Sims. He says, perhaps ironically, the company's idea was magnificent and its principle a perfectly sound one. If it could be generally applied it would have far-reaching consequences. It would completely ruin the drapery trade, bring about the untimely death of hundreds of publications which live upon female vanity and cause the streets of the capital to look like a Dutch town on Sunday. But it would be the first great step towards the simple life for which the earnest students of the times are craving. He concludes : "If ever selfish man attempts to introduce a law to interfere with the gay feathers of the fair I shall be found on the side of the Angels !"

From 1905 to the period of the Great War I do not find anything of particular note in the reactions of the Press to telephonists. We find on the one hand straightforward accounts of an exchange at work, when the efficiency and dexterity of the operators are usually remarked on, and on the other hand the usual grumbles at alleged inattention, wrong numbers, &c., with an occasional rejoinder defending the telephonists.

The Great War and its concomitant deeds of heroism and devotion to duty on the part of operators I shall only touch on briefly. It is sufficient to say that when they came to the notice of the Press they were generously appreciated at their full value. As Mr. Mantle said, however, in his presidential address to this Society, "the full story of the work of the telephone staffs during the Great War remains to be told and is but little appreciated by the outside world. When it is told it will be an inspiration to all who follow in their footsteps to be ready for and equal to any emergency." As a brief instance I quote from our own *Journal* of October, 1915 :—

"In the recent Zeppelin raid on the London district, no less than 436 telephonists reported for duty at their own or the nearest exchange and 120 volunteered their services, but were not needed : a total of 556 in all. These figures are so eloquent that they need no comment." Similarly, any incidents of devotion to duty during floods, fire and other catastrophes have received their full meed of appreciation from the Press.

I think, as I have already indicated, that one of the main features of the attitude of the Press to the telephonist during recent years has been a desire for fair play. Intemperate criticisms of the staff of an exchange at any given place are usually followed by the publication next day, or soon after, of letters championing the operator. Sweeping attacks on the service are often accompanied by reports of interviews with the exchange staff and by any attempt to learn the telephonists' point of view—often with the happy result of eliciting the fact that, after all, there is little to complain of. The vast majority of telephone users have only the vaguest ideas about the inside of an exchange or of the methods of working it. The Press, always in search of good copy, has on the whole a much better understanding, the result of beneficial visits to these great nerve centres of the country's economic life. It could, I think, be demonstrated that the old jokes about novel-reading and knitting at the switchboard are disappearing (the wrong number joke having become the great sheet anchor of the Press humorist), whilst appreciative and intelligent accounts of the telephonists' calling are nowadays by no means an uncommon theme for the journalist's serious efforts.

Sometimes one can suffer from one's friends. For instance, I might name the exuberant paragraphist who wrote a few years ago in one of the great dailies as follows : –

"More than a thousand of London's prettiest women work every day in the large telephone building near St. Pauls. Hundreds of women of 5 ft. in height, with good teeth, acute hearing, perfect eyesight, perfect respiratory systems and normal digestive powers were seen in the telephone exchange by a woman representative yesterday. . . . There were rows of large angelic grey eyes, sparkling brown ones, unsuspicious blue and fascinating green eyes. Most of the girls had bobbed hair, but beneath the switchboard lights it gleamed honey, russet and raven."

A little of this was too much for *Punch*, as no doubt it is for you. Reminded of Beauty and the Beast, *Punch* said :—

"I have always considered it one of the gravest defects of the telephone system in this country that the subscriber cannot see the operator. If this reform cannot be arranged meantime, the next best thing is to have something like the foregoing details on which the imagination can work.

"In the absence of such information a worried subscriber is apt to lose his head and behave abominably. I myself have overheard a man in the City flatly tell her that he didn't believe her when she said a number was engaged. Now, if he had known the young woman to whom he was talking had a perfect respiratory system (enabling her to say 'Newington, ninety-nine" without the suspicion of a wheeze), angelic grey eyes and bobbed hair which gleamed honey, he would never have lost control of himself like that. Instead, he would probably have said politely, 'Really ? Then I'm so sorry to have troubled you. Good morning.'"

The coming of machine switching, slow but sure, is inevitable, but changes seldom take place without laments for the old order which is passing away. There is no doubt that however much subscribers may appreciate the automatic, they part with regret from the skilled and sympathetic co-operation of the operator in their telephonic hour of need. This was very nicely put in a Leeds paper, a city which, as perhaps you know, has been working on the automatic system for some years. The writer pays the telephonists the following tribute :—

"Alas, I can offer them only my thanks and a friendly farewell.

"The line might buzz and howl like the atmospherics of transatlantic wireless, but the Leeds telephone girl's voice would come through with helpful precision and briskness.

"One imagined her sitting throned in state, lifted above our petty turmoils, directing the leashed forces of electricity with queenly grace and composure. Her soothing words calmed the stormy breast with Olympian dignity. We saw her not. She was a goddess in the cloud, a voice behind the veil.

"No more shall we be able, when Fate is perverse, to liberate our emotions by saying, as we sometimes most unjustly did : 'Miss, you've given me the wrong number. What are you doing ?' The dial will stare at our confusion with no more human qualities than a brassie damned for slicing a ball, and we shall know that we have only ourselves to blame—always a hard lesson for humanity.

"Smoother of many a rough moment, helper in many worrying plights, enviable speaker of the clear word, accept a telephone user's sincere thanks."

Here, then, perhaps we may all part for the present on good terms—the telephonist with the pressman who has learned to value her efforts to provide him as efficiently as possible with the most rapid means of intercommunication known in an imperfect world ; the pressman with the telephonist who by now appreciates his sympathy with her troubles and his growing readiness to give her fair play ; and lastly the lecturer with his indulgent audience, not without a prayer that he may be exonerated from a charge of flippancy in his desire to be entertaining or of boring them with too many quotations from old files of newspapers and yellow-edged press-cuttings.

PEREGRINATIONS THROUGH THE BROADCASTING WORLD.

By J. J. T.

(*Continued from page* 195.)

THE criminal mind has quite naturally availed itself of the broadcasting potentialities of the transmission of information without the use of wires. Not long since a gang of swindlers in Germany made scoops to the tune of thousands of pounds before they were traced. A portable set afforded excellent facilities for picking up racing information at the most convenient point, their confederates specialising in this instance on French racing results. Whether from French territory or not was not disclosed. It is sufficient to state that the procedure was simplicity itself. When the results were received, a messenger would saunter past the door of the victim bookmaker with the results conspicuously displayed on an ordinary newspaper, in code. At or near this point another confederate would be handy ready to make the bet of a "dead cert"!

It was some time before the fraud was detected, and then only when members of the gang began to swindle one another and a disgruntled partner disclosed the scheme to the police.

M. Chiappe, Prefect of the Police in Paris, did not decide to institute his "Air Police Service" until it was discovered that unscrupulous financiers were secretly broadcasting abroad their orders for "the purchase or sale of francs from secret wireless stations." The "Air Police"—a somewhat misleading title, by the way, and rather associating this new force with aeronautics than radio communication—is recruited from Army telegraphists under the charge of M. Lahure, a specialist in broadcasting, particularly short-wave transmission. By means of the Belin system it is hoped, even if it is not yet actually in use, eventually to broadcast photographs and finger-prints of wanted criminals.

A fairly recent conference of county chief constables at our own Home Office, according to *The Electrical Review*, has made similar proposals for the rapid dissemination of information regarding crimes and the movements of criminals.

Broadcasting and Trawlers.—The obvious use of wireless broadcasting in connexion with fishing vessels springs to the mind at once as being "safety at sea," "information regarding the location of fish shoals," and also the "state of the fishing markets, at their respective home ports." Few of us, who probably look upon ourselves as mere land-lubbers, would associate the general adoption of wireless apparatus by trawlers with the fact that the Iceland Minister of Justice has recently been much perturbed because no foreign trawler has for some time been arrested for fishing in forbidden areas round Iceland. He did not ascribe this phenomena to the smartness of the Icelandic coastal vigilance, nor has he claimed a pair of white gloves as a tribute to the improved ethics of foreign fishermen. Not at all, and he was right. It has recently been discovered that these wicked fishermen have utilised the latest modern invention as a means of mutually broadcasting, by means of codes, the proximity of the sea police that patrol the coast of Iceland! Steps are, therefore, to be taken to bring a Bill before the Althing to compel all Icelandic trawlers to carry wireless apparatus. These sets will be under Government control and every message heard is to be recorded. Icelandic trawlers will not be allowed to use codes other than those duly authorised. By this means it is hoped that any illicit co-operation between Icelandic and foreign boats will be prevented. Reuter's Copenhagen Agency states that the maximum fine is to be fixed as high as 30,000 Kr. The Bill has not yet become law, it is understood. Meanwhile, no foreign trawlers are yet being shamefacedly towed into Reijkavijk! Mr. F. Kellaway, Chairman of the Marconi Company, speaking at the annual banquet of the Radio Manufacturers' Association at the Savoy Hotel, in December, most certainly did refer to wireless as the "happy hunting ground of the charlatan and sharepusher," but it has been left to the simple-minded seafaring man's imagination to introduce another use—or is it abuse?—for radio communication!

Legal Problems.—There are indeed quite sufficient legal points at issue in connexion with the art and science of broadcasting, apart from items already mentioned. Thus, the Lindsey licensing authority has recently had under discussion the question of certain innkeepers of Gainsborough, Lincolnshire, who, upon learning that they are breaking the law by providing wireless entertainment for their customers without first paying for an entertainment licence, each tendered the cost of such licence —5*s.*—to the local magistrates. The latter, however, referred the matter to the higher authority, while the seven applicants have been given sanction for the wireless entertainment to be continued, retaining their fees until further notice.

Electrical Interference.—Special regulations and laws have by this time been laid down by local and other competent authorities in many of the large countries regarding "interference" with wireless transmission. In Great Britain special observations have been made and an actual assessment of the various kinds of electrical interference noticed as indicated by the number of letters of complaint received by the B.B.C., for example. The latest, that for the 12 months ended December, 1929, has recently been published by *World Radio*, and are hereunder given. The return does not include difficulties due to tramway and trolley-bus systems.

Origin of Interference.	*Percentage.*
Motors driving machine tools, &c.	23.09
Small accumulator-charging plant	14.12
Refrigerating plant	10.01
Generating plant and underground or domestic power mains	9.50
Overhead telephone, signalling and power lines	6.29
Kinemas	6.10
Flashing signs	4.96
High-frequency medical apparatus	1.71
Electric lifts	1.24
Large ventilating fans	0.66
Electric railways with overhead power lines	0.58
High-frequency furnace	0.09
Unidentified	21.65
	100.00

Similar steps have been taken by the German authorities, who have found that high-frequency medical apparatus is the most serious source of disturbance. *The Electrical Review*, remarking on this latter feature, suggests that the evidence of so large an amount of interference attributable from this one particular branch of electricity is due to the fact that such apparatus is more generally used in Germany than in Great Britain.

While mentioning Germany in this relationship, it appears that the municipality of Bockenem (Hanover) has introduced special measures to prevent electrical interference with wireless reception. A recent decree prohibits the use of all high-voltage apparatus unless it bears the Government stamp signifying that no undesirable radiations are produced by its operation.

It is unfortunate that there are no published figures regarding the proportion of interference due to tram and trolley-bus systems, as it is well known that no small amount of inconvenience is caused by overhead power traction. As these lines are penned a paragraph regarding complaints received by the Corporation Tramways Committee of Oldham is before me. The matter was dealt with

by the general manager, who reported to the Committee that he had "carefully considered representations which had been made with reference to interference with broadcasting reception alleged to be due to the running of the Corporation's tramcars and submitted his observations thereon." Upon this report the Committee, after discussing the matter, "was unable to see its way to take any action at present." Not an altogether satisfactory position, if one may be permitted to make a simple comment. So much for a tramway service and its interference with broadcasting! The next instance, taken at random, is that of a public wash-house, driven by electric power at Levenshulme, and alleged to be causing interference with reception in the neighbourhood. Here the Postmaster-General communicated with the Municipal Corporations Baths Committee of Manchester on the subject, and as a result "experiments have been carried out with the co-operation of the chief electrical engineer of the Corporation with a view to the elimination of such interference."

To the lay mind these two cases give the impression of obscurity as regards the legal position of broadcasting and outside interference in this country.

Judging from two legal decisions delivered in a French court within the last few months, it would appear that "parasitic interference" in certain cases can be dealt with under the French Civil Code, where Art. 1382 provides for "reparation for prejudice caused by other persons." Case No. 1.—An action for interfering with his reception of broadcast programmes was brought by a private resident against his neighbour, the proprietor of a café who utilised a gramophone, driven by a faulty electric motor, for the purpose of reproducing dance music. The court judged that the case against the defendant had been proved and ordered the latter to replace the defective motor with an efficient one, to pay the plaintiff 50 francs per day in the interval and also 500 francs as damages, plus the cost of the action. Case No. 2.—This action was also brought by a private individual who pleaded that he was unable to enjoy the broadcast advantages of his wireless set owing to the interference from the working of a large electric sign. The court's judgment in this instance was again in favour of the plaintiff, the defendant being ordered to remove the electric sign entirely, which, it is stated, cost several hundred thousand francs to erect, and also awarded the plaintiff 10,000 francs as damages! "What," asks a contemporary and technical journal, "would have been the nature of the judgments had the source of the trouble been an electric tramway service or a generating station"?

Radio Exchanges.—Centres from which wireless programmes may be redistributed by private persons are gradually increasing. It appears to be within the power of the local council or corporation to give the necessary permission, as, for instance, the Blackburn Council, the Rawtenstall Corporation, St. Anne's-on-Sea, &c., &c.

Battery Eliminators.—The steady increase in the use of all-electric receivers has raised one or two legal points in connexion with broadcasting. On the wisdom of not bringing "eliminators" into use until the local current supply authority has been advised in writing and the communication duly acknowledged, there is no doubt. The Swansea Borough Electrical Engineer has reported to his Corporation Committee certain risks involved in the unauthorised connexion of wireless set battery eliminators to the domestic mains. The regulations in the borough of Swansea, as in many other centres of electrical distribution, are very clear on this point.

There is, however, still some hesitation on the part of certain authorities as to what is to be done in those cases where eliminators have been duly authorised and in use for some not inconsiderable period, when the change-over from d.c. to a.c. takes place. Is the vendor or the user of the current to pay for the necessary alteration to radio apparatus? A conference of representative engineers of the South-East Lancashire electricity undertakings which still supply direct current was recently held in order to arrange a common policy, but no decision so far has been declared. Some of the authorities interested are inclined to maintain that eliminators were fixed at the risk of the user and therefore the user should bear the expense of the necessary change. They urge that while the cost of the change to the individual would be comparatively small, the total expense to electrical distributors of the total of these pieces would materially and detrimentally affect finance. The Chester Corporation Electricity Committee has deferred any consideration of the matter, either by the S.E. Lancashire Conference or locally, until the Electricity Commissioners state "the terms upon which they will be prepared to give their sanction for the change-over of the local electricity distribution system." The Urban District Council Electricity Committee has taken a tentative step by requesting its chairman and engineer to investigate and recommend the best means of meeting claims in respect of wireless and other apparatus arising from the change-over from d.c. to a.c.

Who would have thought a few years ago that one's wireless receiver would be likely to prove so troublesome a little thing to corporations and companies engaged in the heavy current line?

(To be continued.)

"CALIPHONY."

BY W. T. L. (*C.T.O.*).

IT cannot be denied that a caligraphic or typewritten record of a telephonic conversation would be a valuable asset to practically every subscriber and service that uses the system even in the slightest degree.

Although such an invention has often been the subject of conjecture, perhaps even at the moment of writing an inventor may be cudgelling his brains and experimenting with apparatus in an attempt to produce the necessary attachment.

There are, of course, difficulties to be overcome, but to the writer the most prominent is the question of phonetics. For instance, the word "sceptre" would appear as "septer" and "physics" as "fizics," should it ever be possible to make a visible record of one's voice; which is a very different proposition to recording a voice. We already have that in the dictaphone, &c.

For months past the writer has racked his brain and has concluded that materialisation of the idea is quite feasible. The difficulty of phonetic inscription may be overcome by spelling the words letter for letter. In these days of photo-electric cells, selenium, and the thermionic valve, this should not present many difficulties to those who have the necessary apparatus at their disposal.

Phonovision provides the nearest approach as yet demonstrated to producing an audible record of distinction between things which, to us as human beings, are apparently similar. I say audible, because it has been found that when an image of a subject is received on a televisor, sounds which can be recorded and identified with that subject are produced. If a picture of the human face appears in the receiver, the relative sound can be recorded and reproduced at will as the original picture.

It would appear that every subject possesses a noise of its own: for when the image of various faces or objects are so recorded and reproduced, the distinction is made very apparent by a replica of each face or item appearing in the screen.

Here, then, appears to be a basis upon which to discover ways and means of introducing the "caliphone."

When one speaks into a microphone we know that at the distant station the diaphragm in the receiver vibrates, and that

our voice is primarily responsible. If, however, a thermionic valve is introduced, that vibration will be increased to a much greater frequency. Suppose it were possible to actuate a relay by the same method; and to that relay a series of small electro-magnets were attached. Within the "fields," light metal bars with type-heads might be so placed as to be attracted when the current passes through the coils. As the type struck the revolving ribbon, which has been set in motion by the bell, or connexion, it would leave an impression on the paper beneath.

It may be suggested that when speech was being transmitted the frequency would be uniform, and therefore operate all the magnets simultaneously. But—and this is where the reference to phonovision *almost* justifies its existence—articulation provides for distinct pronunciation between each letter of the alphabet, and also of figures up to ten. What if a circuit could be so arranged as to utilise this distinction for the purpose of varying the frequency, which, passing through the relay, would bring the corresponding magnet into play!

"F" stands for "Father," and "S" for "Sugar," when transmitting over the telephone at present, and we must remember that in caliphony our voice would form the control of an electrical appliance, and that "F," in this respect, would have a different effect to that of "S."

The writer has coined the word *caliphony* for want of a better. Perhaps by the time this utility makes its bow, the authorities will have found a more attractive name.

LEEDS DISTRICT NOTES.

WE are an undemonstrative race and Civil Servants are by training and tradition possibly the least demonstrative of the body politic. It was, therefore, an eloquent tribute to the esteem and affection in which Mr. E. S. Francis (Sectional Engineer) is held that so many members of all grades

MR. E. S. FRANCIS.

of the staff, from Lt.-Col. Jayne, D.S.O., O.B.E., M.C. (Postmaster-Surveyor) and Mr. J. W. Atkinson (Superintending Engineer) downwards, felt moved to give verbal expression to their appreciation of him as a Sectional Engineer and their regard for him as a man. The occasion was a large and representative assembly of the staff on July 17 in the dining room, Basinghall Street, under the chairmanship of Mr. S. F. Whetton (Asst. Engineer) to present Mr. Francis with a cheque (for the purchase of a bureau) on his departure to take up his new appointment at Reading as Asst. Superintending Engineer of the South Midland District.

Mr. Atkinson, who made the presentation on behalf of the staff, paid a personal tribute to the efficient and willing help he had received at all times from Mr. Francis. Mr. T. A. Bates (District Manager) and other officers on his staff, referred with appreciation to the part played by Mr. Francis in building up the close co-operation which existed between the Engineering and Commercial Branches. Among the many other speeches made, probably none gave greater pleasure to Mr. Francis than that made by Mr. Newby (S.W. 1) on behalf of the rank and file. Mr. Francis, in a whimsical speech, which included some reminiscences of his 16 years' service at Leeds, expressed his thanks for the good wishes and the gift which accompanied them. He said he felt sure that the reputation for sound engineering work which the West Yorkshire District possessed, and which was the result of the splendid "team spirit" amongst the staff, would continue to be maintained. He treasured, he said, the goodwill of the staff, and the friendships he had made at Leeds, as very precious memories, and concluded with a quotation of J. M. Barrie's that "Memories were given to us that we might have roses in December."

The retirement of Mr. T. W. Cartlidge, Superintendent, Leeds, H.P.O., on reaching the official span of life, was marked by a dinner and concert held in his honour at the Guildford Hotel, Leeds, on May 31. Mr. W. H. Ayrton (Chief Supt.), who was in the chair, paid a warm tribute to Mr. Cartlidge's efficiency and loyal service during very difficult times. After some of the other speakers had regaled the company with amusing anecdotes of the early career of the guest of the evening, Mr. G. E. Graham, in a happily phrased speech, presented to Mr. Cartlidge a handsome oak grandmother clock, fish servers, and a painting, as lasting tokens from the staff of their high regard and good wishes for his future well being.

Mr. Cartlidge, in responding, was humorous and reminiscent, and in concluding said he had come to the opinion that if a supervising officer did his duty conscientiously, without fear or favour, he would win the respect and maybe the affection of the staff.

During the course of the evening an excellent musical programme was contributed by various members of the staff.

We have all seen notices flashed on the screen at the local movies asking "Will Mrs. Smith go home at once," or "Will Dr. Jones call at the Box Office as he is wanted immediately."

One has often wondered, however, what means would be adopted to get in touch with a person who was one of a widely dispersed crowd of thousands of people. Obviously the call boy system of the hotel lounge would not be a practical method to apply to a huge crowd. On the afternoon of the fourth day of the Test Match at Leeds, the query was answered. There was a slight stir in the crowd and everyone turned to look at a groundsman who was walking around carrying a banner (or, to be strictly accurate, a noticeboard on a pole) bearing a strange device "Will Mr. Archibald 'Blank' telephone London Mayfair—immediately."

Now as everyone knows, the afternoon of the fourth day of the Test Match was curiously devoid of thrills, and many people were getting bored. Mr. "Blank" was located in a very short time and went to telephone to the party anxious to get in touch with him. This was not by any means the only result of the notice. The word "telephone" had been suggested to the crowd. Behind us we heard a man say "Well, this is a wash-out, I am going to telephone to Jim to fix up a round of golf." Evidently similar thoughts had germinated in the minds of several spectators because there occurred a small but well defined movement in the direction of the telephone kiosks, and presently there was a queue of four or five people outside each kiosk.

This incident suggests possibilities in the direction of imbuing the telephone habit into the daily life of the man-in-the-street, a habit which, once formed, would be of the snowball variety and bring grist to the Departmental mill.

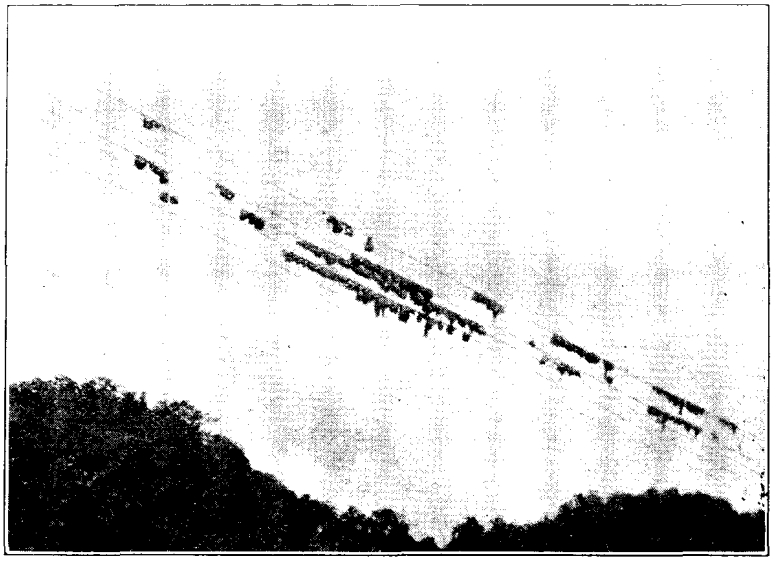
Bradford Notes.—Our regular Bradford correspondent has communicated some disjointed notes containing the words "favourite resort"—"brief respite from multi coin boxes and calling signals"—and "Morecambe," from which we conclude that she has either departed on leave or has just returned to the daily round after a brief spell at the seaside. She does, however, remind us that our congratulations are due to Miss C. Steel on her success in the Clerical examination, though her success may soon mean Bradford's loss.

CORRESPONDENCE.

BIRDS' NESTS ON TELEGRAPH WIRES.

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

DEAR SIR,—The enclosed photograph may be of some interest showing what the Indian Telegraph Department have to contend with in trying to maintain telegraph communication in that country. The photo shows a number of bottle birds' nests built on the telegraph wires in Assam. It must



not be assumed that the wires are usually in this condition. The nests were allowed to grow for four days specially for this photograph. It shows the rate at which these birds can build. Ordinarily, during the nesting season, the wires are cleared daily. Snakes, entrails dropped by kites and vultures, and flying-foxes are amongst other things which the line-staff in India have to contend with in maintaining telegraph communication in that country.

Yours truly,

B. WIENICK,
Director of Telegraphs, India.

Guildford, July 8.

TELEGRAPHIC ZONE SYSTEM.

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

Dear Sir,—Numerous suggestions for increasing telegraph traffic have been submitted and made public through these columns, but practically all are based on the assumption that to wipe out the deficit, Peter must be robbed to pay Paul.

If I may express an opinion, the zone tariff suggested by Mr. Binder, of the A.G.D., although the best yet, would probably fail for more reasons than one.

I predict that no matter from which geographical point a business man operates, his telegraphic accounts in a given space of time would be heavier than hitherto; which, of course, is your correspondent's idea.

But in previous correspondence it has been pointed out that, whatever may be said in the House, the loss on telegraphs is of no concern to the public - people simply pay for their messages to be delivered at the utmost speed. They have not the least desire to know the reason for declining traffic receipts. Those whose telegrams are destined for long journeys (disguised as zone areas) would, I should imagine, be rather uncomplimentary when told that "the purpose of the extra charge is to try and show a profit." Poor consolation to be informed that it has cost the gentleman who has just handed in a message for Eastbourne only *9d.*!

The occasional sender hands in his message for (say) Scotland. Be he a native of that country, he will have something to say. The business man operating from London, or any commercial centre, may probably find it very difficult to discover clients, agents, or customers, sufficient in number, and within the three-farthing zone, to balance the extra charge on his messages intended for further afield.

Apart from this, to balance the charges by a reduction here and an increase there might wipe out the deficit, but there the return would stick. Why not go ahead and show them business is meant? I know all about "public service," "not a profit-making concern," &c., but it is submitted that a profit—beg, pardon, surplus—would be unavoidable if such a scheme were introduced that would be of mutual benefit to Department and public.

Posting telegrams overnight has been the subject of criticism, and rightly so, perhaps, in the case of "twelve words a shilling." May I suggest that an inland "P.L.T." service be inaugurated at a deferred rate? It has been said that the cost of transmission exceeds the charge. Possibly—in much the same way that the cost of an article manufactured in small amounts greatly exceeds that of the same item produced *en masse*.

From my observations there are certain periods of the day when, although not idle, apparatus (not the human element) shows signs of inertia. Cannot an attempt be made to eliminate that waste of time? Half a loaf is better than none.

The periods mentioned are, of course, known; and if traffic is accepted at deferred rates for transmission at this time of day only, surely that would be more profitable than nothing at all. Moreover, it is my firm belief that in this question the utilising of time for the purpose of compiling a deferred tariff, will be found the simple solution to a very difficult problem.

C.T.O., April, 1930. W. T. L. (T.S.).

WESTERN DISTRICT NOTES.

Plymouth Fete.—The Telephone Staff at Plymouth held a most successful garden fete at Inceworth (by the kindness of Miss Mary Bayly, J.P.) on Saturday, June 28.

The day was as gloriously fine as a day can be in Devonshire, and the brilliancy of the affair was assured by the presence of Lady Astor, who performed the opening ceremony. The fete was held in aid of the Plymouth Postal Scholarship Scheme, whose aim it is to send at least one student every year to the University College of the South-West at Exeter. The scholarship this year was won by Miss Ruth Penny, the daughter of a postman at Totnes.

LADY ASTOR AT OPENING OF GARDEN FETE ORGANISED BY PLYMOUTH TELEPHONE STAFF.

Group includes Miss England (Secretary); Mrs. Berlyn; Mr. Berlyn (Head Postmaster); Miss Mary Bayly, J.P.; Miss Westlake (Chief Supervisor); Mr. A. O. Spafford, O.B.E.; Mr. Horwill; Mr. Edgecombe (Assistant Postmaster); Mr. Rogers (Chairman of the Fund); and Mr. Emms (Head Postmaster, Totnes).

In the course of her speech Lady Astor commended the telephone operators for their courtesy and helpfulness.

Mr. A. L. E. Berlyn, Head Postmaster, Plymouth, presided, and other speakers were Mr. E. G. Horwill (the mainspring of the scheme), Professor Honox of the University, Mr. W. J. Rogers, Mr. Emms (Head Postmaster, Totnes), Capt. Bannister (Sectional Engineer), and finally, Mr. A. O. Spafford, O.B.E., Surveyor, Western District.

The festivities were carried on continuously from 2.30 p.m. till 10 p.m., visitors being entertained by the Tramways Band, and delightful exhibitions of dancing by the pupils of Mrs. Pinch.

There were numerous stalls and sideshows, also beauty and ankle competitions for the ladies and a hat-trimming competition for the men.

The Committee and especially the Fete Secretary, Miss Daisy England, must be well pleased with the result of their efforts, which produced £64 for the fund.

This educational scheme is attracting attention in many quarters, and in addition to receiving many enquiries from towns in the British Isles has received an enquiry from South Africa.

During the day it was learned that Miss Bayly's father had one of the first, if not the first, domestic telephone circuits in this country. It appears that Professor Graham Bell, while in Plymouth in 1877, for the purpose of demonstrating his invention, stayed with Miss Bayly's father and fitted up for him a telephone circuit between the house and stables in order that the coachman or gardener could be summoned to the house. It was very apt that Miss Bayly should now be associated with a Telephone Fete.

Exchange Names.- The notes in the June issue, under the heading "We Telephonists" on exchange names, provoked reflections on some of the names of exchanges in the West Country. Bovey Tracey, for instance, sounds romantic, and indeed, the second part of the place name is traced to a de Tracey who was concerned in the murder of Thomas à Becket. Then Tintagel and Camelford (the Camelot of legend, 'tis said) revive memories of the Arthurian legend.

Bishops Caundle, Bishops Lydeard, Charlton Mackrell, Cheriton Bishop, Chilton Polden, Corton Denham, and many other such, suggest an aristocracy of place names having their origin in medieval times.

Glastonbury is another name that conjures up the dim past when waiting for the number one had called on that exchange.

We find the Saints well represented, for have we not St. Agnes, St. Budeaux, St. Buryan, St. Just, St. Tudy and many more.

Quite recently an exchange was opened at Mousehole. Surely this name must come from a fairy story or nursery rhyme.

Then there are the quaint and curious names. Downderry, for instance, how did this slip out of Ireland into Cornwall ? Ipplepen, Lostwithiel, Marazion (meaning Jews Market), Perranarworthal, Stogumber, and Sticklepath, how quaint they all sound.

We in the West have no Royals, Waterloos, Centrals, Citys, and the rest, but then who wants them when we have those mentioned above and many more like them.

F. J. F.

READING NOTES.

THE staff of the Traffic and other branches of the District Manager's Office assembled at King Edward Buildings on Saturday, April 12, to say farewell on the occasion of the retirement of Mr. JAMES SPLATT from the service and his departure to Vancouver.

The District Manager, Mr. C. F. Moorhouse, in asking Mr. Splatt's acceptance of a cabin trunk and expanding suit case paid tribute to the faithful service rendered in his capacity as Assistant Traffic Superintendent and the many difficult cases he had steered to a successful issue. Mr. Vaughan (Traffic Superintendent), Mr. Young (Contract Manager) also paid tribute to Mr. Splatt's personality and the genial manner extended to all. Mr. Splatt suitably responded with much feeling.

On April 29 the staff again assembled in King Edward Buildings to say goodbye to Mr. STANLEY A. YOUNG, who had been promoted to District Manager of Aberdeen. Mr. Luscombe, in asking Mr. Moorhouse to make the presentation, remarked he was sure that he, Mr. Moorhouse, felt proud that Head Office should have selected two of his Staff, i.e. Mr. Edward (late Traffic Superintendent) and now Mr. Young, to be District Managers, within a space of two years, which showed that the Reading District was held in esteem by Head Office. Mr. Moorhouse, in making the presentation, eulogised Mr. Young's sterling work in the Contract Department during his stay in Reading, and said he was proud of the fact that two District Managers had been appointed from his staff. Mr. French, Staff Officer; Mr. Vaughan, Traffic Superintendent; Mr. Frame, Assistant Traffic Superintendent; Mr. Mullens of the Engineering Staff also congratulated Mr. Young.

Mr. Young responded, and emphasised that without the loyal co-operation of his Contract Staff he could not have secured the honour now conferred upon him. The presentation consisted of a gold watch suitably inscribed, a gold Eversharp pencil, and a case of perfume for Mrs. Young. Mr. Young was also the recipient of a Parker Duofold pen and stand from a few of his friends outside the office.

The Reading District still continues to progress—by the time these notes are in print another milestone will have been passed—the District having reached 42,000 stations, which is very gratifying to all concerned.

Development in connexion with the succession of orders for private automatic branch exchanges is very satisfactory, one having been secured from His Royal Highness the Prince of Wales for his residence, The Fort, Virginia Water, the University of Reading and others.

Since the last notes appeared we have received a visit from the Royal Counties Show which was housed in the Prospect Park, loaned by the Corporation, and acknowledged by the Show authorities to be one of the finest sites which they occupy from year to year. Postal and telephone work during the Show exceeded that of other years. The Contract Branch were represented adjacent to the Show Ground Post Office, with a Contract Officer in attendance, who was able to give information regarding the service to numerous enquirers. A school automatic demonstration set, kindly loaned by The Telephone Development Association, was on view and created a deal of interest. Outside the Public Call Offices, exchange lines were provided for the railway companies, Reading Chamber of Commerce, and various prominent firms.

The new Contract Manager has been appointed in the person of Mr. W. S. Coulsell, from Aberdeen, and under his regime the Contract Department will receive the direction and guidance which we believe will be forthcoming.

The District Office Staff are now housed in their new offices at the eastern end of the town, and the change is welcomed by all those concerned, it being situated in one of the most healthy parts of the borough, and named the Sanitorium on account of its invigorating surroundings.

Social.—The Post Office, Telephones Cricket Club (Reading).—Two successful whist drives and dances have been held during the winter and were attended by a large number of the staff and friends. Mrs. Moorhouse kindly presented the prizes on each occasion. The M.C.s for whist and dances were Messrs. Luscombe and Watson. Fixtures have been arranged for the coming season, including return matches with the District Manager's Office, Guildford, and the St. Albans Engineers. The season is looked forward to with every confidence that the results achieved by the team last season will be repeated during this one.

The Cricket Club have so far had a successful season. The District Managers' staff from Bristol and Guildford have been met. The return matches will be looked forward to with interest. The visit to the Bournemouth Y.M.C.A. on Whit-Monday proved enjoyable, and the creditable performance against such a strong combination was regarded as very satisfactory.

SOUTH WALES DISTRICT.

A PRESENTATION was made on May 17 to Miss F. A. Dowdall, Clerical Officer, who has been voluntarily transferred to a similar post under the Ministry of Labour.

The presentation of a drawing-room 8 day clock, handbag, and silver photograph frame was made by Mr. R. S. Grosvenor, Traffic Supt., Class I, who referred in suitable terms to Miss Dowdall's 15 years' service and the popularity in which she was held by the staff.

Mr. Grosvenor's remarks were heartily supported by Mr. W. MacDonald, Traffic Supt., Class II, Mr. D. B. Hebenton, Assistant Traffic Superintendent, and Mr. W. H. Newcombe, Clerical Officer.

FOR OUR ADVERTISERS, &c., &c.

Australia, Melbourne. Aug. 19. Supply and delivery of telephone jacks (Ref. B.X. 6477). New Zealand, Wellington. Sept. 2. Supply of telephone bells (Ref. A.X. 9871) (Contract No. P. & T. 151 2418). Also Wellington. Sept. 9. P. & T. Dept. Supply resistance spools (Ref. A.X. 9867). Australia, Melbourne. Sept. 16. Instrument cords (Schedule C 627) (Ref. A.X. 9890), also switchboard cords (Schedule C. 626) (Ref. A.X. 9889), also supply insulated wire (Schedule C. 631) (Ref. A.X. 9879).

Reports Worth Reading.—That by Mr. E. Murray Harvey, O.B.E., Commercial Secretary, Santiago, prepared for the Department of Overseas Trade. Deals specially with Electrical Import Trade of Chili, difficulties of present-day market, and suggests line of action for Britishers (H.M. Stationery Office, price 3*s.*). Also Mr. W. J. Gleeny's "Statistical Summary," dealing with economic conditions in Sweden (H.M. Stationery Office, price 1*s.* 6*d.*).

The Board of Trade Journal reports that the second radio exhibition will be held in Bucharest from Sept. 7 to 28. This exhibition is to include the products of all the branches of the "radiophonic" and "aerochemical" industries, but special prominence will be given to apparatus intended for military purposes. Inquiries should be addressed to the Comite d'Organisation, Exposition Internationale de Radio, Palais des Postes, Direction Radio, Bucharest.

J. J. T.

LONDON TELEPHONE SERVICE NOTES.

Contract Branch Notes.

THE business done by the Contract Branch during the month of June resulted in a net gain of 757 stations.

The net increase in exchange stations for the six months ending June 30, 1930, amounted to 20,388.

Rural Automatic Exchange.—It is probable that by the time these notes appear the first Rural Automatic exchange in the London Telephone area will have been opened. The exchange will be known as Stapleford, and will serve principally, the attractively named and delightful and picturesque districts of Stapleford Tawney, and Stapleford Abbotts. The opening of this exchange will provide the most up-to-date telephone equipment to, amongst others, a group of farmers situated in the most remote part of the London Telephone area.

Names. Development officers in the course of their work frequently encounter original ideas of builders to attract prospective purchasers.

In one district a builder commenced by erecting some houses which he called "Little Palaces." This was replied to by another who described his property as "Big Palaces." Not to be outdone a third launched out with "Mansionettes," and a fourth believes that he has outmanœuvred his competitors by advertising his houses as "Kingsbury Castles."

Whatever may be the virtues of the different builders' efforts, it seems to us that houses described by such delectable names can scarcely be complete without a telephone.

Promotions. Our congratulations are offered to Messrs. Grant, Goodall, and Seeley on their promotion from Contract Officer, Class II to the rank of Contract Officer, Class I.

Retirement.—An informal gathering of the staff of the South East Contract Office took place on June 19, 1930, to wish goodbye to Mr. Peach, Contract Officer, Class II, on his retirement from the Service.

Mr. Peach, who joined The National Telephone Company, Ltd., in 1906, was presented by the District Contract Manager with a cheque subscribed to by his colleagues as a token of their good wishes to him.

Contract Branch Cricket.—Further progress has been made in the series of matches arranged in connexion with the Shield Tournament.

The last two matches played against the Messengers both resulted in wins.

In the first game, played at Chiswick, the Contract Branch team batting first, declared at 123 for 7 wickets, Goodger and Dickinson being top scorers with 36 and 26 respectively.

The Messengers, in reply, opened with a fine first wicket partnership which yielded 45 runs scored at the rate of two a minute.

Lester 20 and Hurley 23 proved, however, to be the only two capable of offering any serious opposition, and the whole side were tumbled out for 57 runs. Pearkes had the splendid analysis of 6 wickets for 11 runs.

In the return match, played at Battersea Park, the Messengers again fared moderately, and although several of the boys batted stubbornly, they could only muster 41 runs. These were easily knocked off by Doody 51 and Barnsley 18 not out.

It was pleasing to observe the good work of the Messengers in the field, some of their ground fielding being of a high standard.

The London Telephonists' Society.

The Committee of this Society have already been hard at work on the production of an attractive programme for the 1930-1931 Session, and they are featuring an evening devoted to a description of "Other People's Work." The "London Omnibus Service" and "Catering" are the two subjects chosen, and they will be introduced by experts in those commercial spheres, the lecturers being on the staffs of the London General Omnibus Company Ltd., and Messrs. J. Lyons & Co. Ltd. Another outstanding item of interest during the session will be a lantern lecture dealing with the processes employed in the manufacture of automatic telephone apparatus and some sidelights on the other uses to which such equipment is put, for example, the "Totalisator." Then, too, Mr. W. C. Griffith has undertaken to relate some of his experiences whilst investigating the question of long-distance telephony in America. The annual dance is to be held at Coventry Street Corner House in January, 1931, and a Telephone Play, burlesquing some of the diverting happenings in official life, will be presented in April. "Laugh and Keep Slim" is the motto of the author, Miss J. M. McMillan, who has once more undertaken to devote her spare time to making and mixing the ingredients.

The Elocution Competition is always a draw, and this Session it is to be organised on an exchange instead of an individualist basis. A trophy suitably inscribed will be presented to the winning team and will be held at their exchange for one year. A personal prize will also be awarded to each member of the successful team.

The Committee of the Society guarantee enjoyable evenings to those who attend and hope that an increased membership will reward its efforts.

London Telephone Service Sports Association.

The first annual sports meeting was held on the Chiswick C.S. Ground on Friday, July 18. Promptly at 5 o'clock the first race commenced, and except for a few minutes interruption due to the rain, event after event went with a swing until 8.15. There were over 500 entries and 30 items. The results were as follows:—

Veterans' 100 *Yards Race.*—1, F. Moyle; 2, H. A. Hamilton; 3, C. D. Upham. Prizes kindly presented by Mr. M. C. Pink.

Men's Half Mile Handicap.—1, G. C. Brooks; 2, H. S. Read; 3, J. Greenway.

Girl Probationers' Race.—1, Sipthorpe; 2, E. V. Burton; 3, H. Beaves. Prizes kindly presented by Miss J. Liddiard, M.B.E.

Throwing the Cricket Ball (Ladies). 1, H. Beaves; 2, V. J. Bannister; 3, B. Searle.

Throwing the Cricket Ball (Men).—1, E. W. Sweetingham; 2, J. Cameron; 3, G. J. Moon.

Children's Handicap.—Boys.—1, Stanley Smith.
Girls.—1, D. Culley.

Boxes of chocolates were presented to all other runners by Messrs. Nestle & Anglo-Swiss Condensed Milk Co.

Wheelbarrow Race (Ladies). 1, D. Parsons—Burgess; 2, Kinnear—Bolton; 3, Carter—Pollard.

100 *Yards Scratch (Men).*—1, A. D. Rollins; 2, H. S. Read; 3, E. W. Sweetingham.

Invitation Relay Race (Ladies). 1, L.T.S.; 2, Ministry of Health; 3, Inland Revenue.

Match—Girl Probationers v. Boy Messengers: Teams of 4.—Girls 100 yards, Boys 110 yards.—1, Boy Messengers: E. G. Waters, W. Hurley, S. Mackenzie, and T. Dickerson. Prizes kindly presented by Mr. R. Tinniswood, O.B.E.

Tug of War.—Won by Accounts Branch.

Boy Messengers' Race: 100 Yards.—1, E. G. Waters; 2, W. Hurley; 3, S. Cooke. Prizes kindly presented by Mr. W. R. Bold.

Inter Branch and Exchange Relay Race (Ladies).—1, Trunks(A); 2, Putney; 3, Ealing. Challenge Cup presented by the Clerical Officers' Association.

Inter Branch Relay Race (Men).—1, Traffic Branch.

Egg-and-Spoon Race (Ladies).—1, C. Harknett; 2, H. Beaves; 3, D. Frost.

Sack Race (Ladies).—1, M. Newling; 2, D. Boothby; 3, P. Pidgeon.

100 *Yards Scratch (Ladies).*—1, M. Menzies; 2, D. Uglow; 3, J. L. Rosier; 4, V. J. Bannister.

High Jump (Ladies).—1, D. Uglow; 2, —. Searle; 3, V. J. Bannister.

Three-Legged Race.—1, R. Fowler—L. Alward; 2, G. M. Jones—J. L. Rosier; 3, P. Clapham—D. Davenport.

Although there were no records broken there was some very good running. Trunks (A) gave a splendid display in the Inter-Branch and Exchange Relay, and well deserved the C.O.A. Trophy and the replicas of the Cup presented to the members of the team. The Ladies Invitation Relay Race was another excellent event, and the L.T.S. team once again proved their superiority to all comers. The match between the Girl Probationers and the Boy Messengers came about by the former challenging the latter, but in spite of each girl in the team receiving 10 yards, they failed to attain their object of beating the lads. There were no less than 10 heats in the 100 Yards Scratch Ladies' Race.

Miss Menzies, of Ealing, was an easy winner, her time being 11.4. Over 60 competitors entered for the Egg-and-Spoon Race, and there were 8 heats of 7 pairs in the Three-Legged Race, which proved that these events were as popular at the L.T.S. sports as at similar meetings.

The prizes were distributed by the Controller, who expressed his surprise and delight at such a gathering. He felt sure that as a result of that evening the Association would make the occasion an annual event, as future success was undoubtedly assured. Before concluding, Mr. Napier took the opportunity of handing over to the Ladies' L.T.S. Team the Civil Service Challenge Cup which they had recently won and also held in 1929.

Mr. Smallwood of the C.S.S.A., who acted as Chief Judge, followed and encouraged the Association by his appreciation of their successful effort. He called for much warmer support from the staff on future sports days.

Mr. Hugh Williams proposed a hearty vote of thanks to the Controller and to all who had helped to make the meeting such a success.

Special reference should be made to the attendance of a contingent of the L.T.S. Ambulance Corps, who rendered first aid to a number of competitors; the injuries, fortunately, were not of a serious character.

Tennis.—The annual competitions for the "Cox" Cup (Ladies' Doubles) and the "Pink" Cup (Ladies' Singles) are still in progress, and supporters as well as competitors are reminded of the finals for both cups at Chiswick (Civil Service Ground) on Saturday, Sept. 20, at 2 p.m.

Personalia.

Resignations on Account of Marriage.

Assistant Supervisors, Class II.

Miss M. M. E. Tanner, of Purley

Telephonists.

Miss M. M. T. McGlennon, of Purley.	Miss W. M. Horwood, of Paddington.
„ B. E. Abbott, of Temple Bar.	„ A. Pullen, of Paddington.
„ E. E. Hearn, of Temple Bar.	„ M. D. Moyse, of Flaxman.
„ M. Ludlam, of Richmond.	„ M. Tompson, of Harrow.
„ E. I. Parry, of Maida Vale.	„ M. A. Luxton, of Bishopsgate.
„ M. I. G. Grammer, of Victoria.	„ M. E. Brigden, of Bishopsgate.
„ I. F. Fussell, of Victoria.	„ E. V. Hollands, of Sydenham.
„ D. A. Walker, of Victoria.	„ K. Lambourne, of City.
„ E. M. Webb, of Victoria.	„ O. Parsons, of City.
„ E. M. Williams, of Museum.	„ W. Lynch, of City.
„ N. F. Gare, of Museum.	„ M. K. Tomlin, of Croydon.
„ M. W. D. Webster, of Toll "B."	„ A. A. Slade, of East.
„ V. M. King, of Tandem.	„ E. M. Cave, of East.
„ L. E. Carter, of Tandem.	„ A. B. Dorman, of Avenue.
„ W. E. P. Godfrey, of Maryland.	„ E. Graham, of Hop.
„ V. Lawrence, of Trunks.	„ C. A. Clarabut, of Hop.
„ L. M. Boughton, of Trunks.	„ E. Lanford, of Hop.
„ A. Pudney, of Trunks.	„ P. Woodhead, of Hop.
„ E. M. Moore, of Trunks.	„ E. M. Mitchell-Dwelly, of Gerrard
„ E. Knight, of Central.	„ E. G. Harsant, of Wanstead.
„ C. M. Davies, of Central.	„ D. A. M. Sedgwick, of Wanstead.
„ M. L. Johnson, of Central.	„ R. E. Daniell, of Waterloo.
„ Dorothy M. Brown, of Central.	„ A. C. E. Denny, of Streatham.

C.T.O. NOTES.

Promotions.- Mr. P. E. Crisp, Overseer to Asst. Supt. (Cable Room).

Retirements.- Mr. F. J. Taylor, Superintendent Lower Grade; Mr. H. Parker, Overseer.

Obituary.—We regret to announce the death of Mr. W. J. Carter, Telegraphist, who passed away on June 3, and to whose widow we extend our sincere sympathy.

Rambles.—The "F" Division second ramble of the season was once more in Surrey, Mickleham being the venue. Although rain set in for a time, the walk over Mickleham Downs was most enjoyable.

Sports: Cricket.—On Wednesday, July 2, the "Centels" visited Southampton in the Third Round of the Curtis Bennett Shield.

Sir Russell Bencraft, J.P., president of the Southampton C.S.C.C., welcomed us at lunch with a few entertaining remarks to which Mr. H. W. Dunne, of ours, suitably replied.

Southampton won the toss and fared badly, losing their first four wickets for 11 runs. J. Crookes then came to the rescue, and batting magnificently scored 94. But for his display the Centels would probably have won by a much bigger margin. S.O. were all out for 169, W. T. Cook taking 4 wickets for 46. W. T. Cook and W. Drummond opened well for the Centels, and the total was carried beyond the 50 before Cook was out to a good catch. E. J. Harman then joined Drummond and played a very steady innings. In spite of continued bowling changes we passed into the fourth round by the margin of three wickets. Drummond was top scorer with 53, Harman contributed 27, and Cook 24. For S.O. J. Crookes took 3 wickets for 9, W. Hodgetts and R. Russell each 2 for 53.

We all thoroughly enjoyed the day and appreciated to the full the kindness and hospitality extended to us, and hope that the future will afford us an opportunity for showing our feelings in a more tangible way.

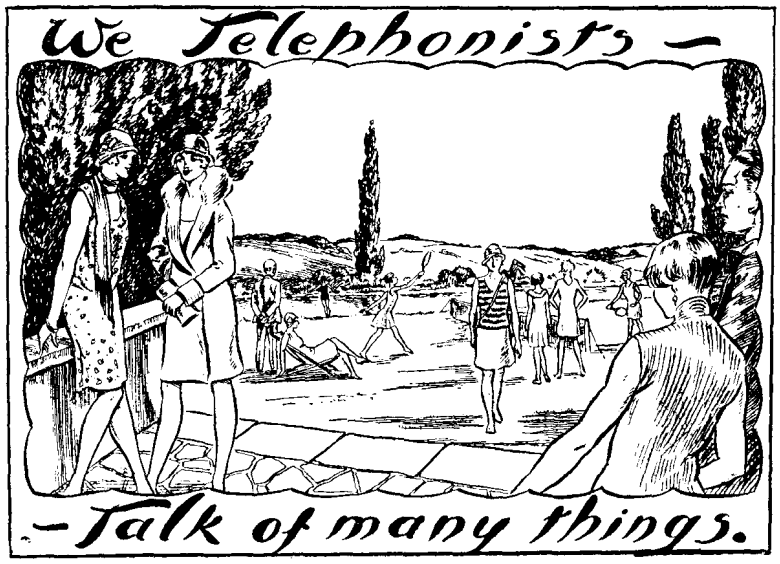
Annual Sports.—The Centels held their Annual Sports at Chiswick on July 11. There was only a fair attendance, and probably the weather which, although unsettled, eventually turned out bright, had something to do with this. Mr. and Mrs. Stuart Jones attended and Mr. D. M. Ford, the late Deputy Controller, was also present. Mrs. Stuart Jones kindly presented the prizes.

Invitation Relay Race, 880 yards, 440 yards, 220 yards, provided a very fine race, the Customs and Excise winning from the Imperial and International Communications Company.

Briefly the results were as follow :—

Inter-Divisional Race: Women—Winners "L" Division.
Inter-Divisional Race: Men—Winners "D" Division.
One Mile Championship—L. Sowden.
660 Yards Cycling—A. H. Fewell.
One Mile Cycling—A. H. Fewell.
100 Yards Handicap: Women—Miss M. Badderly.
The "A. E. Knowles" Cup was won by the Central Hall.

The Side Shows proved very attractive.



Woe in the Wooing.

THE sea kissed the shore: kissed with the quiet, gentle fervour of a lover. The shore seemed to accept his caress with a shy eagerness, timid, half-resisting but surged with joy. And yet there was a masterful, possessive air about him which somehow made her afraid, tinged her answering smile of welcome with sadness and made her pride seem rashness. Sometimes he would rush boisterously to keep his tryst with her and then each would embrace passionately and with abandon. The air would ring with a wild music, the wind would crest him with a majesty and would bend the coarse grasses as in adoration of an advancing hero. But to-day they were langorous one might have thought them to be indifferent to or oblivious of each other. The sun that burnished her gold and silver, flecked him with a myriad lights as he lay idle and complacent beside her. The ripples seemed merely evidence of a subtle restlessness and quiescent power. They smiled together over the past; they dreamed of the future and the present that was theirs seemed more remote than either. He whispered of his departure and of the treasures he would bring on his return. He would deck her with seaweed of wondrous lustre and texture; he would fringe her with ribbon of the purest white; he would strew dainty shells and bright stars at her feet and the pebbles should sing at his touch. He would leave behind for a remembrance soft pools which should reflect the glory of the morning, the pagentry of the skies, the riot of the sunset and the pale peace of the moon. They should be miniature gardens of the deep. Tiny fish should lurk in their shadows; small crabs should flit and burrow and even the limpet should lift its shell and peer cautiously. And then, when he returned, he would take her for his own, for ever—and none should separate them.

The surveyor and the engineer came and they plotted. They brought cranes, steam shovels, pumps, iron girders, timber baulks, concrete and stone blocks. They made a road and a pavement with a granite curb, and by the water-side they planted iron railings. They erected fanciful lamp-standards, and laid out gardens with lawns and flowers and seats and artificial rockeries. "This," they said, "is a Parade." And while visitors beheld the offensive defences and exclaimed, "This is a Coming Resort—a Rising Watering-Place," the inhabitants said, "Let us pull down our barn and build an hotel or a boarding-house, and let us call it 'Sea View' because it is so." The children said, "This is not the sea-side; there are no pools or sand"; but their mothers and fathers and uncles and aunts said, "Rubbish—this is the sea-side; look, there is the bandstand."

One night the sea returned, joyous in anticipation. He ran, he leapt, he tossed, until with swift easy strides he reached a wall. He halted, receded, advanced, retreated, piled high, crouched low, pawed the rough beach and cast stray timbers away contemptuously. Patiently he waited; he knocked, he listened; he hunted, at first curiously, then anxiously, then frenziedly. This was the trysting-place; where was the shore, his beloved? Was she hiding in a teasing mood; had she proved faithless? He seemed to sink back in despair; he became sullen and then, as hope faded, the latent passion blazed. He raged, he roared, he hurled himself madly against the wall; he sobbed, he struggled, fought, tore, battered, crashed, boomed, cursed, massed his foaming chariots and charged like thunder. He called upon the tempest and the wind howled his fury, the rain hissed in hate. The lightning jagged the sky and seared the blackness. But the wall stood like an implacable gaoler and the fair shore remained imprisoned for ever.

Now when the courage of the day has departed and the mystery of night descends, the sea takes on a sinister look, seeking, ever seeking and never finding, clawing at the wall, glaring evilly, showing its fangs, snarling, threatening, heaving; restless, passionate, treacherous; snatching here and there, breaking spitefully; cold and pitiless. And the cold and pitiless bandstand remains as a painted Jezebel mocking the sea and his lover.

PERCY FLAGE.

A Visit to the Rosa Morrison Hospital.

When my chief told me my name had been drawn as one of those accompanying Miss Cox to a Garden Fete, I felt Thursday must be a lucky day for me. I knew we should enjoy ourselves, for I had been promised a very pleasant afternoon when asked if I should care to go.

We met Miss Cox at Marble Arch at half-past two, where a lovely car was waiting to take us to the Rosa Morrison Hospital, Barnet. Our arrival was well timed, for the opening ceremony was about to be performed, after which Miss Cox presented us to Lady Plender, whose guests we were.

The stalls held a variety of goods from which we made several purchases. I think the "Lucky Dips" were most popular and caused some fun. They included a peg-bag, bottles of coloured ink, bath salts, &c. Children dressed in smocks and print frocks, and folk danced on the lawn, and a ladies' string band provided music.

Matron took us over the hospital and nurses' quarters. It was visiting day, so you can guess we were not the only people in the wards, of which there are four. The cream walls, blue curtains and bedspreads were such lovely soft shades, and had a very pleasing effect. The gardens were beautifully kept, especially the kitchen garden. When matron told us one gardener did it all by himself, and out of each week spent one day taking patients to and from the hospital, we were astounded. The man must love his work for he seems to have coaxed every wee plant and flower to do its best for him. The night nurses have their quarters (which is a large hut divided into two rooms) in the paddock adjoining the hospital. We inspected these and found the same colour scheme and air of restfulness, which is needed especially for those who have to turn day into night.

After our tour round we were given a delicious strawberry tea, goodbyes were said, and we were driven home.

One feels the need of personal service and financial help after visiting such a hospital. Health can never be bought, so those of us who are well and strong should do all we can for the less fortunate.

J. F. EVANS, *Clerkenwell.*

There once lived a fellow named Bell,
He is dead: you may say "Just as well!"
He invented the 'phone,
Which some grumblers will own
Should ensure him a warm place in—Harrow.

P.D.'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.1.

GLASGOW TELEPHONE NOTES.

WE extend a hearty welcome to Mr. E. B. M. Lord on his arrival at Glasgow to take up duty as Traffic Supt. (II), to which grade he has been recently promoted. He does not come as a complete stranger, for, besides knowing and esteeming those whom we know and esteem, he renews acquaintance with his present District Manager, with whom he served in Liverpool several years ago, during his traffic training period. Mr. Lord comes with a reputation as a player of Ye Antiente and Royall Game, at which he will find no lack of opportunity to exercise his skill.

Marriages.—

Miss N. McLean, Ibrox.
„ M. McWhinnie, Douglas.
Miss M. Wilson, Central.
„ E. O. Stag, Bridgeton.

I have no Muse,
Dear Mr. Law,
My brains refuse,
Dear Mr. Law,
To do a stroke
Of work. A joke
They cannot make
E'en for your sake.
So you must pen
This month again.
The *Journal* news.
I have no Muse!

M. L. TULLOCH.