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SUGGESTIONS TOWARDS THE IMPROVEMENT OF THE SERVICE.*

BY J. M. MCMILLAN.

"THE Mirrors of the Service," by a "Lady with a Duster"—such was the writer's choice of a title, but an inexorable committee made a clean sweep of it, saying sternly: "Thou shalt have but one title, 'Suggestions towards the Improvement of the Service,'" and where imagination would have run rio, it now halts and stumbles.

An improved service! How many of us, from time to time, have seen visions and dreamed dreams towards the achievement of this purpose. But alas! We have had to say sadly, with Romeo, "A greater Power than we can contradict hath thwarted our intents." So many of our pet schemes have we had rejected that we approach the subject with increasing diffidence. In the first place, there are many points of view to consider. Suggestions, then, will be many and varied, as the subject appeals to one or to the other.

"Wrong number trouble," say some, "the most unsatisfactory feature of the service at present. Lessen this by the 'stile strip' method of separating hundreds and tens digits by short pauses, thus facilitating the selection of the right 'hundreds' block, practically enforcing more deliberation on the part of the subscriber and operator, and causing the number to be more easily remembered."

"Extend the scheme of automatic selection as applied to order wire groups," say others, "and prevent confusion by limiting the use of the circuit to one operator at a time."

"Insist upon all private branch exchange operators being trained in the London Telephone Service."

"De-nationalise telephones," say the subscribers.

"Educate the subscribers," cry the telephonists.

It is human nature to want to improve, not ourselves, but the other person:—

How doth the little L.T.S.
Improve its rental dates,
It gains more honey year by year,
By putting up the rates.

The sub., upon the other hand,
Would like that climate best
Where deposits cease from troubling
And agreements are at rest.

Telephonists, I need not say,
Would hardly take it ill
If holidays were twice as long,
And T.I. forms were *nil*.

And each of us, and all of us,
Unceasingly aspire
To try to make the universe
The shape *we* most desire.

Let us, however, consider, as an experiment, not our own point of view, but the *other man's*. For instance, a great deal has been said about educating the subscriber, and he *is* being educated—by means of the preface to the *Directory*, by *Directory* headlines, by occasional propaganda, and, most useful of all, by visits to exchanges. This latter has proved to be of extreme value, and has enabled the subscriber to see the other side of the question, and to appreciate more fully how he gets his service. There is still need, of course, for an extension of educational schemes, and this is being considered. But we must be just to him. After all, he is paying for his service, and has a right to expect a good one. Besides (let me whisper this) he is not *always* to blame, as sometimes we are asked to believe. It may be urged that he can say what he likes, and no "reprisal" is possible. Experience, however, teaches us quite the contrary. The standard expressions are not *really* a handicap. There is quite a lot of scope for resentment or sympathy to be indicated by the use of any one of them. You can send cold shivers down his spine by your "icily regular, splendidly null" rendering of "I am TRYING to get them," or you can

* Paper read before the London Telephonists' Society.

make the wilderness of his soul blossom like the rose by a friendly "I am *sorry* you have been troubled." There seems, however, to be a strong case for allowing telephonists to use their discretion when a subscriber has been subjected to extreme irritation, and to reply to him sympathetically in phrases not to be found in the list of authorised expressions. The cold, inhuman "the matter shall receive attention" attitude when a subscriber has been cut off, rung in error, or connected with the wrong number might well give him cause to exclaim—"Put not another sin upon my head by urging me to fury. The time and my intents are savage-wild, more fierce and more inexorable by far than empty tigers or the roaring sea."

He is unreasonable sometimes? Well, perhaps he has made an unlucky speculation; perhaps he has been rejected—or, as the cynic will doubtless murmur, accepted! Don't infuriate him still further. Instead, give him cause to say of you:—

"Her voice was like a sad embrace; the tone of one who can divine a grief, and sympathise." We all want to exercise our imagination more. We want to imagine ourselves in the other person's place.

There is a story told of a noted democrat, Judge French, who in the days of slavery lived on the banks of the Ohio. He asked some of his anti-slavery friends to bring to his office the first runaway negro that crossed the river, as he could not understand why they wanted to escape. This was done. He then asked the slave if he had been ill-treated in any way, ill-clothed, and so on. To each question the slave replied in the negative. "Well," said the judge, "you say you had a kind master, were not overworked, had plenty to eat, good clothes, and a fine home. I don't see why you wished to run away." "Well, judge," said the slave, "I lef de situation dar open. You kin go right down and git it."

We want to cultivate a sympathetic insight into the feelings of others:—

If all the subs. in London town,
And those outside as well,
And all the staff at each exchange
Imagined for a spell,
How much the service would improve
I really could not tell.

Co-operation would prevail
Just as it ought to do,
And timid souls fresh hope would find,
And courage take anew,
And each would make allowances
And take a broader view.

"Everything beginning with an 'M,'" said the dormouse, but our formula is "Everything beginning with a 'C'."

Co-operation; concord; concentration; constructive criticism, and the three cardinal points—courtesy, correctness and celerity—to name only a few of them.

Co-operation! In that word alone lies one solution of the problem. To keep our eyes not only on our own work but also on that of the other person. To realise each other's difficulties, and to remember that all are working to one end. To have "united thoughts and counsels, equal hope, and hazard in the glorious enterprise."

Concord, too, is essential if we would get the best results. Where resentment is felt the service is sure to suffer. To brood over grievances, real or fancied, is the sure way to innumerable errors. Let us be slow to give rise to resentment, and slow to take offence. A sense of humour will do much towards resolving the dissonances of life into harmonies. To be born without this sense is almost as great a disability as to be born blind—so much of the colour of life do we miss—so much more gloom cast over others. A solemn countenance does not add to one's dignity; nor does a smile detract from it. But it would be a monotonous world if it were peopled by one type of human being. There is room for all—the man of action, the dreamer, the serious, the laughter-loving. Let us remember, too, that their weaknesses are ours. "Whatever folly men commit," says Schopenhauer, "be their shortcomings or their vices what they may let us exercise forbearance, remembering that when these faults appear in others it is our follies and vices that we behold. They are the shortcomings of humanity, to which we belong; whose faults, one and all, we share."

To concentrate on the work at one's hand should not be difficult of attainment. Certainly in the busy hour at an exchange it would be almost impossible to do anything but concentrate. But during slacker periods a greater effort is needed, and it is in these slacker times that the danger lies. All of us in the London Telephone Service have every incentive to concentrate. Each is, or should be, doing useful work in the service of the State. "When men are rightly occupied," says Ruskin, "their amusement grows out of their work as the colour-petals out of a fruitful flower." Work interest is needed by one and all.

Constructive criticism. We should welcome, rather than resent, criticism of this kind. To have another opinion on the work we are doing is often of extreme value. We are apt to look at our own work too closely to get the right perspective, and to have light thrown on it from a different angle will often enable us to see wherein we have failed in some particular. It is only when criticism is uninformed and ill-natured that we object to it, and rightly so. A good deal of it in the papers at present seems to have it base on shifting ground:—

First Pressman (morosely): "The service is not so good as it used to be."

Second Pressman (gloomily): "It never was!"

"You know who the critics are," says Disraeli, "the men who have failed in literature and art." And Burns refers to them as "cut-throat bandits." Some of the recent comments on the service suggested the following verses to the writer:—

Three critics on a winter's day
Racked their brains for things to say.

The editor, in accents solemn,
Had said, "I want a deadly column.

Just write the worst that you can do,
I care not if it's false or true.

I care not if it's wrong or right,
Or full of rancour or of spite.

If undeserved and quite unjust—
But write a bitter one you must."

He ceased; and then the critics three
Uncorked their vitriolic glee.

Their pens unsheathed, and with a yawn
Invented things till day did dawn.

And when they'd done, there was no trace
Of a single thing that had taken place.

Of all sad words which are said of you,
The saddest are those which are not true.

"These lies are great," the editor said,
And patted the critics on the head.

"The service the worst in all the land?"
And he shook them fondly by the hand.

Alas for us—that such can be
In this fair country of the free.

Oh, better for us, if the critics found
Themselves (like their arguments) underground.

Oh, better for all if the yellow press,
Were sent to eternal nothingness.

If the criticism is deserved let us do our best to remove the cause. If undeserved, let us cast it back into the oblivion from whence it came.

It is not necessary to do more than touch on the three cardinal points, so often have we been reminded of them. To be unfailingly courteous, under any provocation; to be as accurate as it is humanly possible to be; and, after accuracy, to work as quickly as possible. Such is our aim and ideal.

The future then is not dark. The service *has* improved, and is improving. Let us remember that the undaunted spirit of the telephonists, the spirit that overcame the enormous difficulties of the past, is with us still. The spirit that helps so cheerfully and willingly the boys at St. Dunstan's, the War Seals Foundation, the Disabled Soldiers' Fund, the hospitals, and many kindred institutions; the spirit that raised over £2,000 in two days, bringing an ambitious venture to a more than successful conclusion—a venture, I think it will be agreed, which could not have been carried out by any other body of women in the world. With this spirit of enthusiasm and loyalty breathing through the service we have no right, no cause to despair.

> Let pessimists grumble, and pressmen upbraid,
> Each gloomy surmise, like their ink, will soon fade.
> *Trust* the telephone staff, and you'll find they'll respond,
> To the very last ditch—and a long way beyond.

And, with this spirit to help us, to quote the Prince of Wales, "Whatever may be the difficulties, we will overcome them, and pull through."

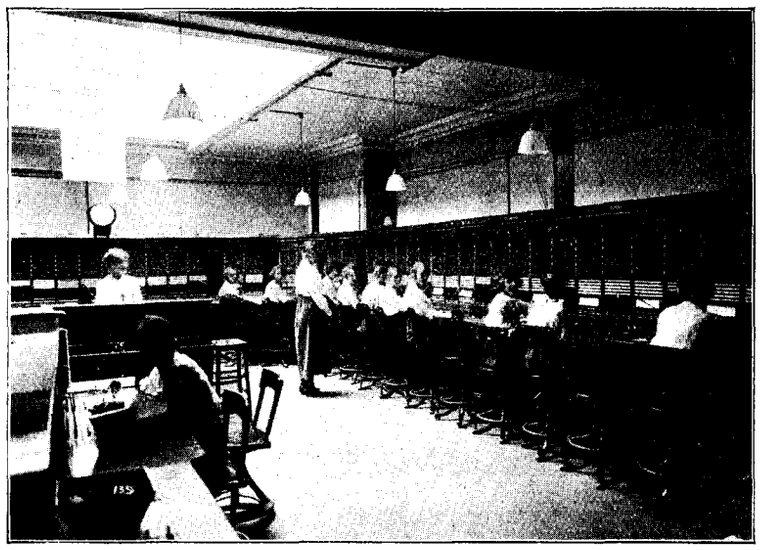
"CHANCERY."

ANOTHER EXCHANGE ADDED TO THE LONDON TELEPHONE SERVICE.

BY C. MARLAND, L.T.S.

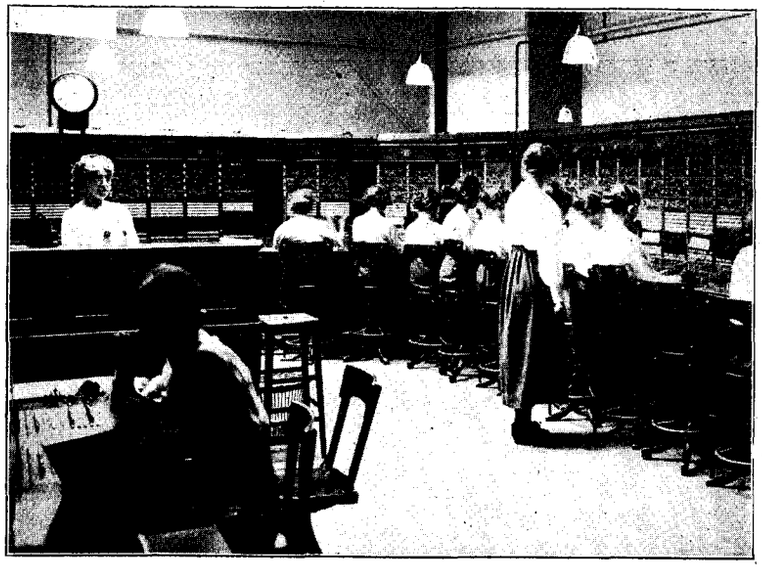
STEADILY the expansion of the London Telephone Service goes on. In spite of all the charges that are made against it of being re-actionary and moribund it continues to grow. During last year expansion took place at the rate of 10 per cent.

New cables have been laid down and new exchanges built with all the speed and expedition that was possible considering the difficulties which had to be faced in obtaining materials. In central and suburban areas where insufficient switching exchange plant was the barrier to immediate acceptance of contracts new relief or permanent exchanges have been designed and constructed. Old subscribers are being transferred to the new exchanges wherever it has been necessary to make room for new subscribers within the area of the old exchange. Clerkenwell, Broadway, Latchmere and Langham have been added recently to the list of over eighty exchanges which come within the boundaries of the London area. Now "Chancery" is added, and gradually this new name will become familiar to people who use the telephone, particularly those in the vicinity of Chancery Lane. That is the place which has given its name to the new exchange. It is necessary to go far afield in imagination sometimes to find a suitable name for a telephone exchange, and on one occasion many years ago a test call was passed in all seriousness for "Higgle-de-piggledy, Kingsbury" in order to test the phonetic possibilities over the telephone of "Kingsbury" as the name of an exchange. A name for this purpose matters much. The subscribers who are transferred from one exchange to another sometimes take strong exception to the change for various reasons. In the case of "Chancery," however, there was not so much objection to the change. The district which it serves is occupied principally by people who are in some way associated with the law, and as Chancery carries a similar association the name was, on the whole, quite acceptable. It may be mentioned, however, that it has already been discovered that Chancery is not completely dissimilar from every other exchange name. If it is pronounced with a short "A" as in "fancy" it is apt to be mistaken for Hampstead. Callers are, therefore, advised to forget their University habit and when calling for Chancery to pronounce it with a long, soft vowel sound.



CHANCERY EXCHANGE.

The area which the new exchange serves is the square inside Grays Inn Road, Theobalds Road, Southampton Row and High Holborn. It has been designed principally as a relief to Holborn. The latter has been working to its full capacity for a long time, and the necessity for a new exchange in a building erected primarily and solely for that specific purpose was accepted and acted upon. The site of the Inns of Court Hotel in High Holborn has been secured, the old building completely demolished and building operations begun. Quite a few years must elapse, however, before



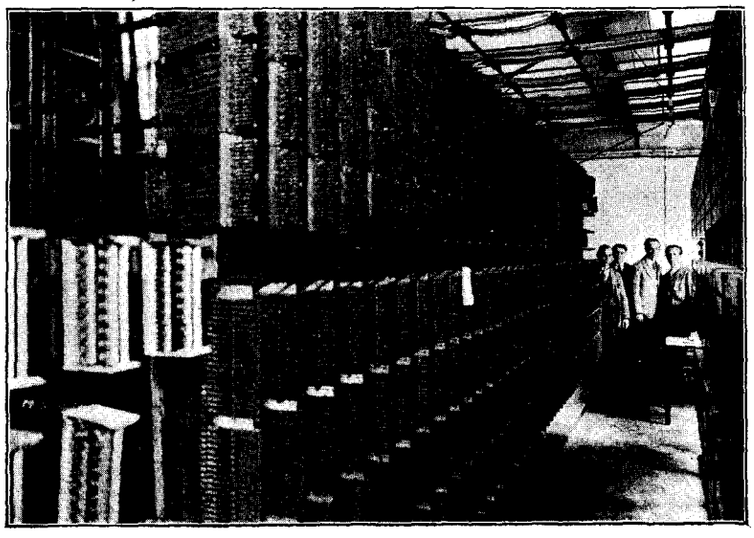
CHANCERY EXCHANGE.

it is completed, and in the meantime Chancery has been brought into use to tide over the period before the new Holborn is ready for service. Like its parent exchange, Chancery is not provided with a home of its own, but is accommodated as a kind of afterthought in a house built for other purposes. Just as Holborn is

marvellously tucked away up on the fifth and sixth floors of the suite of offices formerly known as Birkbeck Chambers and now called Bank Chambers, so is the new exchange to be found in an unexpected situation, namely, on the first floor over a new Slater's

REST ROOM, CHANCERY EXCHANGE.

restaurant at 55 and 56, High Holborn. The ultimate capacity of the exchange is 1,560 subscribers' lines, of which 524 were joined for the opening, 376 being transferred from Holborn, 118 from Central, 28 from City, 1 from Museum and 1 fire line. The opening took place at 2 p.m. on Saturday, May 28, and in spite of certain misgivings and fears there were no untoward incidents or happenings. The preliminary spade work which always precedes such an event had been well done and at the psychological moment when the fuses connecting to the o'd exchange lines were expeditiously removed by a relay staff of engineers and the elastic rings in the cut off relays were released simultaneously by a locally improvised device all eyes were instantly turned in the direction of the switchboard. A sigh of relief was felt when it was noted that the answering field was *not* on fire. Only one or two lamps lit up. Calls to Chancery



TEST ROOM, CHANCERY EXCHANGE.

had actually begun. To be prepared for these the staff answering subscribers' calls had been interspersed with those who were to carry out tests. The latter had been provided with forms on which the results of the tests could be easily recorded and speedily summarised. At the conclusion of the first test at 3 p.m. it was found that there were—

7 exchange faults,
3 line faults,
1 junction fault.

At 5 p.m. there were—

3 line faults,
1 junction fault.

Grave doubts had been entertained that the change of voltage involved in the transfer would possibly upset the balance of the circuits. A special test for low insulation was, therefore, carried out, the result of which was quite reassuring. Only eight cases of low insulation were revealed.

Something more serious happened, however, on the day after the opening. In the early hours of Sunday morning smoke permeated to the switchroom and it was discovered that the power room was full of thick smoke. With commendable promptitude the night telephonist in charge called the fire brigade, who were quickly in attendance. Fortunately, however, the smoke did not develop into flames. No damage at all was done beyond the burning out of the battery choke coil which was the cause of the smoke.

The sister exchange to Chancery is Langham. Apart from a slightly different lay-out of the switchboard necessitated by the configuration of the switchboard Chancery is an exact replica of the Langham board. It is of the C.B.10 type very clearly marked and numbered, and having a four-panelled multiple. The numbering of subscribers' lines begins at 7,000, so that when these circuits are again transferred to the new Holborn it will not be necessary for a further change of number. Sixty subscribers can be accommodated on each A position. There are twenty-six A positions and eleven B, one testing position, four positions on the Information desk and a chief supervisor's desk. The chief feature of special interest in the test room is the combined main and intermediate frame, which is shown in the accompanying photograph. The testing apparatus is accommodated on the same floor as the switchboard, and owing to the structure of the building it monopolises all the light from the spacious windows overlooking Holborn. The switchroom depends for its daylight upon the lantern light which extends over only a part of the room, and except on very bright days the B board has to be lighted with electric light.

The combined sitting-room and dining-room has a very cheerful aspect, commanding as it does a good view of any pageants which may be passing along High Holborn.

The supervisors and staff who have been transferred to Chancery are all gratified at the successful opening and appear happy and contented in their new official home. They are working with that *esprit de corps* and good will which makes for efficient service and a satisfied group of subscribers. This new exchange may be of interest to others, but it means most to the people who will be served by it. And it is hoped that the name Chancery will be a synonym telephonically for happy and efficient relationships both within and without the exchange, serving well those who pay for its service and doing credit to the huge organisation of which it now forms an integral part.

THE BAUDOT.—XXIII.

BY J. J. T.

FIGS. LXIII and LXIV should make the adjustment mentioned in the last article even more clear. These should not, however, be confused with Fig. LXII. The reader has by this time gripped the idea that the selector levers cannot be actuated during the passage of the selector N and its cams KK^1 (Figs. XL and LXIII), and that the ideal position for KK^1 is as far away from the levers as possible. Further, that if, as in Fig. LXIII, KK^1 should be found in any *other* position than that just indicated, say at BB *when the circuit-closing cam* K^4 *is in the exact position as regards d*

of the lever L as there shown, then it will be necessary to bring KK' into the position marked B in the same figure. KK' is, however, a fixture upon the combiner wheel as we have seen, and the problem of how to maintain the relationship is solved by simply moving K4 through a space equal to the angular difference between the correct and incorrect positions. In the case before us through an angle equal to the angle YXZ, and in the direction opposite to the direction

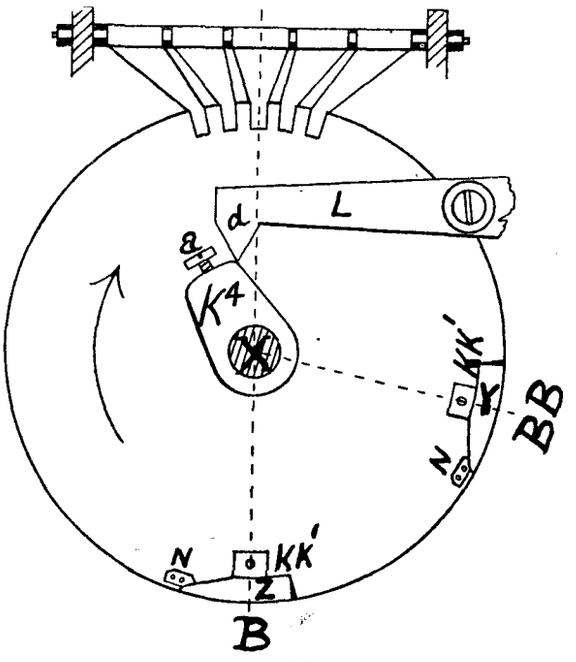


FIG. LXIII.

of rotation indicated by the arrow. The relative position of the receiving and brake brushes to this mechanical relationship is indicated in Fig. LXIV. That is to say, when the brush of Ring II is in the middle of the third segment F the brush of Ring III should be in the middle of the brake segment E allocated to the corresponding receiver, KK' being at B and K4 as shown in relation to the circuit-closing *lever* L.

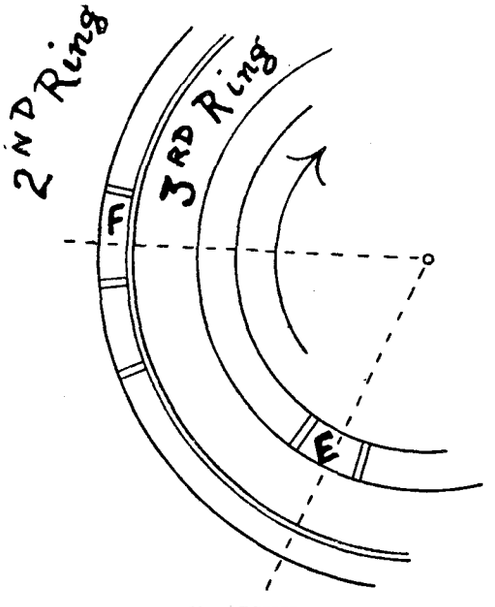


FIG. LXIV.

Figs. LXV and LXVI give views of a later type of brake adjustment and one now generally adopted. Some of the differences between this type and that shown in Figs. LX and LXI are self evident. Tension is given to the armature B by a long flat spring R (Figs. LXV, LXVI) screwed at right angles to the vertical brake piece A at M, below the base-plate W, R being adjustable as regards its tension by means of the screw V (Fig. LXV).

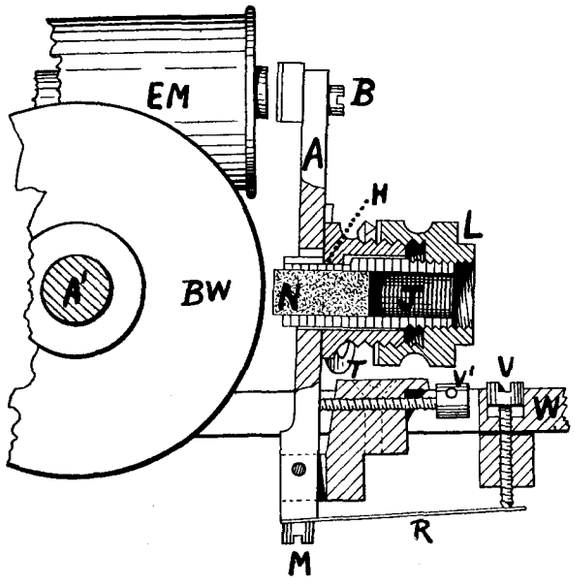


FIG. LXV.

The adjustments of the brake armature are specially ingenious and interesting. To the vertical piece A is fitted a projecting tube K (Fig. LXVI) cut with a right-handed thread on its exterior surface. The interior is channelled and into this glides the catch H of the cylinder J (Figs. LXV, LXVI). The interior of the latter is very finely tapped in order to hold the projecting cork-brake N which is equal in diameter to the thickness of the brake wheel BW. The other end of J is cut with a left-handed thread half the gauge of that of the tube K. L is a large screw consisting of two threaded parts; the smaller thread is the same as that of the cylinder J with which it engages and the larger thread is of the same gauge as

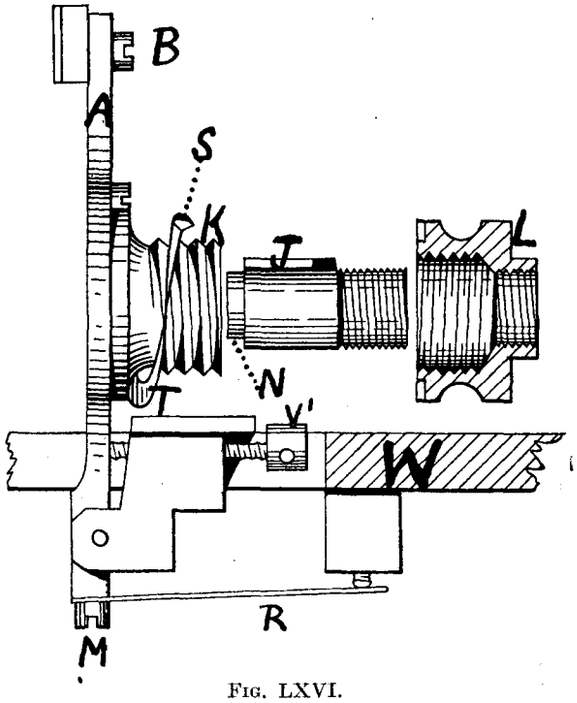


FIG. LXVI.

that of the tube K. This screw L carries on the side facing the armature piece A a number of radial slots. A small steel spur S fitted to the free end of a flat spiral spring T engages with the slots on the face of L as the latter is screwed up towards A and thus holds L in any given position.

The adjustment is as follows: Having taken off the screw L the cylinder J is screwed almost into the end of L. Then the reverse end is inserted into the tube K, and the catch H into the channelling of J. If L be now screwed inwards, L will progress towards A over K, but will *un*screw as regards the cylinder J which latter cannot turn on account of the catch and channelling. The gauges of the screws are in the ratio of one to two and it therefore follows that if for example an advance of two millimeters of the screw L is made the brake-stop carrier J will only move one millimeter. This arrangement gives a specially fine and yet sturdy adjustment. Once fixed the adjustments of the armature piece A made by means of the screws V and V1 should not need to be touched.

(To be continued.)

HISTORY OF THE ANGLO-CONTINENTAL TELEPHONE SERVICE.

(Continued from page 148).

III.

TELEPHONE service with Belgium and France was not re-opened to the public until the 27th and 28th October, 1919 respectively. By that time it was found possible to release certain of the circuits in use by the War Cabinet, the Peace Conference, and the Ministry of Shipping, and service to France was commenced with 5 circuits to Paris and 1 each to Dunkirk, Lille and Boulogne. One circuit in the second St. Margarets-La Panne cable afforded communication with Brussels, but early in 1920 a second circuit was brought into use, and the service extended to Antwerp. The pre-war tariff remained in force for both services, but in the case of the Anglo-French only provisionally. Owing to the increased cost of materials and wages it was agreed by the French and British Administrations early in 1920 to raise the charge for calls between London and Paris from 4*s.* to 6*s.*, and proportionately between the provincial towns of the two countries.

Two additional circuits to Paris were released before the end of 1919, another was brought into use in April 1920, and another in October making 9 in all, which with 3 lines transferred from the Astoria Hotel to the Paris trunk exchange made a total of 12 available circuits in the autumn of 1920, about which time the Dunkirk circuit, which was little used, was discontinued. The ex-Astoria circuits, however, only worked intermittently, and indeed seldom more than 7 of the circuits between London and Paris were working at the same time. The maintenance of the French land-lines presented a problem of considerable difficulty to the French Administration. These lines pass through the devastated area, and moreover some of them were originally in the nature of temporary military lines constructed by the British Signal service out of local material. Repeaters have been inserted on some of these circuits, and the French Government have in hand the work of rebuilding others, and at the time of writing 9 or 10 out of the 12 circuits to Paris are usually available each day in addition to the circuits to Calais, Boulogne, and Lille. The latter line carries most of the traffic for Northern France.

Reference has been made to the insertion of repeaters, which seem to be destined to play a great part in the future of international telephony. The thermionic valve repeater was studied and developed largely during the war for military purposes. Rapid as that development was it has only reached full attainment since the war. The use of these repeaters has not only extended indefinitely the possible range of telephonic speech, but has also enabled the amount of copper employed in the circuits to be greatly reduced, thus providing a considerable offset to the enormously increased prices of material. For instance, instead of using 300 lbs. of copper per wire to the mile as in the London and Liverpool trunk cable, it has been possible to use 40 lbs. of copper in the new London-Manchester cable, with equally good results. Although communication was nominally afforded with the south of France before the war, the speaking was undoubtedly difficult, but now, by means of repeaters, speech with Marseilles and Bordeaux has been rendered entirely satisfactory and the service has recently been extended to Toulouse. In addition communication between France and towns in the North and West of England has been improved by the same means. In October, 1920, the service was extended to Metz, Strassbourg and Mulhouse in Alsace and Lorraine.

Great as are the possibilities of extending the range of telephonic communication in Europe, it is unfortunately impracticable to give effect to them until the needs of the French and Belgian services are satisfied. Congestion at present exists in the traffic both to Paris and Brussels, and any immediate addition to the Anglo-French and Anglo-Belgian circuits would have as its primary object the improvement of communication between London and those places. Not until such improvement has been made will there be an adequate number of circuits available to carry traffic for a possible service with Italy, Germany, or any country beyond. Proposals are under consideration for the provision of further circuits to Belgium, and negotiations have been re-opened with the Netherlands for laying a direct telephone cable between England and Holland. Indeed, the details of the construction of the cable are at present engaging the attention of the respective engineers.

That the traffic between England and France has grown very considerably since the opening of the service in 1891 the following figures will show:—

	Calls.
Traffic in the first day (1891)	22
Average per month 1892	3,018
,, ,, 1895	4,764
,, ,, 1912 (March 31) ...	7,787
,, ,, 1913 ,, ...	9,867
,, ,, 1914 ,, ...	11,735
July 1914 (month before the outbreak of war)	19,963
February 1920	18,336
April 1920	23,939
July 1920	24,111
October 1920	28,252
January 1921	28,278
April 1921	28,579
May 1921	31,496

The Anglo Belgian traffic reached 2,428 calls a month in 1912, and 4,878 in 1914, carried by four circuits. Soon after the re-opening of the public service, 4,306 calls were carried in February 1920 with two circuits. The circuits were increased to three, and 5,296 calls were carried in June and 5,460 in September. 8,000 calls were, however, exceeded in July 1920, and again in February, March and April 1921. The number declined to about 7,000 in May, owing to interruptions to the circuits which prevented full use being made of them.

On the value of the international telephone service in promoting business and social relations between the countries connected it is not necessary to enlarge. What part it played during the war in keeping the Allies in close touch with one another and headquarters in London with the forces overseas we have already seen. On the occasions of international conferences and the like it has proved its value more than once in quite recent times, and the extent of its future possibilities would be difficult to foresee. The language difficulty which gave pause to the early promoters of the service proved to be chimerical and has never retarded the steady development of the traffic. On the contrary the present difficulty is to provide sufficient lines to meet all requirements. When this difficulty has been overcome the expansion of the international service over Europe will only be a matter of time and one of infinite benefit to the nations affected.

W. H. GUNSTON.

LONDON ENGINEERING DISTRICT NOTES.

BEFORE the August issue of this Journal is published the control of the London Engineering District will have passed into fresh hands. Up to the time of sending in these notes no official announcement has been made as to Mr. Moir's successor. Whoever is appointed to this important post may rely on the loyal support of every member of the staff in his task of maintaining the efficiency of the district. The control of a staff numbering nearly 6,000 is no light task, and the problems to be faced during the coming years can only be successfully negotiated by the officers of the district working as a team in perfect harmony and by the exercise of mutual trust and goodwill.

Ineffective Time.

The long spell of fine weather is resulting in a considerable decrease in the number of faults. Fault curves like vegetation are wilting. Although, for the time being, this is a satisfactory state of affairs, the reaction is bound to come when nature starts to adjust the average. Unfortunately, the same weather conditions which tend to produce a large number of faults also make their clearance more difficult, although, thanks to the protective clothing with which the men are provided, the dead time due to adverse weather conditions is surprisingly small. On this same subject of dead time it may be remarked that there is a tendency on the part of some members of the public to assume that every Post Office workman who, when observed, is not obviously engaged in work, must be wasting his and the department's time. This assumption is, of course, due to ignorance, but is none the less disturbing. Gangs comprising various numbers of men are required to carry out the different classes of work that fall to the lot of the Engineering Department to perform. Each unit in a gang has his particular duty, and on some portions of the work every unit in the gang must be simultaneously engaged, although at other times this is not the case. Every endeavour is made to reduce the enforced idle moments, but some are unavoidable. To illustrate the point, take two cases where complaint was received that at certain times men were observed to be idling. Investigation showed that in one case the foreman was giving detailed instructions to the men concerning some intricate diversions and in the other case the men, having completed running a telephone circuit, were waiting for the foreman, who was inside the subscriber's premises having the circuit tested.

It is not claimed that the department's men are free from human failings, but the majority do appreciate that by working conscientiously they are helping to build up a successful business with which they are proud to be associated. They also realise that only successful undertakings can afford to pay satisfactory wages.

Technical Classes.

It may not be generally known that by an arrangement with the Education Authorities special classes are held at the various Polytechnics for the benefit of Post Office engineering workmen. The fees and travelling expenses are paid by the department provided the student's attendance is regular. Most of the instructors are members of the Post Office engineering staff. The scope of instruction is laid down by the department. Although the instruction given at these special classes is not designed to prepare students for the City and Guilds Examinations, yet those who do well in the Second Year Course find little difficulty in obtaining passes for the City and Guilds Examinations. Members of the staff who elect to join the classes designed to prepare students for the City and Guilds Examinations have part of their fees refunded to them if successful in the examinations. They are also entitled to a technical allowance of 3*s.* a week.

The results of the examinations for 1920-21 Session will soon be known. Some 820 students, divided amongst eight Technical Institutions, took advantage of the special classes conducted for the benefit of Post Office workmen. It is anticipated that next Session the pre-war figure of over 1,000 students will again be reached.

Civil Engineers Visit Telephone Exchanges.

On July 1 some 70 to 80 members of the Institute of Civil Engineers, who were in London for their annual conference, took the opportunity of inspecting some telephone exchanges. The three exchanges at G.P.O. South and the Automatic Exchange in G.P.O. West were selected.

Messrs. Ridd and Steed are to be congratulated on the very complete arrangements they made to ensure that the visitors should see and have explained to them everything likely to be of interest. Among the visitors was Mr. Frank Gill, Engineer-in-Chief of the late National Telephone Company.

Another Wise Decision.

In the June issue reference was made to a decision given in a Court of Arbitration by the presiding Judge in connexion with a wayleave case. Since that time the management of a large building let out as offices saw fit to demand an increase in the amount paid by the Department to recoup the owners of the building for any small loss that they might be put to on account of the presence of a pole on the roof of the building in question. Their plea was that the actual value of the sum paid to them was reduced owing to the diminishing purchasing power of the sovereign. In the view of the Department the amount paid was in pre-war days out of proportion to the loss sustained by the owners, the original agreement having been entered into by the late N.T. Co., who, having no statutory powers had perforce to make the best bargain possible with property owners. As the wayleave grantor would not see reason the case was taken to arbitration with the result that in future the company, instead of receiving higher payment will get less than half what they had been paid in the past. There would be little prospect of telephone rentals being reduced in the future if the Department were compelled to pay exorbitant sums for private wayleaves.

North External Section.

A grand variety concert was held on May 6, 1921, on behalf of Mr. J. Groves (Labourer) and Mr. W. Thacker (S.W.II). The former received injuries to his foot whilst on duty, and was in the London Hospital some weeks. The latter has been suffering for some considerable time with internal trouble. He has had several severe operations, which we are glad to hear have resulted in his recovery. Although still very weak he is convalescent, and his colleagues will be glad to see him resume his duties.

The concert was promoted by Messrs. G. H. Gillett and W. Lovell. A tip-top troupe known as the Black and White Concert Party took part, and the rest of the programme was provided by members of the staff, including both internal and external. It was well supported by the staff. The concert was a brilliant success. The net proceeds amounted to £16 1*s.* 7*d.*, which was shared between the parties concerned.

This concert was followed by another a few weeks later, which took place at St. Bartholomew's Hall, Dalston Lane, on behalf of Mr. F. Haynes, on his retirement from the service.

The entertainment was a splendid success, and was made an occasion for presentation to Mr. Haynes of a beautiful clock as a mark of esteem. Mr. Martin, Assistant Engineer, accompanied the presentation with a most appropriate and agreeable speech, and Mr Haynes very suitably acknowledged the gift.

The opportunity was also taken of making some recognition of the services of Mr. J. Warwick, one of the prominent members of the Black and White Concert Party, who is always ready to give his services on such occasions.

Extract from daily paper:—

Baby Left in 'Phone Box.

Hearing the cry of a baby in a telephone cabinet in Victoria District Railway Station, an official opened the door and found a 9 months old girl on the floor. It is understood that all articles found in call office cabinets and not claimed by the owners become the property of the Postmaster-General.

Literary Competition.

The quotations about Traffic given in the L.E.D. notes for July are from Shakespeares' "Timon of Athens."

Back to work again.

Now that the coal strike is over a trade revival should quickly follow. The work of putting down new plant to meet the anticipated demand for telephones is progressing steadily, but there is still a great deal of lee-way to make up. It is to be hoped that the cry for economy will not result in the withholding of funds for telephone plant development, for this will be the surest way to hamper the country's reconstruction. The committee of business men who are to advise the Postmaster-General will no doubt quickly realise that the only hope of meeting the needs of the community is for the Department to concentrate all its energies on the provision of new exchanges and outdoor plant.

Golf.

Secretary's Office *v.* Engineering Dept. (played over North Surrey course on July 13, 1921.)

Secretary' Office.		*Engineering Dept.*	
Mr. De G. Gavey (3 and 2)	1	Mr. R. A. Weaver	0
Mr. J. D. Macnair (1 hole)	1	Mr. J. M. Shackleton	0
Col. D. J. Lidbury (3 and 1)	1	Mr. T. H. Newlands	0
Mr. J. S. Fraser (2 and 1)	1	Mr. G. Cowling	0
Mr. P. F. Apted	0	Mr. M. F. G. Boddington (1 hole)	1
Mr. R. W. Roodknight (5 and 4)	1	Mr. J. Bertram	0
Mr. J. Stuart Jones (5 and 3)	1	Mr. J. L. Taylor	0
Mr. F. H. Kempe	0	Mr. E. J. Rathbone (4 and 3)	1
	6		2

Secretary's Office won by 4 matches.

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 - - - JOHN LEE. J. J. TYRRELL. W. A. VALENTINE. 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 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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LANGUAGES AND LONG DISTANCE TELEPHONY.

IT will be remembered by those who have read the articles on the Anglo-Continental Telephone Service which conclude in this issue, that the question of difference of language appeared to the pioneers of the London and Paris service—at least in London—to be a formidable difficulty which would have the effect of confining the traffic to comparatively few people. This judgment of the linguistic attainments of Englishmen and Frenchmen has happily been so far falsified that the traffic has nearly always exceeded the carrying capacity of the lines. Now, however, the question has arisen in a new form. An American journal, moved by the recent interesting experiments in trans-continental telephone, re-inforced by wireless speech, says: "What fairy tale could compare with this vision of a world-telephone-system that will make necessary to all nations the use of a common language which will join all peoples of the earth in one brotherhood?" The use of a common language will always, we imagine, be an unattainable ideal, nor is it an entirely desirable one. What country with a cultured and copious idiom, enriched by the literary traditions of centuries would consent to forget or forego its language for any possible commercial advantages? We must attain the brotherhood of nations rather by learning one another's tongues than by trying to force our own language on an unwilling world. It is singular how the study of a language creates a sympathy with the country which speaks it, and we believe that such study is the only true specific for understanding the outlook and ideals of other peoples than our own. Moreover, we do not see that any urgent necessity arises for the use of a common language in international telephony. Although this country at present is in communication with two French-speaking countries only, it should be remembered that continental countries, undivided by miles of sea, speak with all their neighbours and employ widely differing languages. France is in communication with, amongst other countries, Holland, Germany and Italy, and Germany can speak to Denmark, Norway, Sweden, Hungary, Holland and Poland, besides its Latin neighbours. Perhaps the intention of the writer was that telephone users should be bi-lingual, using their own language for ordinary purposes and the universal language for international telephony. But in the adoption of that common language surely insuperable difficulties could arise.

It may be of interest to inquire to what extent the principal languages of the earth are distributed amongst telephone users. Owing to its use in highly-developed America, and in the British colonies, the English language has an overwhelming preponderance. There are, perhaps, some 21,000,000 telephones in use in the world. Of these fifteen-and-three-quarter millions are used by English-speaking people in the Unites States, Great Britain, Canada, Australia and Africa. German comes second, *longo intervallo*, with about two-and-a-quarter million telephone users in Germany, Austria, Switzerland and neighbouring states. French has about 500,000 votaries, Swedish 400,000, Dano-Norwegian 400,000, Japanese 350,000, Spanish 250,000, and Russian 200,000. Even thus some of the most widely spoken languages are but ill-represented amongst telephone users. Populous India and China have not 50,000 telephones each, and in the former case the subscribers are largely European. As for Arabic, which is spoken over a vast tract of Asia and Africa, extending from Bagdad and Muscat to Morocco, and from Algiers and Damascus to Zanzibar, we should doubt whether that language is used to speak over more than 20,000 telephone lines. We give these rough figures that the selector of a universal telephone language may take his choice, and we do not envy him his task.

HIC ET UBIQUE.

A BILL before the German Reichstag proposes the abolition of flat rates for telephones. The new charges range from 380 marks (say £19) per annum in small places with up to 50 lines to 760 marks (say £38) per annum in places such as Berlin. In addition calls will cost 3*d.* each, and at least 40 local calls per month must be paid for. Thus a Berlin subscriber will pay 885 marks a year for 500 calls instead of 880 marks for an unlimited service.

BY a clerical error last month our correspondent stated on page 158 that Sir Andrew Ogilvie had recently been elected an Associate of the Institute of Electrical Engineers, instead of a member of the Council. Sir Andrew has, of course, been an Associate for very many years.

THE *Glasgow Citizen* in commenting on the excellent telephonic development of Australia informs us that at present the Commonwealth has 43 telephones to every 100 of the population. Nearly every other person (babies, school children, wives and mothers included) would thus appear to be in possession of a telephone in that happy land. On examining the figures of Australian development we find that what is really meant is that 43 per 1,000 is the correct ratio. We may say that the trifling discrepancy caused us no undue surprise, as we are well accustomed to this sort of telephone statistics in the Press.

A NOTE in the *Electrical Review* on electrostatic adhesion refers to Elisha Gray's experiments in 1873 or 1874 on the transmission of musical sounds by telegraph. Gray constructed a cylindrical

sounding-box with a metal cover and mounted it on a spindle to which a crank was attached. The metal cover was connected to earth through the spindle and the operator held one end of the telephone line in his hand. On rotating the box and pressing the fingers against the cover, while the current was flowing, he says: "the tune that is being played at the other end of the line becomes distinctly audible." Gray proved that the effect was due to electrostatic attraction. On one occasion when he had been sending tunes over a short line using one of the batteries of the North-Western Telegraph Co. at Milwaukee, he was surprised to learn that the tunes were reproduced by the relays in the various offices along the line. "Some of the operators being ignorant of the invention of the telephone at that time, were very much amazed at this new exhibition of the musical powers of their instruments and I am told that one gentleman, 60 miles from Milwaukee, closed his office that night much earlier than he was accustomed to do." It will be remembered, comments the *Electrical Review*, that America had not then become "dry."

"A FEW weeks ago," says the *Cardiff Western Mail*, "I called your attention to the difficulty which confronts wireless telegraphy by reason of the electrical disturbances set up by the despatch of wireless messages. These difficulties will be overcome in the future, but at present I believe that even the strongest wireless installation can only be used some five hours a day. There is now an International Commission sitting to decide how the wireless messages shall be despatched in the future, what air currents shall be used by each country, and how their various instruments shall be tuned up. The air will obviously be cleared if it is possible to create special French, American, and other lines, and this, it is said, can be done by the allocation of certain currents and the tuning up of the various machines. Experts are now at work upon this task."

We presume that hot air currents are referred to.

ACCORDING to *The Times*, it is proposed to raise the telephone rates in Vienna 150 per cent. They are already extraordinarily high and have risen from 480 kronen with 12,000 calls a year in 1919 to 3,600 kronen, for a service including 12 calls a day. At the old value of the krone this would represent £150 per annum, though what it means in spending-power to the Viennese at the present time it is difficult to gauge—24 calls a day cost 7,200 kr. a year (say £300), and 40 calls 14,400 kr. (say £600). An Association of Telephone Subscribers met and condemned the proposal to raise these rates another 150 per cent, threatened a subscribers' strike, and proposed that the telephones should be worked by a private company. It is interesting to remember that the telephone service was originally introduced to Vienna by an English Telephone Company in 1881.

WE heartily congratulate our colleague, J.J.T., on his appointment as a third gallery superintendent to the Cable Room, Central Telegraph Office.

THE Australian press is highly satisfied with the cable service reporting the recent test matches as the following extracts show:—

"The Pacific Cable service," says the *Sun*, "excelled itself when handling our test cricket messages last evening.

The story of the third day's play reached us in messages which travelled from London to Sydney in 24, 25, 24, 24, 29, 20, 30, 27, 22, 37 minutes respectively.

That is to say the news came 13,000 miles faster than the result of a race is transmitted from suburban racecourses to the head telegraph office."

"The cablegrams from London describing the test match play came through to the *Daily Telegraph* (Sydney) office last night in remarkably fast time. The first was received at 9 p.m., and the others came every few minutes, until the luncheon adjournment.

What is known as summer time—under the daylight-saving scheme—is being observed in England, and this means that English time is now nine hours behind Australian. A cablegram from Lord's Ground was delivered in the *Daily Telegraph* sub-editor's room just 20 minutes after it had been lodged. This is certainly smart work on the part of the Pacific Cable Board, which is now handling the messages."

The *Sydney Evening News* has a paragraph to the same effect.

MODERN WIRELESS TELEGRAPHY AND TELEPHONY.

BY F. ADDEY, B.Sc., M.I.E.E., FELLOW I.R.E.

(*Continued from page* 153).

Internal Action of a Valve.

BEFORE the filament is heated the space inside the valve offers a very high resistance indeed to the passage of the current of electricity, and a very large electro-motive force is necessary to force any current to flow between the anode and the filament. When the filament is glowing, however, the state of affairs is quite different. With a comparatively small electro-motive force applied from anode to filament, that is, with the anode made positive to the filament, a current will be sent through the valve. If, however, the electro-motive force be applied in the reverse direction, the anode being made negative to the filament, no current will flow.

It has been found, as a result of modern research, that from a heated body, such as the glowing filament of a valve, small negatively charged particles are continually being shot off. These particles seem not to be material bodies in the ordinary sense, but each seems to consist solely of a minute charge of negative electricity. They are called "electrons," and their discovery has revolutionised our views on electric charges and currents.

Before electrons were known, an electric current was, for convenience, said to flow from a body at a so-called positive potential to one at a so-called negative potential. This was, however, a purely arbitrary convention. No one knew whether a "positively" charged body or a "negatively" charged body had the greater charge. When a positively charged and a negatively charged body were joined by a wire, no one therefore could say which way the resulting "current" in the wire actually flowed, or even whether any current flowed at all.

The expressions "positive charge" and "negative charge" were simply convenient names for opposite electrical states into which bodies could be brought, while the expression "electric current" was used to denote the sum total of the various phenomena which were set up in and around a wire, one end of which touched a positively charged body and the other end one negatively charged. Certain of these phenomena were directive, and their direction, or "sense," could be reversed when the positive and negative ends of the wire were reversed. For instance, a compass needle near the wire was caused to twist round when the ends of the wire were brought into contact with the charged bodies, and the direction in which the needle turned depended on which end of the wire was joined to the positive body, and which to the negative. The idea was thus reached of something flowing in the wire in one direction or the other, which caused the observed phenomena. The direction in which this "something" should be said to flow was arbitrarily chosen as being from the positively charged body to the negatively charged one.

It now appears that there is an actual flow of electricity in the wire, but that this consists of a stream of the negatively charged electrons, flowing in the opposite direction to that in which the "current" is ordinarily said to flow. The electrons are in the wire all the time, but they need to be set in motion before the phenomena of a current of electricity are produced. A battery is an electron pump, and when its terminals are joined by a wire it forces the electrons in the wire round and round the closed path or circuit formed by the battery and wire, this electron stream passing, in the wire, from the negative battery terminal to the positive one. Since, however, the idea of a current of electricity flowing from a so-called positively charged body to a so-called negatively charged one has become ingrained in electrical matters, it continues to be used, with the tacit reservation that the "electronic current"—which is probably the only real "current" concerned—flows in the opposite direction.

We have stated above that a stream of electrons is continually shot off from the glowing filament of a valve. If the positive pole of a battery B_2 (Fig. 12), the high tension battery, be joined to the anode, and its negative terminal to the filament, a complete circuit round which electrons can flow will be formed, and, since the battery provides the necessary driving force, a current will accordingly be set up. The electrons shot off from the glowing filament are attracted across to the positive anode, and complete their circuit through the battery and the connecting wires. The actual electron stream flows round this circuit in the direction from the negative pole to the positive pole of the battery B_2 (clock-wise in Fig. 12), but, as explained above, this electron stream is described as a "current" in the reverse direction, that is, in the direction shown by the arrows in Fig. 12.

Thus the space between the anode and the filament of a valve can be considered as a conductor, completing the circuit of the high tension battery, and allowing a current to flow. But it is different from an ordinary conductor, because current can only flow across it in one direction, from anode to filament (using "current" in its old sense). If the high tension battery be reversed, so as to make the filament positive and the anode negative, then the electrons, as fast as they are shot out from the filament, will be attracted back to it again instead of passing across to the anode, and so no current can flow.

With a fixed value for the voltage of the high tension battery, and with the filament kept at a steady temperature, it will be clear that, assuming no disturbing cause to come into action, the anode current will remain steady. But across the valve, between the filament and the anode, lies the grid, and the electrons, in their passage along the valve, have consequently to pass through its meshes. It is evident that the electrical state of the grid will have an effect on the magnitude of the electron stream which reaches the anode. If the grid be made negative, then, since the electrons are also negative, and similarly charged bodies repel one another, the grid will tend to stop the electrons as they flow towards it from the filament in response to the attraction of the positive anode, and to repel them back towards the filament. When the grid is made very negative none of the electrons will manage to get past it at all, and the anode current will fall to zero. As the grid is gradually made less and less negative more and more electrons will succeed in getting past it and reaching the anode, and so the anode current will rise.

Certain other actions take place inside the valve, unless the interior is absolutely free from traces of air or other gas. A molecule of a gas is composed of a positive nucleus surrounded by a certain number of electrons. In the ordinary condition the positive and negative charges in the molecule are equal, and therefore balance one another, and so the molecule is apparently uncharged. When an electron moving with high velocity collides with a gas molcule, the shock may cause an electron to be detached from the molecule, leaving the latter with an excess of positive charge. The molecules from which electrons have been removed are known as "ions," and the process is called "ionisation." Ionisation will begin in a valve in which the necessary trace of residual gas exists as soon as the velocity with which the electrons move is sufficiently great, and this velocity will evidently depend on the amount of retardation or otherwise which the electrons experience from the effect of the potential of the grid.

When ionisation begins the number of electrons in the valve will be greatly increased, for not only are those which are released from the molecules in the collisions added to the general stream passing towards the anode, but the positively charged ions will be attracted to the filament, to which the negative terminal of the high tension battery is connected, and they may strike the filament with sufficient force to raise its temperature and so cause a greater number of electrons to be set free.

For the valve of which the characteristic curve is shown in Fig. 13, this increase in the anode current begins when the potential of the grid is about half a volt below that of the negative end of the filament. The maximum rate of increase of the anode current corresponds to a positive grid potential of about a quarter of a volt.

When the grid is made positive, however, it begins to attract the negatively charged electrons to itself, and so the number which succeed in getting through and contribuitng to the anode current is diminished. At first the increase in electrons due to ionisation is greater than the decrease due to the attraction of the grid, and so the anode current continues to increase. But as the grid is made more and more positive the number of electrons which it attracts gets greater and greater, and at length the rate of increase of the anode current begins to diminish. For the curve shown in Fig. 13 this occurs when the positive grid potential reaches about one volt. The rate of increase becomes less and less as the grid potential becomes greater, and consequently the curve showing

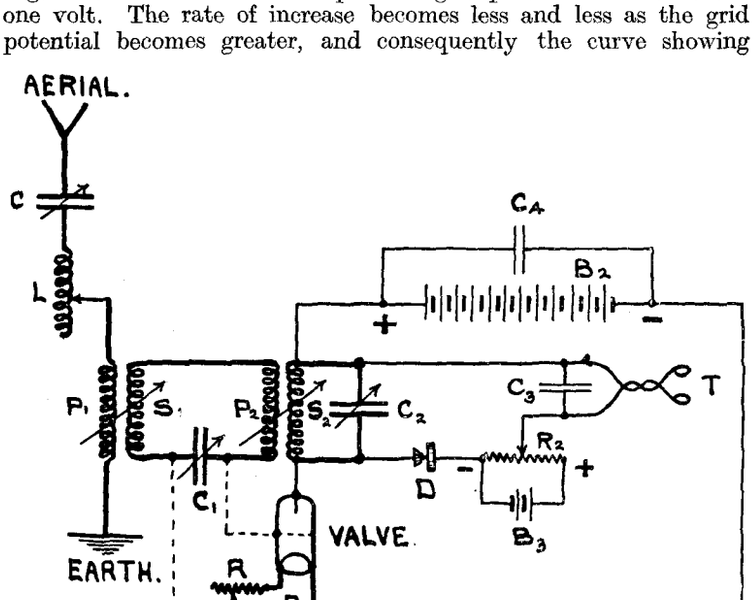


FIG. 14.—CONNEXIONS OF RECEIVING SET, USING HIGH-FREQUENCY AMPLIFIER AND CRYSTAL DETECTOR.

the anode current bends over and at length becomes horizontal. If the grid potential were made still more positive the drain of electrons would be so great that the anode current would begin to decrease.

Applications of Valves in Wireless Telegraphy.

We are now in a position to understand how these thermoelectric valves are employed in wireless telegraphy. They can be used for several different purposes. In the first case a valve can be associated with a crystal detector circuit, such as that shown in Fig. 10, in such a manner as to increase the amplitude of the oscillations set up in the closed oscillatory circuit when a train of electric waves passes the aerial. Thus louder sounds are produced in the telephones. This is known as "high frequency amplification." As far as the part of the circuit containing the crystal detector and telephones is concerned, the effect is exactly the same as if the power of the transmitting station from which the signals are being received had been increased.

Valves may also be used to take the place of a crystal detector for rectifying the oscillations and so producing sounds in the receiving telephones; for magnifying the sounds in the telephones; for receiving continuous waves; and for generating oscillations at transmitting stations.

These various applications will be dealt with in order.

High Frequency Amplification.

Fig. 14 shows the connections of a receiving circuit arranged for high frequency amplification and crystal detector rectification.

Between the open and closed oscillatory circuits of Fig. 10 is inserted a third oscillatory circuit S_1 P_2 C_1, known as the "intermediate circuit," but the arrangement is exactly the same in principle as that shown in Fig. 10.

In series with the aerial is joined the aerial tuning condenser C, the aerial tuning inductance L, and the primary coil P_1 of an oscillation transformer. The secondary coil S_1 of this transformer is joined in series with a variable condenser C_1 and the primary coil P_2 of a second oscillation transformer, so forming the intermediate oscillatory circuit. The secondary coil S_2 of this second transformer is joined in series with a variable condenser C_2, and thus a second closed oscillatory circuit is formed. Across the condenser in this circuit is joined the crystal detector, potentiometer and telephones, exactly as in Fig. 10.

The aerial circuit and the two closed oscillatory circuits are adjusted so that their natural frequencies are the same and are equal to that of the incoming waves.

The coupling between the primary and secondary coils of the two oscillation transformers is adjustable. The oscillations set up in the aerial by passing electric waves act on the intermediate circuit by means of the transformer P_1 S_1, and set it into oscillation. The oscillations in the intermediate circuit set up oscillations in the circuit S_2 C_2 by means of the transformer P_2 S_2. Across the condenser C_2 is joined the crystal detector D, the potentiometer R_2 with battery B_3, and the telephones T with telephone condenser C_3. The oscillations in the circuit S_2 C_2 are rectified by the crystal detector and affect the telephones in the ordinary manner.

The advantage of the intermediate circuit is that by its use "jamming" by signals of wave lengths other than that which it is desired to receive is reduced, especially if the coupling between the two oscillation transformers be made small. The aerial circuit may be forced into oscillation by these unwanted signals, but since the frequency of the oscillations so set up is different from that to which the circuits are tuned, the impulses on the intermediate circuit through the oscillation transformer will not occur at the proper intervals to set up strong oscillations in that circuit.

Any weak oscillation of the unwanted frequency which may be set up in the intermediate circuit will for the same reason have great difficulty in producing oscillations in the final oscillatory circuit, and so the effect on the telephones of the unwanted signals will be very small indeed.

The arrangement described so far constitutes a complete receiving set, using a crystal detector. The introduction of the valve does not affect the principle of this arrangement in the least, its purpose, as mentioned above, being only to increase the amplitude of the oscillations in the circuit S_2 C_2.

(To be continued.)

SELECT COMMITTEE ON THE TELEPHONE SERVICE.

RESUME OF EVIDENCE (*continued*).

Mr. W. H. ALLEN, Controller of the Post Office Stores Dept. was examined on *June* 15. He said that more than half of his time was devoted to telephones, and did not think the appointment of a separate controller for telephones would be economical. He described how stores were purchased and tenders obtained, how classified, and how repairs were carried out. £500,000 worth of apparatus was dealt with in the factories each year. He explained the relations of his department with the Stationery Office, and gave evidence on local sales of plant and on distribution of the telephone directory.

The RT. HON. E. G. PRETYMAN, M.P., gave evidence on *June* 22 on behalf of the Land Union. He stated what he paid for his telephone at Ipswich, Felixstowe and in Lincolnshire, and what he had paid in Norway 20 years ago. He thought that free scope should be given to local bodies in rural areas to provide their own systems, and that rural systems should be cheaper than large town systems.

Mr. A. V. ALEXANDER, representing the Co-Operative Societies, was heard on *June* 27. He agreed that the service should be self-supporting, and said that as regards war bonuses the Society would never stand for any attack upon wages to Civil Servants. He thought, however, that the increased charges would reduce the use of the service. The Society were in favour of the message rate system, but thought a larger discount than that proposed should be given to large users.

On *June* 29 Sir CHAS. OWENS, a director of the L. & S.W.R., gave evidence on behalf of the London Telephone Advisory Committee. He said that prices had come down since the Departmental Committee reported, and that the new rates were based on figures which had become obsolete. He compared the arrangement of the Engineer-in-Chief department with that of a railway company's engineering department, and suggested that there was duplication of clerical work in the P.O. He compared operator's wages with those paid to women by private firms, and complained of lack of co-operation and co-ordination between the spending department and the selling department. As regards the flat rate he said that the P.O. was to blame for overloaded lines, and he thought the fact that the flat rate had not been abolished earlier was a proof that the administration was bad. He suggested larger rebates on the message rates. Sir Charles came in for a good deal of heckling by the members of the Committee with reference to railway service, and delays to calls were compared with the overcrowding of carriages, which he appeared to justify. The table of wages which he produced was also much criticised.

Sir ISAAC CONNELL, Scottish Chamber of Agriculture, gave evidence on *July* 4. He thought that the telephone service should be worked on business lines, that the State should economise and bear the loss while prices are high. The present rentals, he said, were prohibitive for farmers, and rural party lines were not suitable for Scottish farmers. He thought the extra mileage rate should be reduced from £10 a mile to £5.

Lt.-Col. W. J. O'MEARA gave evidence on *July* 11 on behalf of the London Telephone Advisory Committee. He was Engineer-in-Chief of the Post Office 1907-1913. He thought that the telegraphs and telephones should be separated from the Post and Savings Bank and that the work should be decentralised. He complained that in his opinion the Engineer-in-Chief was subordinate to the staff of the Secretary's office. He gave particulars of the administrations in Italy, Germany, and Sweden, and suggested a direction-general for telegraphs and telephones and a direction general for posts, both under the same minister. He thought the traffic department should be under the engineer-in-chief, who should be the principal man under the minister on the telegraph side.

Mr. ALEX. MCEWEN (Highlands Reconstruction Association) was the next witness (*July* 13). He complained of the cost of proposed guaranteed trunk lines into the Highland districts, and of the proposed telephone rental charges. He gave comparisons of rates for rural districts in Great Britain, Switzerland, Sweden, and Norway. The Highlands were a poor district and wanted help, but he thought the service would eventually pay.

UNVEILING OF THE CENTRAL TELEGRAPH OFFICE WAR MEMORIAL.

AN impressive ceremony took place on Sunday, July 17, in front of the G.P.O. West before a large gathering when the memorial tablet inscribed with the names of those members of the C.T.O. who had fallen in the great war was unveiled by the Postmaster-General. The subscription to the Memorial had exceeded £1,300, and with the major part of this sum a bed was founded and endowed in St. Bartholomew's Hospital, of which Mr. A. W. Edwards, Deputy Controller of the C.T.O. and chairman of the War Memorial Committee was elected a Life Governor.

The band of the Post Office Rifles, which was in attendance, played Sullivan's In Memoriam, and after Mr. A. W. Watts had read the names of the fallen, the St. Martin's Glee Singers gave a rendering of Mendelssohn's "For ever Blessed." Mr. Edwards then presented photographs of the receipt for £1,000 and of the bed at St. Bartholomew's Hospital to the Postmaster-General and requested him to unveil the Memorial.

The Postmaster-General (the Right Hon. F. G. Kellaway) having done so, read a letter from Lord Stamfordham, the King's Secretary, expressing His Majesty's thanks for the Souvenir of the occasion which had been sent to him, and his recognition of the work done by the Telegraph Service. Mr. Kellaway remarked that Wellington commanded about 30,000 British troops at Waterloo, and that the British Post Office had sent three times that number of men to the late war, of whom 9,000 had laid down their lives. It was a record of which the Post Office might be proud. Divided as were these men's interests during life, their unity was so great during the war that they were prepared to give their lives for it. To be worthy of them and to do the things that matters, we must be united in our lives.

Following on the hymn "O God, our help in Ages past," the Bishop of London was asked by the Controller, Mr. John Lee, to dedicate the Memorial. The Bishop, after reading the dedicatory prayers, referred to his connexion with the P.O. volunteers. He pleaded for peace at home, and begged all to work with determination so as to be able to show something worthy of the blood which was shed in defence of the country.

After another quartette by the glee singers, the "Last Post" and "The Reveille" were given by Mr. W. W. Hodges and Corporal W. G. Veazey. Then after a few minutes' silence Mr. H. S. Jordan and Miss Russell thanked the Bishop on behalf of the War Memorial Committee, and the proceedings terminated with "Land of Hope and Glory" by the band. During the ceremony, foreign offices were requested to suspend work with the C.T.O. The following messages were received in reply:—

Ns agreons volontairement votre attente et sommes touches par la pensee sympathique d'eriger un monument pr les collegues tombes qui ont ete aussi nos collegues.—(*Rome.*)

D'accord pour la suspension du sce 3.30 a 4 heures. Nous nous associons bien sincerement a la ceremonie qui commemore la memorie de nos collegues anglais tombes pour la defense droit de la justice et de l'honneur.—(*Bruxelles.*)

Entendu pour l'interruption a partir de 3 h. 30 nous sommes de coeur avec vous dans cette circonstance.—(*Paris.*)

The Hague and Hamburg also agreed.

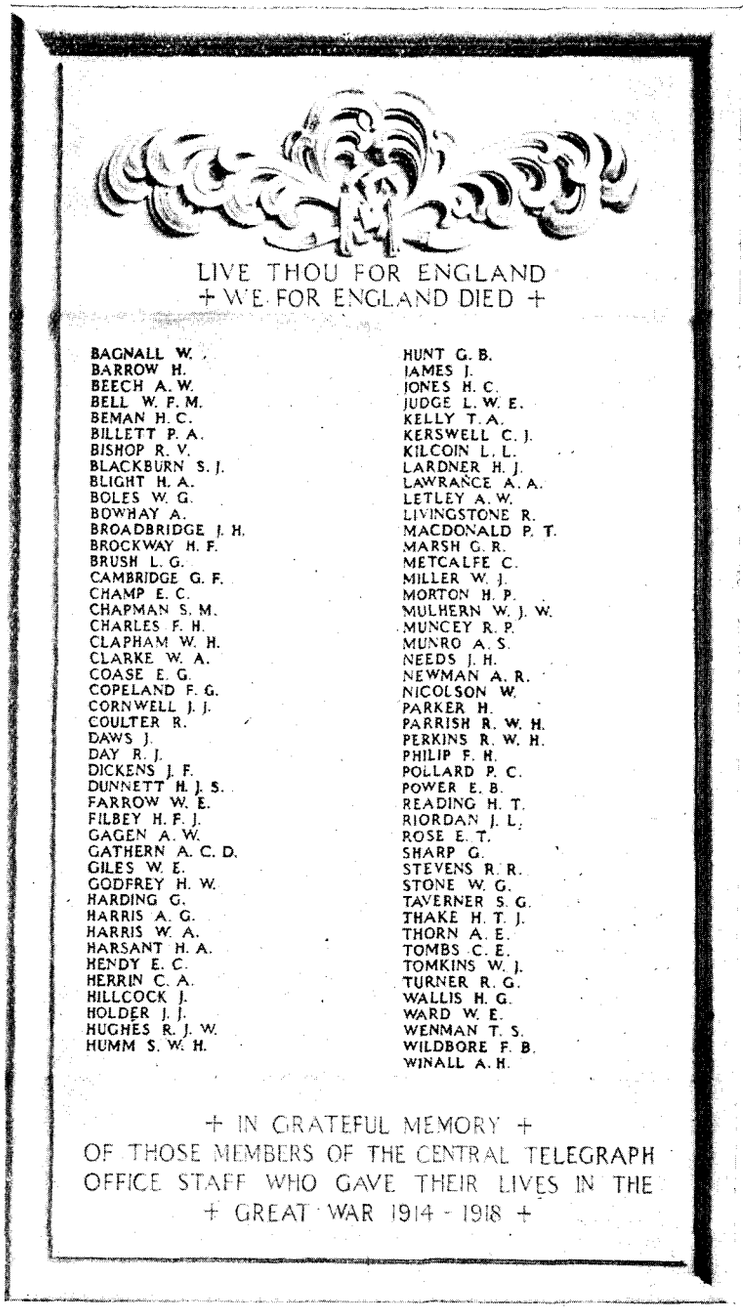


Photo by ALEXANDER CORBETT, 48, *Baker Street, W.*

LONDON TELEPHONE SERVICE NOTES.

Miss A. A. Heap, I.S.O.

MISS HEAP has still a few more days with us at the time of writing these notes, but she will have vacated the official chair before they are circulated, and they must needs go to press before the reception and presentation to her takes place. An account of the function will, therefore, necessarily be delayed until the September issue.

* * *

Friday, June 24, heard another echo of the bazaar. It was the anniversary of the opening of the South London Hospital for Women, and H.H. the Princess Helena Victoria, who attended the fete held to celebrate the event, received purses. A small sum, £12, still remained from the proceeds of the bazaar, and Miss Channer (Sidcup) and Miss Wheatley, City Exchange, had each the honour of presenting to her Highness a purse of £6. The full sum raised by the bazaar and by additional subscriptions has reached the grand total of £2,512.

The Imperial Swimming Club (Trunk Exchange).

The club are holding their Annual Swimming Gala at the Holborn Baths on Sept. 14. A 60-yards handicap, open to all ladies' departments of the Service, will be held.

Will Club Secretaries please forward names and times of intending competitors to the Secretary, Miss Hodder, Trunk Exchange, G.P.O. South, E.C.4, not later than Aug. 15. Entrance fee, 1*s.* 6*d.*

Further Light on the Wrong Number Trouble.

This time it is the *London Mercury* which has been unravelling the mysteries of the wrong number trouble, and we are extremely grateful to learn from so respected a source that there is foundation for our apprehension that some at least of the wrong number tales are "fishy" ones. The July issue includes a poem by Geoffrey Dearmer, of which the following is an extract:—

> "Where crabs with eyes set squinting in their shells with sidelong crawl
> Are scudding; where the baby dabs with squashed flat faces sprawl;
> Where the lurking lobster spawns and a hueless host of prawns
> Where anemones like rubies gem the rough and rocky wall,
> And swimming from a narrow—'Are you Hammersmith or Harrow?
> Yes, I want you. Wait a moment, two-nine-seven London Wall.
> Five? Sorry you've been troubled: two-five-seven London Wall.'"

Contract Branch.

The Contract Branch has during the past month lost one of its well known figures in the person of Mr. William Logan Rae, who retired on July 3, having attained the age of 60 years on that date. He entered the service of the National Telephone Company on April 11, 1905, and was appointed Divisional Contract Agent of the North-East Division of London in September, 1910. The North-East Office was one of the two Contract Offices in London which were closed down for reasons of economy in the early days of the war, and Mr. Rae then acted as a third class clerk in the Accounts Branch, subsequently being transferred to the Headquarters Section of the Contract Branch. His health has been far from good for some time past, and all who know him will join in wishing that as a consequence of his rest from official duties he may be completely restored to health.

* * *

How greatly simplified the Revision of Rates work would have been if all subscribers had adopted the same attitude as the writer of the following letter:—

"We beg to acknowledge receipt of your letter of the 28th instant. In these matters the public are entirely in the hands of a Government Department. You will remember when you were a boy reading the fable of the lamb and the wolf. Whatever we do in the guise of the lamb we are quite satisfied that you will devour us some day in the future.

"We, therefore, academically agree to all your terms and everything you suggest, because we are entirely helpless."

Langham Choral Society.

Rehearsals re-commence on Sept. 13 and will continue weekly on Tuesdays at 6.30 p.m. at the Rangers' Hall, Tottenham Court Road, W.C.1.

The first concert of the season will take place at the Queen's Hall on Armistice Day, when the programme will include Beethoven's Mass in C and Elgar's "Banner of St. George."

Vacancies still exist for tenors and basses. Applications for membership should be addressed to the Hon. Secretary, Miss W. M. Nurse, 11/12, Norwich Street, E.C.4.

Minus and Plus.

With the provision of a new exchange located at the Orpington Post Office to serve the Cray area, the late Cray subscribers pass from the London to the Brighton District and are re-christened Orpington. The Cray Exchange had 87 subscribers, and on that basis was among the four smallest exchanges in the London Telephone area. It had been in use for 17½ years and was of the magneto type. The new installation is C.B. signalling.

The new Toll Exchange in Norwich Street, Fetter Lane, is rapidly nearing completion, and with the new exchanges, Grosvenor and Minories, will probably be opened at no great distant date.

The Belgrave Social and Athletic Club.

The members of the above club and their friends spent an enjoyable day at Tunbridge Wells on June 19.

We started from the Manor House at 10.20 a.m., and, after stopping at Dalston to pick up the remainder of the party we soon left the City behind and enjoyed a splendid view of the surrounding country. We arrived at Tunbridge Wells at 1.40 p.m. where an excellent luncheon was served at the Swan Hotel. This hotel proved doubly interesting, as hanging in the stairway were several very clever cartoons, depicting the transfer of the telephone system in Tunbridge Wells to that of the G.P.O. in 1912.

During the afternoon several of the party walked to Happy Valley and "Toad Rock," armed with cameras, but, owing to the rather bad light, the efforts of the majority were not very satisfactory. After tea, which took place just after 5 o'clock, a rag cat was raffled among the party and realised £1 1*s.*, which has been sent as a donation to St. Dunstan's Hostel. Everyone thoroughly enjoyed themselves, including the drivers and conductors, and it is hoped by all to have a similar trip in the near future.

SUNSPOTS AND MAGNETIC STORMS.

BY ARTHUR E. COTTERELL.

THE magnetic storm of May 14 and 15 last not only affected the needles at the observatories and caused considerable interference on telegraph systems throughout the world, but afforded us another reminder of an unsolved problem of nature. Although we are well acquainted with effects, our knowledge of the causes is very far from being established.

It is true that several plausible theories have been advanced but terrestrial magnetism is surrounded by so much that is complex, contradictory, or elusive, that none of them can at present be regarded as conclusive.

In the course of my study of the subject there are certain points which have particularly impressed me as adding to the complexities.

It is generally accepted that sunspots pass through cycles in which their maxima or minima respectively are attained on an average of about 11.1 years and that magnetic disturbances are closely in accord therewith; magnetic storms of magnitude being usually coincident with sunspot maxima. Graphs of various observatory records certainly support this theory.

In my estimation, however, the most important storms are not merely those which bring about violent agitations of the needles but those which also induce "earth currents" so strong and variable as seriously to interfere with single wire telegraph circuits, the extremities of which are connected with the earth. Now, although such telegraph circuits are frequently affected by minor "earth currents" the great magnetic storms to which I have alluded occur at very irregular periods and curiously enough do not coincide with sunspot maxima or minima, as the following table of some of the greatest storms will show:—

Magnetic storms affecting telegraphs.	*Sunspots.*	
	Maxima.	*Minima.*
Sept. 1, 1859	1860.1	1856.0
Aug. 3, 1872	1870.6	1867.2
Nov. 17, 1882	1883.9	1878.9
Feb. 14, 1892	1894.1	1889.6
Oct. 31, 1903	1906.1	1901.7
Sept. 25, 1909	1917.7	1913.1
Aug. 11, 1919		
May 15, 1921		

It is not suggested that there is no connexion between spots and storms; the recorded evidence is overwhelming, and on each of the occasions mentioned there was a huge spot or group of spots. The point which I desire to emphasise is that none of these great storms during the last 62 years have been coincident with a maximum spot phase if we except the storm of 1859, which did nearly coincide.

As the average interval between sunspot maxima shewn in the above table is 11.5 years and minima 11.4 years it should be stated that the 11.1 years average is based on records taken over a much longer range of years.

The most tenable theory as to the connexion between sunspots and magnetic storms appears to be that which was, I think, first advanced by Mr. Maunder, in which it was suggested that streams of electrified particles are ejected from the spotted region of the sun and that these affect the earth's magnetism and set up or start terrestrial currents if such a stream happens to be so directed as to hit the earth's atmosphere. Whilst very largely accepting this view, I am constrained to indicate certain circumstances which present some difficulties when considered in conjunction with the generally accepted graphs which illustrate the connexion between magnetic storms and sunspot maxima. It is well known that coronal streamers are comparatively short all over the sun at periods of sunspot maxima and that at periods of sunspot minima there are always long equatorial streamers extending probably beyond earth-sun distance, and that from their direction approximating to the ecliptic such streamers are likely to reach the earth. Examination of them by the spectro-heliograph has revealed their electric or electrified nature. It would, therefore, seem to be curious that magnetic storms should occur when these electric streamers are short, as at times of sunspot maxima rather than on occasions of sunspot minima when the streamers are long. No doubt much may depend on the precise direction of any particular stream, but the conditions to which I have alluded seem to illustrate some of the complexities and contradictions which surround any inquiry into this interesting but elusive subject.

In considering the incidence of sunspots it is a natural though to question the possible effects of combinations of the planets. Some years ago I made rough computations of their relative positions at various dates of magnetic storm with a view to ascertaining whether the configuration was such as might warrant the assumption that the combined gravitational pull of several in a given direction might be a key to the secret, either as causing the spots or directing the electrified streams. I have recently gone over my figures and added similar details as to later storms.

In a few instances the configurations seem to be suggestive but in others the positions of the planets were such as rather to dispel the thought. I understand that Prof. E. W. Brown some years ago investigated the planetary positions at certain times of sunspot maxima, but although obtaining some extremely interesting results, missed establishing an acceptable theory owing to certain occasional discrepancies.

If I may venture to tread on speculative ground I would suggest that there is still one field within the Solar system which, so far as I know, has not been explored in this connexion, and which in the present state of our knowledge cannot yet be fully investigated. I refer to the minor planets whose orbits lie between those of Mars and Jupiter, not as a sole cause, but as a possible contributory one.

I quite realise how comparatively small they are and am aware of the views held by eminent astronomers as to their probable aggregate mass. Their views, however, seem to vary considerably and can hardly be deemed to be conclusive at the present stage when we do not know how many asteroids there are. In one respect we have definite information, that is in regard to the periodic times of a very large number of them which we know vary between some three and nine years.

It follows that they must be continually changing their position in relation to one another just as runners in a race of several laps change their groupings, from which we may infer that at times they are scattered in the belt of their orbits whilst at others they may form groups which may conform more or less with the celestial longitude of some of the eight principal planets.

It has naturally happened in the past that special consideration should be given to Jupiter on account of his giant size, the close approximation of his orbital plane to the ecliptic, and not least of all to his period of 11.86 years so closely approximating to the 11.1 years average of sunspot maxima. On the other hand it was easy to discard Jupiter, as not only is there a difference in the two periods of .76 of a year but there would be cumulative differences with succeeding cycles, although after many years they would come into phase again to be followed with a repetition of the divergencies. Another reason for discarding Jupiter arose from the fact that his time of reaching perihelion can only rarely coincide with sunspot maxima.

Had there been a planet whose periodic time was about 5.74 years its synodic period with Jupiter would have been about 11.1 years.

Seeing that a large number of the known minor planets have periodic times ranging about 5 or 6 years it would not seem unreasonable to speculate as to the possibility that they may be a contributory cause of sunspots in combination with Jupiter.

Recently I attempted a preliminary investigation as to the motions and positions of the first 280 minor planets. The changes of groupings was interesting but not such as I could consider strongly suggestive. As I have already said, however, any such theory cannot be adequately probed until we are possessed with a fuller knowledge as to the many thousands, perhaps millions, of asteroids which it is thought may exist.

TELEGRAPHIC MEMORABILIA.

THE *Cable Room Monthly* of June anent the retirement of our esteemed friend, Mr. C. F. Moody, reminds us of one of the most interesting of the many reminiscences of our colleague. It was on Dec. 10, 1877, when the receipt of the news of the fall of Plevna came trickling through to London by Morse-printer on the direct London-Vienna wire. Archibald Forbes, the famous newspaper correspondent, "rode some 50 miles to a small telegraph station and got his message in first to the Austrian capital. The *Daily News*, to whom the telegram was addressed, was advised that the message was being received on that momentous Sunday evening and made preparations for the 'scoop.' The last pages were rushed to their offices sheet by sheet in a cab."

I find I am expected, by some of my particular friends, to write something on the Advisory Committee which is at present sitting on the Post Office—metaphorically, of course! While anxious to oblige it is very questionable whether I shall give voice to exactly the sentiments which those particular friends would have expressed for the simple reason that, feeling unbounded confidence in our organisation, without esteeming it faultless, there does not appear to be room for any qualms respecting the final result of any enquiry into our ways and method. To write that much does not infer that there is no room for improvement in method, in apparatus, or in personnel. One can find flaws in the organisation and material and goods, yes, and even in the personnel of some of the best organised and best advertised emporia. That at least has been the sad experience of the writer, sad but comforting in that one recognises the human touch in its very fallibility. One has heard of private railway companies whose engineers have designed engines too heavy to travel over certain bridges of their own system, others whose funnels would not pass under arches of their own building. One has heard of shipbuilders whose vessels have been failures, and commercial men whose business methods have brought the whole fabric of their design crashing about their ears with untold misery for thousands in its train. Behind the history of the Post Office and its administration there is at least the unique record of much unselfish thought and labour for the community, and not a single error which has ruined a life or broken a heart. Our one great difficulty has been and will be for many years yet, to obtain that sympathetic understanding of the difficulties and intricacies of the technical side of our crafts. It is one thing to drop a letter lightly into the pillar-box, to hurriedly scribble a telegram and throw it across the counter of the nearest Post Office, or to call up the doctor, the police, the fire-brigade or the theatre on the 'phone, and quite another matter to appreciate to the full the personal service rendered, the complicated organisation demanded, and the skill required to give the most satisfactory results for the few pence at which such services may be purchased.

Post Office administrators would have a much easier task if, once and for all, it were definitely laid down that it was to be run either on commercial or philanthropic lines, but the pendulum of criticism swings first in one direction and then in the other. No private organisation has ever been requested to adopt both methods, or even to work them alternately.

The C.T.O. Amateur Gardening Association held their Fruit, Flower and Vegetable Exhibition in an out-of-the-way corner of the building kindly lent for the purpose on July 6. How the exhibitors managed to produce so high a standard of excellence in each of these departments is their own secret. There was, however, a complete absence of those phenomenally sized tubers which the normal season produces and which are apparently the particular pride of the prize grower.

It is regretted that room cannot be found for the complete list of prize winners, space available only permitting the names of "Firsts" in the various classes of the following:—Potatoes: Mr. P. Hutchins, Mr. G. H. Parker. Carrots: Mr. F. S. Parker, Mr. C. W. Ledger, Mr. C. Land. Beans: Mr. C. Young. Edible Peas, Onions, Beetroot, Shallots, Rhubarb, Violas, Sweet Peas: Mr. F. S. Parker first in each of these seven classes. Turnips: Mr. C. Young. Bush Fruit: Mr. T. H. Wright. Roses (two classes), Violas, Spray: Mr. E. F. Bing. Rambler: Mr. E. Bothwell. Sweet Peas: Mr. H. Lang. Violas, Cut Hardy Flowers, Antirrhinums, Annuals: Mr. W. P. Barry first in each of four classes. Cut Flowers: Mr. C. W. Ledger. Biennials: Mr. E. Hill. There was a special class for Novices, apparently those who had never before exhibited in the following:—Potatoes: Mr. W. A. Fisk. Onions: Mr. J. Pratt. One Rose: Mr. W. P. Barry. Sweet Peas: Mr. F. S. Parker. Violas: Mr. W. P. Barry. The first prizes for the arrangement of cut flowers went to Miss M. J. Clarke and Miss L. F. Ransom (novices). Special congratulations are due to Mr. F. S. Parker for his record of eight firsts, three seconds, one third. The cut flowers were despatched to our friends and neighbours, the patients of St. Bartholomew's Hospital, from whom a grateful acknowledgment was duly received.

Advances in the direction of improved selectivity for Wireless Telephony may be judged by the following experiment which the *Telegraph and Telephone Age* records as having been described by Mr. E. F. W. Alexanderson before the Institute of Radio Engineers at New York. A trial installation was erected three miles from the New Brunswick station whose wave length is said to be 13,600 metres. Despite this close proximity, signals from Carnarvon, Wales, were distinctly and clearly received at the experimental station, although the wave-length of the Welsh station is 14,200 metres. The New Brunswick signals, despite their intensity and small wave-length difference, were practically obliterated by the special methods described by the lecturer.

A correspondent who is always interesting sends a number of newspaper cuttings which he encloses to prove that there is "some reference to telegraphy in almost every paragraph one reads nowadays." Whether our friend has been particularly lucky in the days he has chosen from which to prove this bold assertion, I am afraid my own lack of observation is unable to verify. Truth, however, bids me place on record that on four consecutive days in a recent month the following subjects were either heavily head-lined or mentioned with some degree of prominence in a leading London daily:—"The Admiralty (Signalling) Flag Book," "Hundreds of Telegraph Wires cut in England," "Wireless calls for help. Ship strikes iceberg," "Submarine Cable Telegraphy (Oscillatory Circuit Signal Conditions)," "Warning electric Signals for Vessels approaching land, the submarine cable method," "Wireless Tests by R36," "Eastern Telegraph Company's dividend," &c., &c. It is an interesting list and only intensifies what many of us do not perhaps fully realise, how much in modern life depends and centres round the art of signalling in one word *our* craft!

The recent visit of representatives from the Celestial Empire to the C.T.O. has, we trust, proved of no small utility to our Chinese colleagues. On the other hand, thanks to the courtesy of these same representatives, we have gained that ever interesting experience of a peep into other lands as well as that generally speaking chastening experience of seeing ourselves as others see us.

We learnt of some of the difficulties experienced by the Chinese in applying their language to a telegraphic system. Burdened with a written tongue which necessitates the use of some thousand or so of signs to represent its various meanings when telegraphing it becomes necessary to signal each one of these by a series of numbers. Thus telegraphy in Chinese vernacular always means an uninteresting text comprised solely of figures. When the sender of a telegram hands his message in at a Chinese Post Office, having first written or rather painted it on the form with a brush, it is coded into groups of figures. These are signalled through to their destination where, should the receiver require it, the telegram is decoded, at an extra cost of 10 per cent. As a point of interest I was assured that there were certain Chinese counter clerks who could code or decode no less than three thousand of these groups without referring to the key. Whether legend or not I cannot tell, but it was also stated that an American had invented a type-writer capable of printing two to three thousand characters. It was not a portable machine, as it occupied about the same space as an ordinary upright piano!

The daily output of an office of the size of Pekin is not more than twelve to fifteen hundred telegrams. Each Chinese telegraph office retains its forms for twelve months. My informant stated that there was a movement in commercial China to utilise the English language entirely for commercial purposes, and with this end in view the Pekin University had conceived the idea of compiling a special Anglo-Saxon commercial vocabulary for general use which would prove of special utility in telegraphing and cabling. One can understand that so cumbersome a system of communication had proved a heavy handicap in international trading.

It struck our visitor as something humorous that we should lend staff from one division to the other. In Chinese offices the same superintendent always controls the same staff and only in the event of one of the latter desiring transfer to another "division" or "brigade" on the grounds of disagreement, or for some other cause, is a change ever permitted or even desired.

The following appointments are announced in connexion with the C.T.O. Foreign Telegraph Department. To be Assistant Superintendents, Messrs. Page, Poffley and Pratt. To be overseers: W. Annible, C. J. W. Barrett, Beaumont, Classey, Cumber, Fursman, Roebuck, Upson, and H. A. Webb. To one and all the sincerest congratulations from past and present colleagues.

J. J. T.

The above is a picture of the Bradford Telephonists' Hockey Club. The sender assures us that the members are even more excellent as telephonists than hockey players.

WHERE TO STAY.

The attention of our Readers is directed to the following list of Boarding and Apartment Houses.

BRIGHTON.—Rusthall Boarding Establishment, 11-12, Cannon Place. Central. One minute West Pier. From 2 guineas weekly.

DEAN FOREST.—Severn-Wye Valleys. Beautiful Holiday Home (600 ft. up) 55 rooms, extensive grounds, motors, golf. Boarders 47*s.* 6*d.* to 63*s.* Prospectus—Littledean House, Littledean, Glos.

EASTBOURNE.—"The Polytechnic," 109-111, Tideswell Road Recommended by Polytechnic, Regent Street. Comfortable holiday home. Seven minutes station. Five minutes pier. Liberal table. Piano. Terms, board residence 5*s.* deposit and 2 guineas at end of week.

ILKLEY, YORKS.—Marlborough House Boarding Establishment. Tennis Court. Billiards. Excellent cuisine. Near Moors. Stamp for tariff. Mr. and Mrs. J. T. Robson, Resident Proprietors.

MARGATE (CLIFTONVILLE).—"Lavardin," Edgar Road. Board Residence. Minute Sea. Liberal Table. Highly Recommended. Young Society. Tariff on application.

SHANKLIN, I.W.—Comfortable, homely board-residence. Holiday home. Substantial cuisine (separate tables). New management. Close sea, shops. Picnic parties arranged. Geere, Glenavon. Phone 37.

SWANAGE.—The Highcliffe Private Hotel and Pension. Unrivalled position on sea-front. Near Golf Links. Excellent cuisine. Inclusive terms. Enlarged 1911-1912. 'Phone: 47 Swanage. Mrs. Hooke.

CORRESPONDENCE.

CONTRACT BRANCH NOTES.

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

DEAR SIR,—It was with pleasurable feelings that the writer commenced to read the article under the above heading on page 161 of the T. & T. JOURNAL for July, 1921.

My pleasure was, however, soon turned to dismay when, upon reading the second paragraph one learned that "the only exchange line cases dealt with by that branch are those where the subscriber has decided to allow his agreement to cease, &c.," and one said to oneself, "surely this was never written by a contract man"—but there it is, and one must suppose that one has been dreaming during the past eight months and that instead of being in the midst of a whirlwind of hundreds of various matters concerning preliminary work, issuing notices, following up with agreements, then reminders, telephone calls, and finally disconnexion forms one has only simply been dealing with cases "where the subscriber has decided to allow his agreement to cease, &c."

Reading on, one becomes more interested, and nods agreement at the results regarding the new private wire rates.

Then behold the sequel; the article relates to London only (lucky devils)—and not to the whole of the country. This fact is, one hesitates to say deliberately held back, but certainly very modestly kept from the reader until the last paragraph,* and in almost the last word, for who but London could refer to "long circuit to the Provinces."

Most contract managers will be inclined to commiserate with their brethren of the London Contract Branch because of that which they (L.C.B.) have missed, and having successfully accomplished a task which at times seemed overwhelming, one sticks out one's chest and with pride tells you that he would not have missed it for anything.

Thus, dear old London, we of the Provincial Contract Sections, can perhaps be permitted to blow our humble trumpets and say, whenever memories of the Revision of Rates are revived, "well, *we* did it *all*."

Please don't think, ye Londoners, that this letter is written in a boastful mood, for your difficulties are appreciated, but it is desired to correct an impression which the uninitiated would form were the fact that the article refers to London only not given publicity.

ROBT. P. LOWE,
Contract Manager.

Telephones, Norwich, July 9, 1921.

* The Editor must be held responsible for this. The Contract Branch Notes were sent in by the writer of the London Telephone Notes along with his other paragraphs, but the Editor thought them sufficiently interesting to require a separate heading. There was, therefore, obviously no idea on the writer's part that he was referring to any district but London, and it was unnecessary for him to say so specifically.

As one of the writers of the Contract Branch Notes which appeared in the July issue of the JOURNAL, I have been favoured with a sight of Mr. Lowe's letter. One has always regarded the city of Norwich (for obvious reasons) as "hot stuff" and, therefore, one has confidence that the Contract Branch of that city will have lived up to its reputation. It should, however, perhaps be mentioned that the total number of stations in London is well over 320,000. In London, too, it must be remembered that there are four separate Contract Offices none of which is housed in the same building as the Accounts Branch, and, therefore, it was far more economical for the work in connexion with exchange lines to be dealt with by a special staff in the Accounts Branch rather than that the very heavy work should have been undertaken of splitting up the rental ledgers into the four sections concerned. It is interesting, too, to note that over 11,000 Exchange cases were dealt with by the Contract Branch in London in connexion with the revision of rates work and these cases, so dealt with in London, are, as pointed out in the second paragraph of the July notes only the difficult ones, and therefore, London's backwash is probably of greater volume than Norwich's full flood.

W. GLENNY.

July 13, 1921.

CIVIL SERVICE SPORT.

AN OPEN LETTER TO ALL CIVIL SERVANTS.

Ladies and Gentlemen,—It should be evident to all members of the Civil Service that the time has now come when a strong effort should be made towards the establishment of Civil Service Sport upon an adequate organisational basis. At the present time there is no body in existence which can be said to represent the Civil Service in sport. There has long been in existence, it is true, the Civil Service Athletic Association, which has just held its fifty-fourth Annual Meeting at Stamford Bridge. But the scope of this Association is limited solely to athletics and, even so, its organisation is by no means as perfect as might be desired. Neither the Civil Service Association Football Club nor the Civil Service Rugby Football Club can be termed representative, because, so far as our inquiries lead us, no effectual effort is made from year to year to attract the best talent the Service possesses to these clubs. During the football season just ended an effort was made to arrange a match between the Civil Service Football Club and a team representative of the Civil Service Football League. The effort proved unsuccessful largely, we believe, because of lack of energetic support for the proposal by the League teams. As for the Civil Service Cricket Club, the less said about it, as being representative, the better. The Civil Service Amateur Swimming Association may be said to be truly representative, and it is to be hoped that other sections of sport within the Service will speedily perfect their organisations to the same extent as has been done by the swimmers. Even here, however, we find the handbook for the year 1921 "Roneo-ed" and not printed; and several championships are still without trophies (back-stroke, diving, life-saving and various team and ladies' championships).

Our object in drawing attention to these matters is to secure the establishment in the very near future, of a Civil Service Amateur Sports Association which shall truly represent all branches of Civil Service Sport (duly affiliated to such organisations as the A.A.A., L.F.A., R.L.S.S., S.C.A.S.A., R.W.A., L.R.C., and N.C.C.U.). Under the aegis of this body would exist and, we hope, flourish sections for as many as possible of the branches of sport: such as Football (Rugby and Association), Cricket, Swimming, Athletics, Hockey, Tennis, Billiards and Golf. Leagues could be formed, cup competitions instituted and the truly competitive spirit between the Departments fostered. By this means, also, properly representative teams could be selected to meet, on equal terms, teams from the banking, teaching, commercial and industrial worlds. New entrants to the Service would be speedily attracted and everyone would benefit. In this way, too, the Civil Service would gain in the esteem of the man in the street, and much of the ignorant and damaging criticism at present prevalent and popular respecting the Civil Service would be "scotched."

I would desire to appeal to all present secretaries and representatives of Service Sport to take this matter up. There should be no further delay. No existing organisation would suffer—in fact, all would inevitably benefit by union under the banner of the new organisation—and there is the great possibility that, having such an Association, representations could be successfully made to H.M. Treasury for the allocation of funds for the purchase of grounds or for the use of Crown Lands for the pursuit of Service sport. In any case, the formation of such an Association would be a move in the right direction, would give a welcome fillip to sport, and would inevitably benefit the health of the Civil Service, individually and collectively.

RICHARD R. COX,

[Referee, Civil Service Football League and London Business Houses Football League and Cup Competitions; Captain London Dock C.C. (Customs and Excise Cricket League); Editor, *The Civilian*.]

82/3, Lower Thames Street, E.C.3.

WEST YORKSHIRE TELEPHONE DISTRICT.

UNDER the auspices of the Traffic Discussion Circle, an enjoyable picnic was held on June 4 at Bolton Abbey. The journey was made by charabanc, and parties were made up at Leeds, Bradford and Dewsbury.

There was a good representative gathering, including many officers from Bradford and Dewsbury sub-exchanges.

The staff were very pleased to have with them Mr. Beaton, the Postmaster-Surveyor, and Mrs. Beaton; Mr. Lawrence, Postmaster of Dewsbury, and Mrs. Lawrence; Mr. Elliott, Assistant Postmaster, Bradford, and Mrs. Elliot; Mr. Riley, Superintendent of Telegraphs, Bradford, and Mrs. Riley.

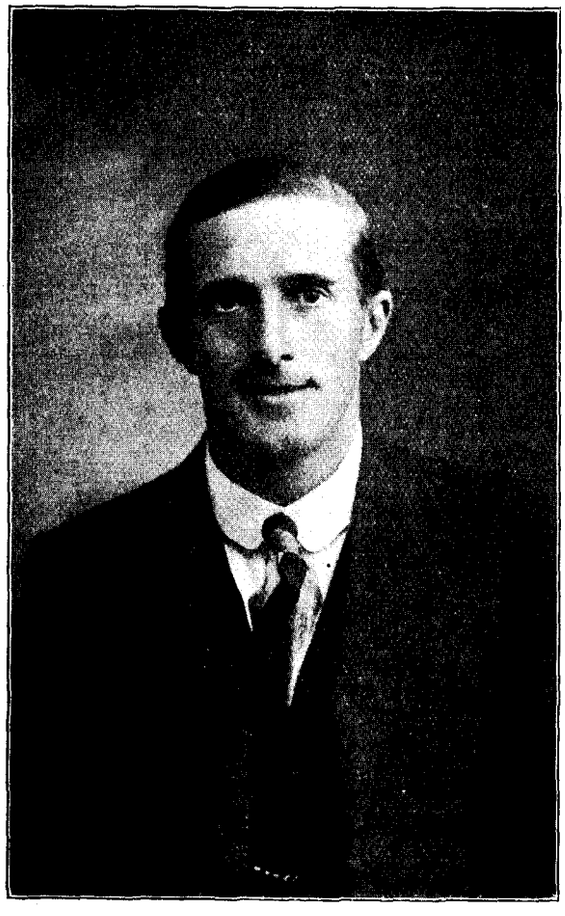
The afternoon was spent in wandering through the woods, enjoying the beautiful scenery for which the district is noted. An excellent tea was provided at the Devonshire Arms, to which full justice was done. After tea the younger "bloods" indulged in sports. The sack race was well patronised by the ladies, and some of the entrants showed considerable skill in the manipulation of the sacks. A novelty race "speed of answer and disconnect" was also well patronised, and we look forward with hope that the entrants will show the same eagerness to "get there first" when engaged in their more serious occupation. What proved to be the most enjoyable and keenly contested event was, perhaps, the tug-of-war; there was keen friendly rivalry between the teams from Leeds, Bradford and Dewsbury. It would perhaps be inopportune to discuss the merits and demerits of the various teams, or how the winning team achieved success, especially as they were ladies, but we can, it is thought, without offence quote a remark which was heard on the ground, "Weight does tell, doesn't it?" Now, dare we mention the winning team? better not, perhaps.

The prizes were distributed by Mrs. Beaton, and Mr. Beaton, in the course of a few well-chosen remarks, said that such gatherings served a very useful purpose and that he hoped the example set would be followed by other branches.

All returned safely to their homes and turned up smiling on the Monday morning, voting that the outing had been an unqualified success, and expressing fervent hopes that they might be off duty for the next one, which we hope will be in September next.

MR. W. I HUNTER

of the Deal Post Office Staff, whom we congratulate heartily on winning the Amateur Golf Championship at Hoylake, at the end of last May. He created a record in the Amateur Championship by the margin by which he beat his opponent in the final. Mr. Hunter's photograph came to hand just too late for insertion last month.



MR. W. T. COOK

of the Central Telegraph Office, has had the honour of playing for Surrey several times this year. He scored 84 *v.* Sussex on his first appearance in first class cricket, and 71 *v.* Oxford. He also scored 101 and 65 for the Second XI. *v.* Wiltshire.

PERSONALIA.

LONDON TELEPHONE STAFF.

THE following resignations for marriage have taken place during the month of June:—

Miss E. T. COWLEY, Assistant Supervisor, Class I, of London Wall Exchange.
Miss F. E. IVE, Telephonist, of London Wall Exchange.
Miss K. M. WRANGHAM, Telephonist, of London Wall Exchange.
Miss E. F. BOURNE, Telephonist, of London Wall Exchange.
Miss M. E. N. KING, Telephonist, of Sydenham Exchange.
Miss E. MARSHALL, Telephonist, of Trunk Exchange.
Miss G. S. RICHARDSON, Telephonist, of Trunk Exchange.
Miss W. T. SMITH, Telephonist, of Trunk Exchange.
Miss L. WEEKES, Telephonist, of Trunk Exchange.
Miss M. V. FARQUHAR, Telephonist, of Paddington Exchange.
Miss V. WELLS, Telephonist, of Paddington Exchange.
Miss E. V. JOY, Telephonist, of Hammersmith Exchange.
Miss A. BURGESS, Telephonist, of Avenue Exchange.
Miss H. HITCHINGS, Telephonist, of Avenue Exchange.
Miss D. G. F. WALLIS, Telephonist, of Central Exchange.
Miss G. A. DAWSON, Telephonist, of Museum Exchange.
Miss E. M. COLEMAN, Telephonist, of Museum Exchange.
Miss J. E. SERVANTE, Telephonist, of Victoria Exchange.
Miss L. E. WILDMAN, Telephonist, of Victoria Exchange.
Miss M. E. BARRETT, Telephonist, of Victoria Exchange.
Miss D. S. WILLIAMS, Telephonist, of Victoria Exchange.

PROVINCIAL STAFF.

On April 28, Mr. HARRY ROSTANCE and Miss V. M. STEWART, both of the General Office, Sheffield, entered into a life partnership. On the eve of the wedding the bride and bridegroom elect were presented by their colleagues with a handsome oak timepiece.

Miss M. CARR, Writing Assistant, Sheffield, on leaving to be married on June 25, was presented by her colleagues with an oak clock.

Miss J. G. PEARSE, Telephonist, Devonport (Plymouth), was the recipient of a silver cake basket from the staff on the occasion of her marriage on June 1, 1921.

Mr. S. G. CAPLE, Clerical Officer, Traffic Dept., District Manager's Office, Plymouth, was presented by the clerical, operating, engineering and cleaning staffs with a set of rustless and plated cutlery on the occasion of his marriage on June 1, 1921.

Miss G. A. PEARCE, Telephonist, Plymouth, and Mr. HERBERT PETHICK, Telegraphist, Plymouth, were presented by the Postmaster's and District Manager's staffs with a silver tea service and glassware on the occasion of their marriage on June 4, 1921.

Miss W. PRIDEAUX, District Manager's clerical staff, Plymouth (formerly Telephonist, Plymouth), resigned for marriage on June 2, 1921. The staff presented her with a plated cruet.

Miss E. M. COOPER, Telephonist, Plymouth, was the recipient of an embroidered linen bed-spread from her colleagues on the occasion of her transfer to Yeovil as Senior Telephonist on July 10, 1921.

CALENDAR OF COMING EVENTS.

Aug.	3.	Cricket.	Cable Room *v.* Civil Staff Police at Paddington.
,,	4.	,,	Cable Room *v.* W. Norwood Social at Dulwich Park.
,,	5	,,	T.S. Foreign Annual Sports, Grove Hotel, Dulwich.
,,	9.	,,	Cable Room *v.* A. and B. Divisions at Dulwich Park.
,,	15.	,,	Commercial Cable Co. *v.* Cable Room, away.
,,	15.		Last date for entries for the 60 yards handicap open to all Ladies' departments of the Service, which takes place at the annual swimming gala of the Imperial Swimming Club (Trunk Exchange) (see L.T.S. Notes.).
,,	16.	Cricket.	Cable Room *v.* C. and F. Divisions at Dulwich Park.
,,	23.	,,	Stock Exchange Tels. *v.* Cable Room at Dulwich Park.
,,	24.	,,	Cable Room *v.* Silverdale at Sydenham.
,,	31.	,,	Cable Room *v.* Tulse Hill United at Dulwich Park.