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TELEPHONE MEN.

LXI.—CHRISTOPHER FEARNHEAD MOORHOUSE.

CHRISTOPHER FEARNHEAD MOORHOUSE was born on Jan. 15, 1872, at Canterbury, Kent, and came from an old Manchester family. He was educated at St. Bonaventure's Grammar School, Forest Gate, Essex. On leaving school he entered the service of the United Telephone Company on Dec. 9, 1886, and was appointed Junior Clerk under the late Mr. W. W. Turner, at that time the Engineer for the West of London. He will thus have completed 25 years' service next December. On the amalgamation of the United, National and Lancashire & Cheshire Telephone Companies he was appointed Assistant Cashier, and subsequently became Assistant Engineer under Mr. Frank Kenney, then Engineer for the Regent Street district, and under Mr. Kenney's tuition he gained a considerable knowledge of construction work. The work of metallic circuiting the Company's system in West London was then in full swing, and a considerable portion of this work fell to his share.

Owing to the rapid growth of the service on the Regent Street Exchange, it became necessary to look for larger exchange premises, and Mr. Moorhouse was instructed to report on vacant premises in the neighbourhood. He drew attention to the suitability of the old Pelican Club in Gerrard Street, but the place was then considered far too large for the Company's requirements; although eventually it was purchased by the Company.

In October, 1896, Mr. Moorhouse was appointed Local Engineer for Paddington and Kilburn, and in July, 1898, he was appointed Local Manager for this district, which at the time was probably one of the largest in London. At this period telephonic development in the West End began to make rapid strides, and under his supervision an extensive underground system was laid down through Paddington and Kilburn, the latter exchange being closed and the subscribers cut in to Paddington.

In March, 1899, Mr. Moorhouse was appointed District Manager for the Eastern district of London under the Metropolitan Superintendent, Mr. C. B. Clay. At this time the district office was situated in The Grove, Stratford, and consisted of three small rooms over a boot shop, but it was not long before these premises were found to be totally inadequate. Up to the time of his arrival in the East of London the telephone system did not extend beyond

Leytonstone, but, after some protracted negotiations with the various local and Forest authorities, exchanges were eventually opened at Wanstead and Woodford, and the ice was broken for further development in the various districts beyond. During his tenure of office in the East district the Company's present commodious buildings were erected in the West India Dock Road, and under his supervision practically the whole of the East of London was converted from the overhead to the underground system—a system extending from Jubilee Street, Mile End Road, to Forest Gate, Walthamstow and Plaistow. Prior to his leaving the district a scheme had been put before Head Office for cutting

the old Barking Exchange out and erecting a new exchange for East Ham. During the time Mr. Moorhouse was in this district an important centralisation scheme was carried through—namely, the closing of the Albert Docks Exchange and the transfer of a considerable portion of the Stratford subscribers to the new Eastern Exchange, and of the subscribers working on the old Eastern Exchange to the new building in West India Dock Road.

When the London centralisation scheme matured in January, 1905, and the district managerships were abolished, Mr. Moorhouse was appointed Divisional Engineer for the South-East and South-West—an extensive district extending from Molesey on the West to Dartford on the East. Further promotion came in the same year, when he was appointed Contract Manager for London, and during his tenure of that office he put before the late General Manager a scheme for decentralising the Contract

Department—namely, by opening up contract offices in the principal centres of London. At the time the contract work was dealt with from one contract office at London Wall and covered a territory of 640 square miles.

In October, 1906, he was transferred as Contract Manager to the Sussex district, and on the promotion of Mr. F. W. Taylor to Manchester, he was appointed District Manager for the Sussex district under Mr. C. J. Phillips. During the period he has been in Brighton the Company has had a pretty busy time. The underground schemes at Eastbourne and Lewes have been extended and new underground schemes laid



down at Littlehampton and Chichester and the system extended to Selsey.

Mr. Moorhouse is always ready to look at any matter from all sides, and in his work he allows no considerations of personal convenience to interfere with the carrying out of the duty before him. He is resourceful and possessed of considerable tact, and may, in fact, be described as an excellent "all-round man."

Mr. Moorhouse's indoor amusement is music, and he is keen on gardening. He also confesses to a weakness for collecting old china.

He takes a keen interest in all questions which affect the welfare of the staff, both socially and officially. He is president of the Brighton Staff Benevolent Society and also chairman of the Brighton Staff Transfer Association.

THE RECEIVED CURRENT.

Abstracted and translated by G. M. B. SHEPHERD from Papers communicated by M. DEVAUX-CHARBONNEL to International Conference of Telephone Engineers, Paris, 1910.

EXAMINING first the relatively simple case of the propagation of a sinusoidal current along a telephone line: the steady periodic state having been established, the well-known relations for P.D. and current at two points l distance apart are:

$$E_o = A E + B I$$

$$I_o = A I + C E$$

Where E_o, I_o, E, I are the P.D.'s and currents at the points considered.

The constants A, B and C have the values—

$$A = \cosh (a l)$$

$$B = Z \operatorname{sh} (a l)$$

$$C = \frac{1}{Z} \operatorname{sh} (a l)$$

a and Z are characteristic constants of the line, viz., the attenuation and the line impedance.*

For practical conditions we must regard the case of a line terminated by apparatus, and to generalise, the two terminations may be considered different, one of impedance Z_1 and the other Z_2 . The sending instrument has an E.M.F. V_o . Calling U_o the impedance at the sending end, then the P.D. E_o will have the value—

$$E_o = \frac{V_o U_o}{Z_1 + U_o}$$

$$U_o = \frac{E_o}{I_o}$$

also $E = Z_2 \times I$ at the receiving end.

$$\text{Finally } I = \frac{V_o}{A (Z_1 + Z_2) + B + C Z_1 Z_2}$$

or bringing in the line constants—

$$I = \frac{V_o Z}{\frac{1}{2} e^{a l} (Z + Z_1) (Z + Z_2) - \frac{1}{2} e^{-a l} (Z - Z_1) (Z - Z_2)}$$

In this formula the line constants a and Z , also Z_1 and Z_2 , vary with frequency. It is therefore necessary to study the telephonic frequency question.

Daily experience shows that the telephone reproduces very exactly human speech, for the peculiarities of speakers' voices can be recognised. The complete analysis of the telephone current has not yet been accomplished; however, its study is possible. We have shown that oscillograph records corresponding to syllables

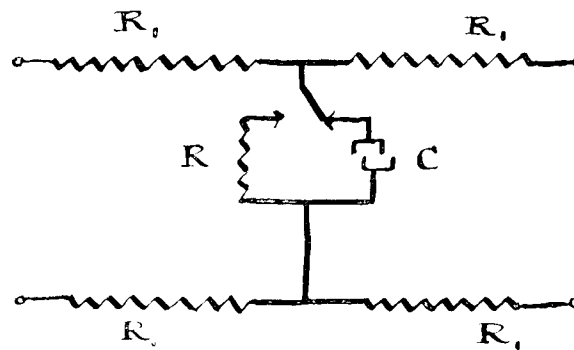
can be obtained. In a syllable the most important effect is produced by the vowel which gives rise to a sensibly regular periodic vibration. Consonants modify at the beginning and end of the syllable the wave form peculiar to the vowel.

If we content ourselves with studying vowel records the problem is comparatively simple, and the conclusions are these. Different vowels give rise to regular vibrations, distinguished by a fundamental corresponding to the tone in which one speaks and to the harmonics of this fundamental tone. Moreover, these harmonics are of greater amplitude than the fundamental, as shown by the following table:—

Vowel.	Harmonic.	Amplitude.
A	1	1.0
	2	1.7
	4	3.0
	6	4.8
O	1	1.0
	3	2.4
	5	4.2
U	1	1.0
	2	2.0
I	1	1.0
	2	4.2
	13	2.8

From these results it is natural enough to think that the most important frequency is not that corresponding to the fundamental tones of the voice, say, 150 to 250 ~, but to a much higher frequency. The determination of this frequency has been the subject of a number of investigations. We shall quote particularly those of Messrs. Cohen and Shepherd, and of M. Haupt.

The first named used an artificial line loaded with inductance coils, whose spacing could be altered so as to cut out certain known frequencies. They found that speech was only intelligible when frequencies between 800 ~ and 1,600 ~ were included. M. Haupt used a line composed of equal resistances connected at their centre by a shunt which could be made at will either a simple resistance R or a condenser C (see figure below).



Keeping a fixed value for C , R is varied till one gets the same intensity of sound by either arrangement. It was thus found that the frequency ought to be about 700 ~ for a man's voice and about 900 ~ for a woman's.

Lastly we have sought ourselves to render speech unintelligible by placing on a line either a great inductance to suppress higher harmonics or a condenser to eliminate the lower ones. We have thus found that the indispensable frequencies lie between 800 and 1,200 ~.

From these diverse experiments it follows that the most important frequencies amongst the unlimited number constituting the human voice, are included between 700 and 1,200 ~. Accepting a mean figure of 950 ~, we shall adopt for the ω , that enters into all formulæ, the value 6,000, which is a convenient number for calculations.

COMPLEX LINES.

The author investigates mathematically the case of a line composed of two or more different constructions, and presents some very complicated formulæ. The conclusions are that in most practical cases the sum of the attenuation lengths of the different

* Sometimes termed propagation constant and surge impedance.

sections of a circuit is sufficiently close to the true total value. In the extreme case of a very heavy aerial line connected to a 20-k.m. section of 2½-m.m. cable, a loss equal to about 2½ miles of 20-lb. standard cable for a single frequency is estimated. Short pieces of cable do not bring in appreciable reflection losses, neither do different gauges of aerial line. The result is the same no matter which way propagation is taking place. This last and other conclusions in regard to complex lines are arrived at by Kennelly.*

Suitability of Apparatus to the Lines.—Taking the case of a transformer used to connect a circuit to a subscriber's line, e.g., a C.B. repeater, M. Breisig concludes that the ratio of transformation should be equal to the sq. root of the ratio of impedance of the circuits connected or

$$n = \sqrt{\frac{Z_1}{Z_2}}$$

This result is reached by comparing the transformer to a section of line, and seeking for the condition that the impedance of each winding may be the same as that of the respective circuits joined to it. Turning to receivers, M. Breisig thinks that the impedance of the types commonly used is too large. M. Bela Gati also considers that the resistance of receivers should be as low as possible. The induction coil should similarly be low and the step-up ratio high. Transmitters should have a high resistance. The natural period of vibration of microphones is best at 800 ~, which should be an appropriate one, since 800 is of such importance in telephony.

The question of the suitability of terminal apparatus has been little studied, and the following considerations may perhaps show the sort of difficulties encountered. Consider a uniform long line. The arrival current is given by

$$I = \frac{V Z}{\frac{1}{2} e^{\beta l} (Z + Z_r)^2}$$

where β is the real attenuation constant,

Z = line impedance,

Z_r = apparatus impedance,

Calling n the ratio of transformation of induction coil, and E the primary e.m.f.

$$V = n E$$

$$Z_r = R + i \omega L = R_2 + n^2 R_1 + R_3 + i \omega (L_3 + L_2)$$

R_2 and L_2 are the resistance and inductance of the secondary; R_3 and L_3 the same for the receiver in series with it. In deducing βl without considering the instruments it is easily seen that if Z is almost a pure ohmic resistance, as in the case of aerial lines or Pupin lines, maximum I is reached when the ratio n satisfies the relation

$$n^2 = \frac{-(Z + R_2 + R_3) + \sqrt{4(Z + R_2 + R_3)^2 + 3\omega^2(L_2 + L_3)^2}}{3 R_1}$$

which shows that for a given line and instruments the ratio n should be inversely as the microphone resistance.

Thus $Z = 600$

$R_2 = 160$

$R_3 = 440$

1200

$\omega L_2 = 160$

$\omega L_3 = 240$

400

This data applies to apparatus of the French administration. We have

$$n = \sqrt{\frac{1300}{3 R_1}}$$

For $R_1 = 5$ ohms

$R_1 = 50$,,

$n = 9.2$

$n = 2.9$

The figure $n = 9.2$ is not far from that found in a number of induction coils, which is not surprising, since they have been

* It is extremely doubtful whether any transition losses of the magnitude stated above actually take place in practice. They have anyway not been found. Reflection effects may be either + or -, and are greatly dependent on the frequency. On the average it is probable that the said effects are negligible.—(Translator of the Article.)

designed empirically. The Pasquet microphone has a resistance of 5 to 6 ohms. If C.B. transmitters are in question the ratio n ought to be reduced. The theory that microphone resistance R_1 should be small does not always conform with practical results. Thus the solid back has a higher resistance than the Pasquet, and is equally good. Another factor comes into the question—viz., the e.m.f., which depends on the nature of the microphone. One sees, however, that it is advantageous to reduce the impedance of apparatus as much as possible, which is in accordance with results obtained by Breisig and Bela Gati. Summarising—the minimum of the expression

$$\frac{Z}{(Z + Z_r)^2}$$

being reached for $Z = Z_r$, it is best to use apparatus of high impedance on a high impedance line, and *vice versa*. Yet it may be added that efforts to produce an induction coil in accordance with theory have not led to any great improvement in audition. It seems that the variations in the constants are so large that the formulæ established up to the present do not enable apparatus to be designed which is better than that designed experimentally.

ON THE LIFE OF WOODEN TELEGRAPH POLES.

GEHEIMER OBER-POSTRAT CHRISTIANI, of Berlin, gives in *Archiv für Post und Telegraphie* a continuation of his statistical article which appeared in that journal in 1905. He says:

Six years are a short period for experimenting on the life of telegraph poles, especially when in that period important alterations have taken place in methods of preparation. Before the success of a new method of impregnation can be reliably judged the poles erected must have a whole life behind them, which means the passing of some decades. Until then close observations must be made. Since 1904 the erections and renewals have been continuously observed, both for every method of preparation and for every year, by the Imperial Post and Telegraphs Administration, and differentiated accordingly as they were renewed on account of decay or other causes. Where earlier information was deficient it has been completed as far as possible. Unfortunately, the records of annual replacements due to other causes than decay are wanting for the period from 1884 to 1903. We can therefore only estimate the life by the discontinuance of renewals. . . . In these circumstances the different methods of impregnation (even when approximately equal in value) show significant variations in their line of life. Each has its characteristics depending on the peculiarities of the process, and only upset by more or less external and local circumstances in the positions of the poles in the route.

I refrain from the publication of detailed information on this subject; for the present I consider it only necessary to supplement my statistics of 1905.

ALTERATIONS IN THE CONDITION OF TELEGRAPH POLES FROM 1904 TO 1909.

At the end of the financial year.	No. of poles in route. Treated with					Poles in line unprepared.
	Copper sulphate.	Zinc chloride.	Creosote.	Mercury sulphate.	Other processes	
1904	2,699,400	10,373	90,170	189,262	1,890	25,015
1905	2,846,314	9,316	89,610	224,855	1,839	20,871
1906	3,016,203	8,090	94,938	276,175	1,917	19,734
1907	3,167,776	8,370	99,075	336,712	1,788	17,810
1908	3,254,240	7,186	126,575	412,033	1,931	16,119
1909	3,305,802	7,286	177,483	474,399	2,462	14,892

At the end of 1909 per 100 poles—

83	were prepared with	copper sulphate,
0·2	"	" zinc chloride,
4·4	"	" creosote,
11·9	"	" merc. sulph.,
0·1	"	" other processes,
0·4	"	unprepared.

100·0

TOTAL OF OBSERVED POLES.

Process.	Poles at end of 1909 in the routes.	Poles changed 1904-1909.			Total of observed poles.
		Decay.	Other causes.	Total.	
Copper sulph.	3,305,802	315,168	339,788	654,956	3,960,758
Zinc chlor. ...	7,286	4,846	2,890	7,736	15,022
Creosote ...	177,483	13,313	17,049	30,362	207,845
Merc. sulph ...	474,399	14,512	29,921	44,433	518,832
Other processes ...	2,462	496	255	751	3,213
Unprepared ...	14,892	24,657	3,367	28,024	42,916
Total ...	3,982,324	372,992	393,270	766,262	4,748,586
From 1852 to 1903 were changed ...	...	1,109,911	701,165	1,811,076	1,811,076
Number of observed poles of different kinds ...	1,432,903	1,094,435	2,577,338	6,559,662	

A statement is given on p. 48 of poles changed from 1904 to 1909 on account of decay, together with their life; also the average duration of use of all poles removed on account of decay from 1852 to 1909. In order to show the economic significance of the calculated averages it is necessary to set against them the average cost of treatment, which, again, I only give for the latter years and for the processes now in use. The treated poles cost per cub. metre—

Year.	For impregnation with		
	Copper sulphate.	Mercury sulphate.	Creosote.
	Marks.	Marks.	Marks.
1907 ...	33·68	34·46	40·82
1908 ...	31·49	34·77	40·23
1909 ...	30·45	35·25	38·92
Average ...	31·87	34·83	39·99

If the costs of freight, erection, etc., are added thereto—a round figure of 20 Marks for copper sulphate and mercury sulphate and of 25 Marks for creosoted poles—and the sum is divided over the average value of the period of use, the following approximate figures are obtained for the yearly cost:—

For impregnation with copper sulphate	3·87	Marks.
" " " mercury "	3·85	"
" " " creosote "	2·91	"

The superiority of the creosote method is again significantly brought out, whilst as regards other methods of preparation the

position of copper sulphate impregnation has been altered so that the Kyanizing (mercury sulphate) process is now of almost equal value. It must, however, be remembered that the comparative figures obtained are based chiefly on the statistical results of the last century, and must not be taken as they stand as the final result of the newer methods of impregnation, and further that the method of their calculation does not take sufficient count of the age-ratio of the different conditions of the poles, and that therefore the varying dates of erections yield varying results.

Whoever continues the calculations on a like basis in some years' time will, without doubt, obtain other values. This is confirmed by the following statement:—

Statement of

- (a) Poles placed in the routes since 1904;
- (b) Poles again changed on account of rottenness up to the end of 1909.

Year.	Copper sulphate.		Mercury sulphate.		Creosote.	
	a.	b.	a.	b.	a.	b.
1904	234,004	3,646	37,650	165	7,103	11
1905	247,834	1,624	41,485	72	4,438	2
1906	281,097	586	56,782	31	9,730	—
1907	268,023	184	67,962	22	9,806	—
1908	205,407	39	84,521	20	33,305	—
1909	164,701	6	70,174	—	55,080	—
Total	1,401,066	6,085	358,574	310	119,462	13
		or 0·43%		or 0·09%		or 0·01%

From this statement it is observed that the Imperial Post and Telegraphs Administration more and more supplies its requirements with creosoted and Kyanized wood, which the small replacements of poles treated by these methods fully justify. Notably poles impregnated with creosote on the Rüping principle have, up to now, shown no sign of decay.—W. H. G.

THE NEED OF ENGLISH.*

By FRANK PEET, Nottingham Factory.

It is now generally recognised that one's education is not finished when one leaves school, and proved, I think, by the success of training colleges, evening continuation schools, correspondence classes and the like.

Owing to these various admirable institutions a boy or girl on leaving school to enter business can take up any branch of study he or she pleases. Usually students take up subjects which they think will be of best use to them in their particular work. This, of course, is to be encouraged, but I think that it is to be greatly deplored that so few recognise the great advantage to be derived from a study of English.

The different educational establishments that I have mentioned make fair provision for the subject, but the classes are not at present very well supported, so that I think the best thing to do would be to make English a compulsory subject in both the industrial courses and the various alternative commercial courses which are set out in the prospectuses.

And yet in face of all this apparent indifference towards the subject, which, in my opinion, should be one of his strongest points, notice how sensitive the average man is to defects pointed out in his English. He will admit his ignorance of the capital of Peru, the husband of Queen Anne, or even the rule of three without turning a hair; but if you wish to annoy him, and in many cases gain his hearty ill-will, just remind him that a certain word, as he pronounces it, is not to be found in the dictionary, or that he said "was" when he should have said "were."

* Paper read before Nottingham Factory Telephone Society.

Now these errors, which perhaps at first sight appear quite insignificant, sometimes count against a man to such an extent that, could he only realise it, he would do his utmost to remedy the evil. The immortal Shakespeare says: "There is a tide in the affairs of men, which, taken at the flood, leads on to fortune." Now, I suppose everyone has hopes of rising at some time to a higher position than he holds at present, and one cannot be too well equipped for the time when that "tide" comes one's way, and I maintain that a sound knowledge of English gives inestimable help to a man in his struggle for promotion. I do not mean, of course, that everyone is to make a study of the classics, but I think it will be agreed, if a little thought is given to the matter, that a good command of one's own language will help one considerably.

For instance, you can quite see that an employer, having before him two applicants for a responsible post that he has vacant, and allowing that these two men are equal in the technical knowledge required for the birth, will naturally appoint the one who can most clearly state his opinions, and it is this study of English that I am advocating that *enables* a man to state his opinions clearly.

It is of no earthly use putting a man in a position of authority if he cannot give his orders definitely and without waste of time. Instructions given, as they often are given, with endless and unnecessary details, leave the one receiving the instructions pretty well bewildered, as in trying to remember the rigmarole of details he probably fails to grasp thoroughly the main points of the orders.

Many blunders are caused in this way, and I expect you all know of cases when, on a man's being brought to book for an error committed, he will state that "so and so" told him to do the job that way and "so and so," on being questioned, will say that he told the man to do it the other way. But no matter who is really to blame in the matter, time is lost over explanations.

Time lost is money lost, and, naturally, employers do not like losing money.

While on this particular point I believe the fact is often overlooked that in working for his employer a man is working no less for himself, and that one cannot rightly work for one's self without considering one's employer.

But apart from this question of the advantage to masters, the difference that a friendship with his mother tongue makes to a man himself is simply marvellous. I say friendship advisedly, because a man gets to dwell with pleasure on the time when he seriously began to take up this study. Look how pleasant it is to be able to join in an argument about a subject that one is interested in, instead of being afraid to speak a word for fear of saying wrongly what one wishes to say; and besides being pleasant, how often it is beneficial to be capable of taking part in a discussion, especially if that discussion concerns one's own work.

It is only a short time ago that, when a controversy in a certain trade was being carried on in the daily papers, a man in the same trade remarked to me how anxious he was to have *his* say in the matter through the same medium, but that he simply could *not* put his ideas together well enough to send to the paper. This is not an isolated case, I am sure, and it is at these times that we hear the plaintive cry, "Oh! I wish I had paid more attention to my English." But then, perhaps, the most important point overlooked is that it is never too late to pay attention to it.

Now, to come nearer home, do you not think that this telephone society of ours, successful as it is, would be more so if more members and—at present—non-members, could only put into sound reading matter the knowledge they have of the various branches of our work? And do you not think that the discussions on papers, interesting as they are, would become more so if more members could only state concisely their opinions on these various papers? I am perhaps treading on delicate ground here, but it is my opinion that many of our best men are deterred from writing papers, and from joining in discussions, by being afraid, as I said in my general remarks, of saying wrongly what they wish to say.

This is a great pity, as these meetings can be of still greater help to all of us, so that anything that tends to improve them is to be welcomed. It is to be borne in mind, too, that in helping these meetings to help everybody, one is principally helping one's self. Before I finish I would like to explain that I am *not* putting this paper before you as a model of paper-writing, but just to try to

make felt, as far as lies in my power in the short time available, the need of a stricter application to the study of English. As another illustration of this need, I might mention that I have lately started a collection of peculiar sayings and mis-spellings, which same collection, if treated by some able pen, would make an interesting and most humorous paper.

So now who will volunteer a paper on "English as she is spoken and written."

DEPARTMENTAL CO-OPERATION (AND THE LACK OF IT).

By G. R. SCOTT.

THE old, old saying that unity is strength—undoubtedly true, wherever applied—is perhaps better exemplified in modern business than any other where. Only by the loyal and hearty co-operation of all concerned in the conduct of any commercial enterprise can the greatest degree of prosperity be attained. In many concerns one or more heads of departments may develop a tendency to obstruct progress. These obstructionists are so formidable a skid upon the wheel that every effort should be made by employers to see such a condition is continuously discouraged. Moreover, the actual obstructionist himself would indignantly resent a suggestion that he was doing anything but his level best to further his employer's interest. Under the stress and strain of modern conditions, where every minute lost or gained may mean failure or success, both employers and employees must work hand in hand. Other things being equal, it is the firm in which is most co-operation between individual members and departments that succeed best.

The method of obtaining this co-operation is one of the problems which has to be faced by business men of the present day. It is very unfortunate that the irresistible tendency of our age which draws manufacturing into immense establishments, requiring the work of thousands, renders it impossible for employers to obtain that intimate acquaintance with employees, which under the old system of manufacturing in very small establishments made the relation of master and man more intimate. When articles were manufactured in small shops by employers who required only the assistance of a few, the employer had opportunities to know every one, to become acquainted with each and to know his merits. It being nowadays impossible for employer and employees to come into intimate contact in the ordinary course of business, acquaintances must be sought through other forms, if all feeling of mutuality are not to be lost, and let it be noted that once this feeling of mutuality is lost all co-operation is at an end. The best that can be done seems to be to organise clubs, social evenings, whist parties and so forth amongst the employees, in which the heads of departments should take an active interest. By some such means as these we may hope to maintain to some extent the old feeling of kindness, mutual confidence, respect and esteem, which formerly distinguished the relations between master and man. Under the old system each employee felt himself, as it were, a partner in the concern. Now, however, he has come to regard himself almost as a human machine, and his employer has become almost a myth. Just a word about the inside man who fails to realise that the outside man needs his co-operation. If he could only spend three months or so out on the road trying to secure business it would be the best possible education for him, and I am not afraid to say that he would return to his inside post convinced once and for all of the many difficulties besetting those who run the selling end of the business. From that time on he would be a better departmental head, for he would see that out in the world of affairs matters do not always take their regular turn. There is often much straining by the head of a department to maintain his rights and privileges. This is proper enough, provided that the business is in no way hindered, but the first consideration must be the keeping of the ship afloat. If a man will not point out a leak because leaks are not in his department he is surely unworthy to hold an important position. Admittedly a very great deal rests with the head himself. He may have the happy knack of keeping his assistants in good fellowship, or he may think it a great scheme to set one against the other. The decent thing pays best in

the end, and every opportunity should be taken under all ordinary circumstances to promote good feeling between all. An occasional meeting of heads of departments is decidedly beneficial; it is good in many ways, but it must take place in the Company's time. If any departmental head is prevented from attending by reason of his work, one knows what to expect if ever he falls ill. If he cannot leave his department for an hour or two now it will be a sorry case one of these days, and it is best to begin at once to train a good assistant who can take his place at any time. In a well organised department, the head should be able to absent himself at an ordinary time without the work suffering. In such meetings a member with obstructionist tendencies is promptly outvoted, and it is quickly seen whether his obstruction is not largely prompted by laziness, or, to use a more polite expression, by inertia. Within certain limits it is prudent to avoid haste that will result in loss, but there must always be the willingness to spring to attention and get quick action when the occasion demands it; not merely that, but to do it with a good spirit, so that others may be energised by their example to put forth extra effort to cope with the urgent need. All holding responsible positions in any concern should be brought to see the common sense of such a proposition.

A valuable form of co-operation, not strictly departmental, but which goes a long way, is the loyalty of a first assistant to his chief. It is so cheap and easy to envy one's chief his position and to become spiteful about it. In any case we cannot all have the same good fortune. So putting ability on one side entirely, it is unsportsmanlike to grudge the head the position he holds. Many a first assistant would do better work than his chief, but he must bide his time. Promotion comes to those in time who, after associating themselves with the right kind of business, know how to wait as well as work.

We know that a continued state of armed neutrality goes on unsuspected in many quarters. It should be diligently sought for and steps taken to counteract it, as in large companies where so many departments depend on each other for information I think it is the head's position to root out such an evil, and I have no doubt success would be gained by such an action. The chief would indeed be happy who would gain so much respect, something akin to affection, from his staff that personal differences were nipped in the bud, while the desire to do one's best was always blossoming into good work to the mutual advantage of everyone.

Enough to fill a book could be written of petty jealousies between departments, but I think it best to "leave well alone."

The advantages of this co-operation to both employer and employee must be obvious to all. The employee works for a personal friend not for one known solely by name, and hence he comes to put his very best into the work and does not need that constant "spurring on" which in too many cases is necessary at the present time. The employee has not only the satisfaction arising from this added interest in his work, but feels that his chief is a friend to whom he can look for assistance in any difficulty which may arise in the course of his work, and is not an ogre, a visit to whose den means death, or at the very least a refined species of torture.

Without co-operation no concern can be sound, as has been remarked by the prince of business men, Andrew Carnegie. There is a partnership of three in the industrial world when an enterprise is planned. The first of these, not in importance but in time, is capital. Without it nothing costly can be built. From it comes the first breath of life into matter previously inert. The structure reared, equipped and ready to begin in any time of industrial activity, the second partner comes into operation. That is business ability. Capital has done its part. It has provided all the instrumentalities of production, but unless it can command the services of able men to manage the business, all that capital has done crumbles into ruin.

Then comes the third partner, last in order of time but not least, labour. If it fails to accomplish its part, nothing can be accomplished. Capital and business ability without its being brought into play are dead. The wheels cannot revolve unless the hand of labour starts them.

Everyone of these three are equally essential to the other two. There is no precedence. They are equal members of that great triple alliance which moves the industrial world.

Capital, business ability and manual labour are the legs of a three-legged stool. While the three legs stand sound and firm the stool stands, but let any of these three weaken and break, let it be pulled out, down goes the stool to the ground, and is of no use until the third leg is repaired. This, then, is the importance of employees—unless they stand firm and united the whole industrial fabric sinks in ruin.

THE TELEPHONE EXCHANGES OF LONDON.*

By G. H. BRYANT.

As the scope of this paper is not defined by its title, being at a loss for a better, I will commence by briefly stating the intent and design.

My aim is to survey and outline the progress of the latter day switchboard equipments as used in London, and also to peer ahead.

Now as the growth of switchboard equipments is necessarily dependent on the growth of the lines which are accommodated by those equipments, I shall, firstly, deal with the growth of direct exchange lines and show the strides that have been and are likely to be made. We will, then, consider the advent of the central battery system in London and how it has advanced, until at the present time only 23.5 per cent. of the Company's direct exchange lines in the Metropolitan area are working on magneto exchanges. Some features of the Company's C.B. exchanges will then be dealt with;

GROWTH OF DIRECT EXCHANGE LINES
IN THE
MET AREA

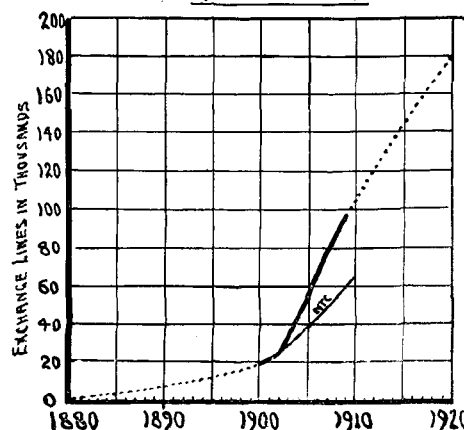


FIG. 1.

and the various improvements that have been effected to the switchboard equipment since the first C.B. exchange was opened in London will be touched upon. Also the tendency of faults, as shown by the last four years' working, will be considered. And lastly, I shall propound some improvements that will possibly be made to manual switchboards before automatic equipments come into their own.

The Growth of Direct Exchange Lines.—Some 30 years ago telephone exchanges were inaugurated in London, and after twenty years' progress the number of direct exchange lines in the Metropolitan area amounted, in round numbers, to 20,000. During the ensuing ten years, which brings us to the present day, the Company have more than trebled the 20,000, while the Post Office, who have been operating for eight years, are, up to date, working approximately 40,000 direct exchange lines at their Metropolitan exchanges. The sum total at the present day for the Metropolitan

* Prize paper read before the London Telephone Society in the session 1909 10.

area, National and Post Office, amounts to approximately 105,000.*

As a recitation of cold figures does not convey their import and enable their trend to be fully appreciated, I am making free use of curves throughout this paper, by which agency the trend and import of the various considerations can be readily seen.

Fig. No. 1 shows a growth curve for the total direct exchange lines in the Metropolitan area, and graphically represents what I

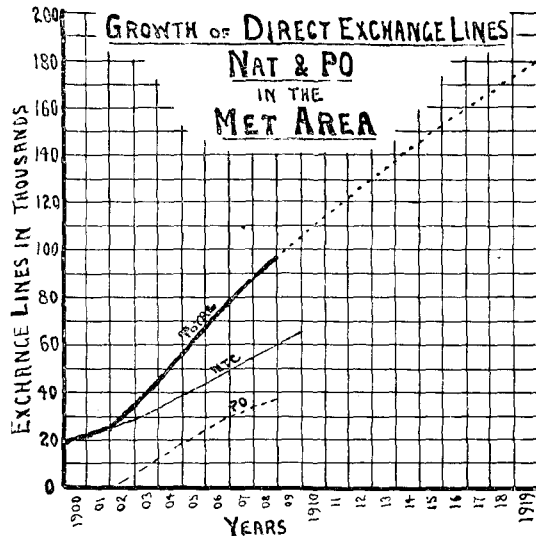


FIG. 2.

have been stating as to the past 30 years' growth. Plotted horizontally we have the years 1880 to 1920, and vertically the number of direct exchange lines from 0 to 200,000. I have not been able to obtain figures for the years prior to 1900, but as the growth during that period was from zero to 20,000 it can be represented by the dotted line. It should be remembered that the telephone was invented in the year 1876 and introduced commercially in 1878. It will be noticed that the curve starts at 1880, that is, four years after the invention.

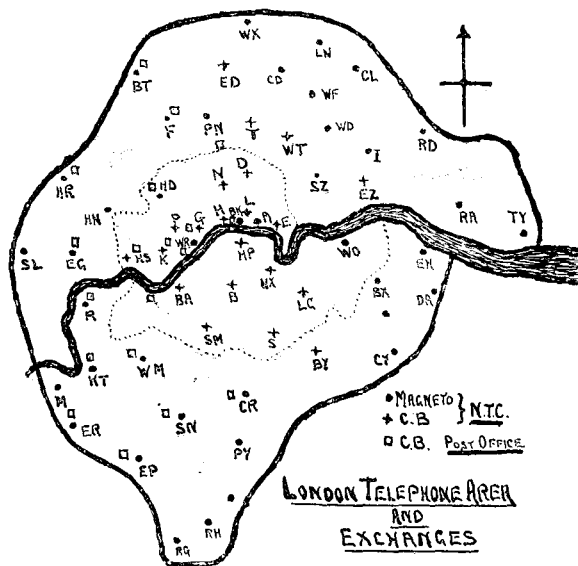


FIG. 3.

After the year 1902 it will be observed that there are two curves. The lower relates to the Company alone, and the upper to the Company and the Post Office, who opened their first Metropolitan exchange (excepting the London trunk exchange) in 1902.

* This and other figures in the paper refer to the position in 1909. The number of the Company's exchange lines in London at the beginning of 1911 was 75,937, and of the Post Office 48,014; exchange stations, N. T. Co., 122,680, P. O., 69,035. The present totals therefore are—lines 123,951, stations 191,715.

By projecting the curve we can obtain an idea as to the number of direct exchange lines that will be working, say, ten years hence. As shown by the dotted projection the number will approximate 180,000. It will be noticed that the upper curve has a drooping tendency, that is, its rate of increase is declining, while the lower curve has its direction sustained. This can be more clearly seen from Fig. 2, which omits the years 1880 to 1900, and the curves are plotted on a larger scale. Here you see the sustained growth of the Company's lines, the declining tendency of the Post Office lines, and when the curves are summated, the noticeable droop.

Ten years ago the Company were operating 47 public exchanges in the Metropolitan area and the Post Office nil. To-day the Company have 60 exchanges, comprising 21 central battery and 39 magneto, while the Post Office are working 25 central battery and 39 magneto exchanges. Therefore, the present-day situation is 46 central battery and 39 magneto exchanges, making a total of 85 public exchanges in the Metropolitan area.

The next figure, No. 3, depicts roughly the location of the present-day exchanges in the Metropolitan area. Crosses signify the Company's central battery exchanges, dots the Company's magneto exchanges, and squares the Post Office exchanges, which are all central battery. Although the magnetos are fairly numerous they are mostly minor exchanges, and account for only 12.7 per cent. of the whole Metropolitan area's direct exchange lines,

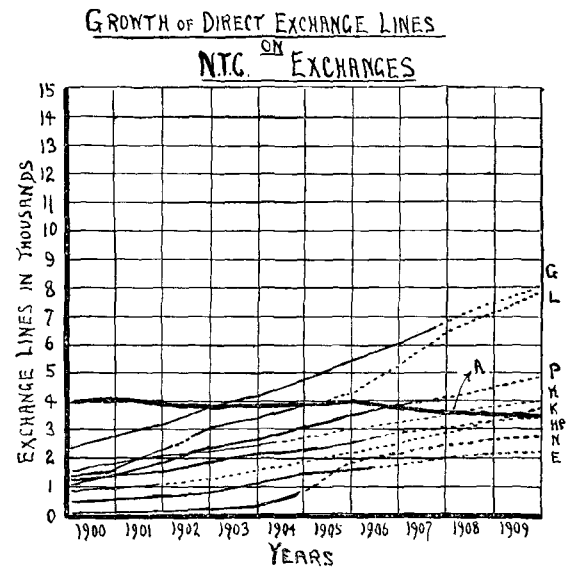


FIG. 4.

including Post Office. When Avenue, Bank and Westminster Exchanges commence their central battery careers, individually or otherwise, only approximately 6 per cent. of the direct exchange lines will remain on magneto exchanges, and that type of switchboard equipment, except for small exchanges, will have had its day so far as London is concerned. It should be remembered, however, that the magneto exchanges and the subscribers' instruments connected thereto are modified for working in conjunction with C.B. exchanges, and, with the exception of Bank, accord a double lamp clear to calls originating at central battery exchanges; that is, a subscriber on a magneto exchange when called by a C.B. exchange gives a clearing signal through to the distant C.B. exchange by replacing his receiver on the switch-hook.

We will now consider briefly the growth of direct exchange lines on individual exchanges. I have prepared growth curves for some of the Company's Metropolitan exchanges relative to the last ten years, and for some of the Post Office exchanges since they were opened. The data for the latter were obtained from the *Post Office Electrical Engineers' Journal*. The dotted curves indicate the Company's C.B. exchanges, the black curves magneto exchanges.

Fig. No. 4 shows curves for the Company's larger exchanges, and it will be noticed that "Gerrard" holds the premier position and has multiplied three to four times in the ten years. "London

Wall" is overhauling "Gerrard," and by the slope of its curve will soon take first place, so far as the number of direct exchange lines is concerned, providing the switchboard equipment can accommodate the additional lines.

The sudden variations in the curves can be accounted for in most cases by changes made in the exchange areas, such as the closing of an exchange, the opening of a new exchange, or the diversion of the growth of an exchange. Thus the jerky growth of

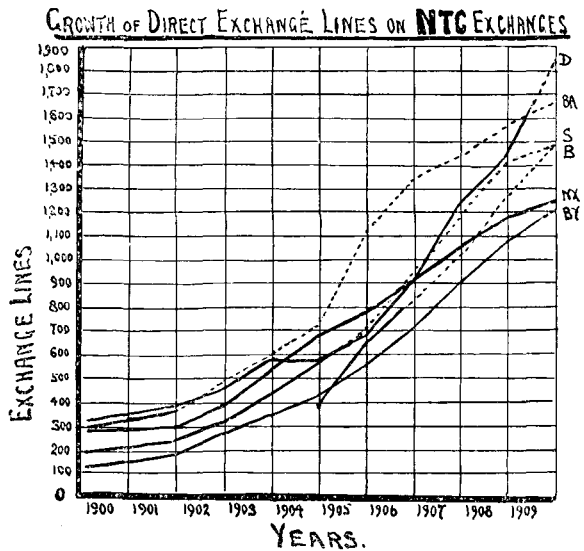


FIG. 4a.

London Wall (L) can be connected with Avenue (A), whose curve you notice is declining, the growth being absorbed by London Wall; also, the rapid rise of North (N) during 1904 and 1905 is accounted for by the absorption of King's Cross and a portion of Dalston (D). Fig. 5 is plotted to the same scale and relates to the larger Post Office exchanges. The extraordinary growth of Central (C) can be followed—from nil to nearing 15,000 lines in less

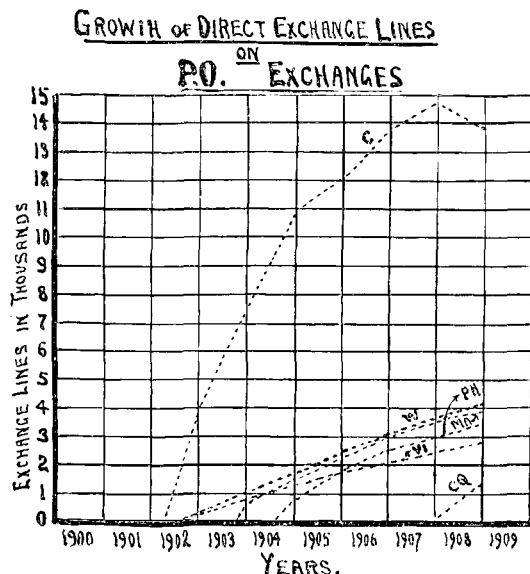


FIG. 5.

than six years, after which the City Exchange (CQ) was opened—see bottom curve.

In Figs. 4a and 5a growth curves are set out for some of the smaller exchanges.

The Advent and Progress of the Central Battery System.—The next figure, No. 6, shows concisely the headway made by the central battery system in London since its innovation nine years ago and also how the magneto system has fared.

From the "central battery" curve which relates to the Company's exchanges it will be seen that a start was made at the end of 1901, that three years afterwards the decline of magneto commenced, and that during 1907 magneto and C.B. changed places, and how at the end of 1909 the lines on the Company's C.B. exchanges were more than double those on the Company's magneto exchanges. The thick line curve is a summation of the central battery and magneto curves.

The dotted curve relates to the Post Office, and it will be observed that it commences a few months after the central battery. It is interesting to notice from the slope of the C.B. curve how the change-over of the Company's exchanges to that system has accelerated and how the Post Office have been overtaken and passed.

The short line in 1902 indicates the brief life of the first London Wall C.B. exchange.

The Company's first Metropolitan C.B. exchange was Kensington (K), opened in December, 1901; then followed Battersea (BA) in January, 1902; the first London Wall (L) in March, 1902, and so on until at the end of 1909 there were nineteen, and at the present day 21 C.B. exchanges in the Metropolitan area so far as

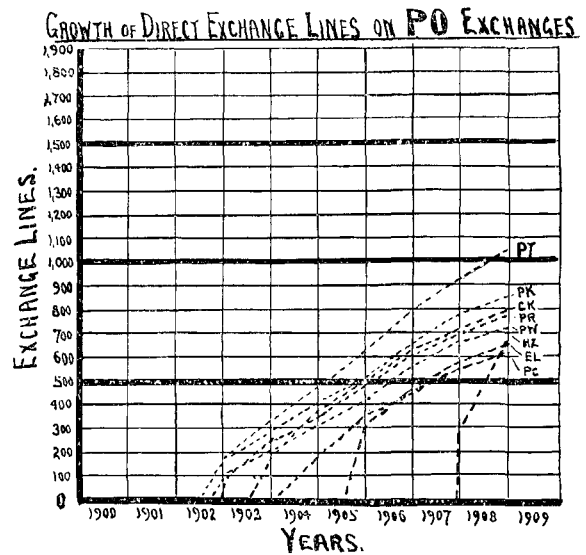


FIG. 5a.

the Company is concerned. The switchboard equipments at these exchanges, with one exception, namely, Battersea, appertain to the Western Electric Company's patents, and do not differ radically. The later exchange equipments are but a refinement of the earlier, for the basis of the design has not been altered.

Comparing an early with a recently fitted board the noticeable differences are: In front, the inclined, as against the level key shelf; the improved method of marking the local and outgoing junction jacks, rectangular engraved tablets instead of circular paper discs; improved outgoing order wire buttons with removeable designation tablets; concentric operators' instrument plugs; and coloured connecting cords.

At the back the most noticeable difference is the institution of the roller shutter in place of the cumbersome panels, and a feature of the interior, as a precaution against fire, is the division of the board into three sections by two fire-resisting screens, one, the subscriber's multiple shelf, made of iron and extending the width of the board, the other consisting of removeable uralite panels fitted below the outgoing multiple and calling lamps and jacks. Also nine foot cords are fitted, double pulley weights accommodating the cord. Then in place of a cable troughing there are two iron racks. The jack fasteners are completely controlled from the back of the board; when a jack is removed the stile strip is not disturbed. The soldering tabs are of the U type, which means that both ends of the tabs are at the back and are therefore more accessible than

in the earlier boards. The operator's instrument, circuit induction, coil condensers, etc., were mounted at the bottom, and in some cases at the top of the boards; after graduating through a con-

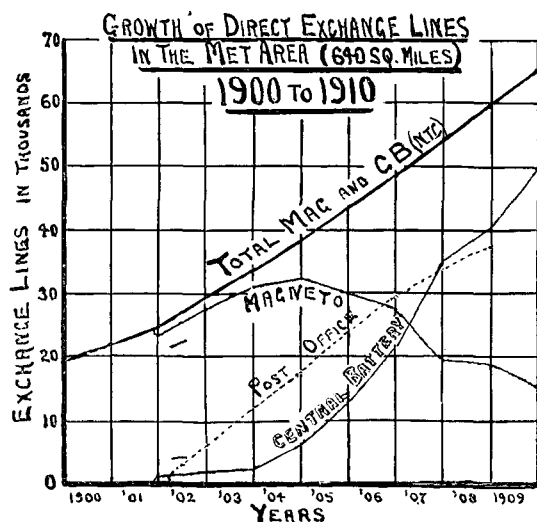


FIG. 6.

taining box located above the supervisory relays and resistance spools, they are now mounted on a plate fitted in a similar position and take up but little room.

(To be continued.)

SUCCESS.

By A. K. MURRAY, *Contract Manager, Hull.*

(Concluded from page 33.)

(B) "CO-OPERATION."

The subject of co-operation is one which affects every member of the Company's staff. It is essential to success.

The meaning of the word in the standard dictionary is "joint labour for the purpose of attaining the same end," and surely this describes us.

As the hub of the wheel is the resting point of the spokes, so are the shareholders of our Company the foundation of the staff.

The shareholders provide the capital with which to conduct the business, and we (the spokes) must allow no carelessness anywhere, else disjointed work is the ultimate result, and profits go down. This must be remedied, and we cannot complain if the people who provide the funds, take stringent measures in order to bring matters right.

It should always be borne in mind that we are working for people who have invested their money in telephone service, and in strengthening their faith in it, we, a reliable staff, are expected to work in unity to further a common end, viz., that of earning for the shareholders, money in dividends and of giving the staff employment. The directors who represent the shareholders appoint officials well primed in managing affairs generally, and in turn, the officials engage men capable of ensuring success. The staff is responsible for the carrying out of all instructions laid down, and when all is running sweetly we have good organisation.

We should never forget in all our dealings one with the other that the primary object is to sell telephone service to the public.

The payment is what we live by. Again, we should not forget that the business has to be conducted to advantage by us, for we (not the shareholders) are responsible for the money, or its value, which we handle.

By co-operating and forming telephone societies we spread knowledge—those who are members get the benefit.

Each department furnishes something towards our education, and that is what we want, viz., co-operation.

All members should endeavour to get their fellow-workers to join telephone societies, so that they may get the benefit and also give the benefit of experiences, for the members of these societies are expected to, and, as a rule, do express their opinions. We may be missing interesting matter through the absence of fellow-workers.

Good-natured criticism furnishes and burnishes, although we should remember that nothing is to be gained by disputes or heated arguments.

The idea is that each branch of the Company's staff should dovetail one with the other to the advantage of all, for when this state of affairs is reached we get the full value of true co-operation.

Before we attain such perfection, however, we must be imbued with the spirit of co-operation. Cultivate broadmindedness—bear with one another and do not jump to conclusions too rapidly, and so make the ascent easy.

In districts and centres where members of different departments do not or will not work together in harmony, there is and always will be trouble.

Reform is necessary in such cases either in an amicable or forced fashion, but preferably the former method. If, however, it is necessary to resort to the latter course, then it is imperative to take stringent measures to ensure a permanent cure, for the men who will not work hand in glove with one another will create strife, and the infection will spread.

Differences will arise with mathematical regularity and hurt the general conduct of the establishment, bringing the results of work, which should be 100 per cent., down to zero.

No matter how good a man may be, he must recognise that co-operation is necessary and will be insisted on if success is to be the outcome of work.

The lesson I am endeavouring to convey is to the effect that we must meet our fellow-workers half-way, and some more than half-way.

It is most objectionable when friction arises between chiefs of departments, not only in one way but in many, for it usually does not end with the chiefs. You will find, as a rule, that the assistants follow the example, for we are prone to follow the lead, especially if it is a wrong one, human nature, curiously enough, always finding that easiest.

At this stage, ladies and gentlemen, I ask you not to flout or treat with indifference the value of this subject, for co-operation is worth the study, if success is to crown efforts; and to those who recognise this, I say prosecute it against odds and make it transparent to all fellow-workers.

The art of success may be acquired by economy and co-operation.

Success in the sense of getting money only will not bring happiness, if we have no idealism in us. We must work in unison and make things pleasant as we go along, for:

"This world is all a stage,
And from a tender age
We each must play a part
Until the last act's o'er."

Unfortunately, some people want to boss the show although they are not entitled to, thereby inducing a rebellious feeling, and when this anxiety permeates a staff or portion of a staff we are going backward instead of forward. Such people require careful handling because they are usually more impetuous than argumentative, and should be influenced rather than admonished. This duty of the chief-in-all should be carried through quietly but nevertheless firmly, the chief remembering all the time that his position is similar to that of father to a large family. His guidance is as necessary to the good conduct of the staff as it is necessary to the good conduct of the business portion, for the one affects the other. Where a man fails in such administration, success will be absent.

I submit these few latter remarks to all who are likely to be appointed to responsible positions for, in mounting the ladder of success, you are always told there is room at the top. With good chiefs at the top, we get judicious administration.

You all know that a ladder will not stand upright of itself. It necessarily requires support. In business circles every firm requires stays and these stays are comprised of the staff.

Heads of departments are usually men who have been tried and shown ability, but we cannot all be chiefs right away. We can, however, be expectant, going through the process of fitting ourselves for chance vacancies, and while on this point I cannot do better than quote what the late F. Marion Crawford said in one of his books:

Almost all men have the qualities which can give moderate success. Very few have those gifts which lead to greatness, and those who have them invariably become great. There is no unrecognised genius; for genius means the production of what is not only beautiful, but enduring, and the works of man are all sooner or later judged by his fellows, and judged fairly.

If you remember, Mr. Wrote, in referring to clever men on the first evening of the society's meeting last session, mentioned that no matter how high up in the dark corner the clever man was hidden, he would ultimately shine.

In speaking to all members of the society, I am not going to select the clever members, but I say generally that *you* may not be a genius, but *you* may have the requisite intelligence to make good use of already existing methods, and mayhap improve them.

Let me emphasise the need of careful jurisdiction and broad-mindedness on the part of those who have the responsibility of decision in promoting the members of their various staffs, and above all to work in co-operation, asking the opinions of others if there is any hesitation on any question arising. Two heads are better than one, and he is a wise man who sinks his so-called dignity by asking his assistants their opinions on difficult matters.

In dealing with this subject, no allowance has been made for the petty jealousies which cannot help but arise through the contrariness of human nature. Many times have I heard veiled, yet spiteful allusions from one member of one department about a member of another, and, although there may be no harm done, still the feeling animates the being.

A feature of co-operative working is the glad feeling which permeates everyone. There enters into the heart of all a conviviality borne of confidence in one's working neighbours and extends itself into social life. Envy should be thrust behind us, all unhealthy feelings banned and dictatorial methods tabooed, because they only bring constraint and contrariety in their train.

The philosophical spirit should be trained, and generosity should prevail. To be morose is utterly wrong, for we were never meant to spend our lives grumbling and picking holes in each other.

It is a fact that some chiefs can conduct and get better work out of their respective staffs than others, but it does not always follow that the other chiefs are in any way incapable. No! No! Some have the gift of tact to a greater degree.

I am sure no words of mine could express this so clearly as does Mr. Hare's essay on "Control," which appeared in the JOURNAL for November and December, 1909. . . . I read his views with great interest and admiration, for they fell so very much into line with my thoughts on this paper of mine, which I was then preparing. He strikes with much ease and force the very points which I find it difficult to express suitably.

In thinking out and writing this paper considerable thought has been given not only to the business in which we are engaged but also to the general well-being of every servant of our Company.

The certainty is that if there are no useless bickerings and friction we shall make better headway in every sense of the word. The work will be executed rapidly, and happiness will be a constant companion; after office hours we will trip home with springy steps, returning to work next morning eager to get ahead with the work in hand. In fact, the ideal co-operative spirit fulfilled, the district would prove a veritable paradise.

Perhaps, if we have a few similes, we will be better able to reckon the value of co-operation, if indeed it can be reckoned.

Take, for instance, the harmony of a choir. How delightful it is to listen to, but if one or two members get out of time or tune the effect is disastrous. No one can dispute the need for perfect unity here.

Or suppose you enter a first-class jewellers' warehouse and request to be shown a first-class watch chain? Examination will show an excellent piece of work, everything beautifully finished, every link A1. This is a first-class chain undoubtedly, but, assume that a flaw be found: Result—the whole value lessens.

In a similar manner each member of our staff should not fall

short in his or her proportionate value, otherwise there is a flaw which does not tend to good working.

To carry the simile into outdoor enjoyment, what better could be mentioned than the co-operation necessary to the success of a football team? Those of you who are familiar with the game know perfectly well that the goalkeeper, backs, half-backs and forwards all have their allotted parts to play. Any bad judgment, or a forward playing badly, will upset and disorganise the combination. If the team is successful in winning, it is usually found to have been due to the players co-operating.

Then take the army.

Nations preparing a campaign arrange in minutest detail every movement, with alternatives in case they should be necessary. Every corps has its instructions where and when to proceed, and changes in plans are immediately communicated by means of field telephones, etc.

When the crucial moment arrives and the signal is given *success depends on united action*. You will easily realise that concerted movement makes all the difference between success and defeat.

Another instance, and I make it the last, although I might go on enumerating all night.

Hull is noted for its railway crossings, and no doubt you will all have seen a goods train at rest there, waiting for the signal to go ahead. It is noticeable when the start is made that there is a tremendous tugging and chugging (especially if the train is heavily laden) at the couplings before the whole train gets under weigh. What if some links were weak? The result is obvious. Similarly with our departmental and individual duties. If we have weakness in the links that make up our chain of work, reparation is needed at once, for if the weakness continues there is no alternation to scrapping the faulty sections and replacing them.

Co-operation means success, and want of it necessarily spells failure.

There is no mid-way.

It is not too strong to assert that co-operation is our duty, yet many ignore it, while credit is due many members for their thought and resource in many cases.

I have had the pleasure of calming refractory subscribers after office hours and possibly done good by judicious explanation, but there is no knowing what might have happened if the operator-in-charge at the exchange had not thought of telephoning to me and getting me to speak. Not long ago a gentleman got through to the Enquiry Department after office hours. He wanted to know the tariff rates and some other details which, although supplied, did not satisfy him. Employees more rigidly "official" in spirit would, perhaps, have told the enquirer to ring again during the ordinary business hours, but he was put through on telephone to my house, and ultimately an order was secured. Our operator did the right thing at the right time, although under no obligation to do so. Her co-operation in this matter helped the Company, and such actions bring success. Those who let similar cases slip are unreliable, although it does not follow that ability is wanting. No, want of thought is the trouble.

Let us make up our minds to do what we can in every day's cycle of duties, making steadfastness the aim and trustworthiness our object, and then there will be no knowing or even estimating the high standard we may reach.

A cycle neglected will not live as long as one carefully oiled and cleaned. In the same fashion a business will eat itself away if there is grinding.

Do not put off but commence co-operation now, if you have not already done so.

To-day is with us—use it.

Yesterday is gone—forget it.

To-morrow is nigh—make the most of *now*.

Let there be no reflection or cause for non-success. Make your watchword, "Something attempted—something done."

Institute of Electrical Engineers.—The following have been elected to the Institute:—Mr. W. B. CROMPTON, Engineer-in-Chief's Office, and Mr. F. MORLEY WARD, Exchange Electrician, Dalston, as Associate Members, and Mr. H. C. TOWNSEND, Exchange Manager, Dalston, as an Associate.

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"BY THE STAFF FOR THE STAFF."

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VOL. VI.]

JUNE, 1911.

[No. 63.]

FARMERS' TELEPHONES.

MR. HERBERT SAMUEL in his speech on the Post Office Vote outlined a scheme for extending the telephone system to isolated rural places which has been received with considerable cordiality in the Press with all the air of welcoming a complete novelty. Briefly, the Postmaster-General proposes to offer to the agricultural districts the unlimited use of a telephone for £3 per annum to any farmer who is willing to join with his neighbours, the minimum number of subscribers on a given "farmer's line" being five.

Of course the widest possible extension of the telephone service in this country is in itself a desirable thing. Its extension to remote villages and scattered communities is especially desirable. We are by now quite familiar with the arguments in favour of rural telephones—namely, their aid to agricultural development, their facilitation of business in places where communication is slow and difficult, and their power to lessen the isolation of country life and promote social ends. We have often expressed our views of the great value of the telephone in rural as in urban society, and readers of the JOURNAL are, of course, by no means unfamiliar with the idea of rural rates in this country. They have, in fact, been on trial by the Company for many years, but the Company's tariff of £4 12s. inclusive of 300 free calls were on the "measured" rate basis, and although undoubtedly higher seem to us to present some advantages on the score of practicability. The Company made a stipulation that there should be not less than three subscribers to each mile of wire, and the Post Office will doubtless find it wise to adopt some such limiting arrangement. One of the problems of a rural rate is the difficulty of confining it to the class for whom it is intended. The Company's rate was not applicable to places within half a mile of an exchange and did not apply to towns or suburbs. A farmer

is somewhat difficult to define, and, further, a rate cannot be restricted entirely to a class. If the farmer is eligible so is the miller and the farrier; and if the miller why not the country doctor? The Company's tariff, limited to no one class, covers a continuous service, which does not cease with the closing of the Post Office. When the utility of the telephone in emergencies (which obstinately refuse to confine themselves to working hours of the day) is remembered, it will be seen that continuity is no small benefit. Nevertheless the rate has in general met with a limited measure of success; but while it may be objected that it does not offer such favourable terms as the Postmaster-General's proposed rate of £3, with unlimited service, its principle is the same—viz., the connection of a number of stations on one exchange line. It is, of course, the essence of success in such a rate that a good number of subscribers should be obtained on each party line. The difficulty was not that the charge was too high but that it was impossible to get a satisfactory minimum of subscribers per mile of circuit. There is little doubt that a vast amount of educational work will have to be done before farmers can be got to look at party line telephones in anything like sufficient numbers to make them a successful venture.

The Postmaster-General, as we have indicated, is departing from his adopted principle of measured service, and is giving his prospective customers an unlimited number of calls for their £3—a step which we are sure will be hailed with unbounded delight by our municipal-telephony friends. It recalls so vividly the generous, unproductive and ill-fated rates in vogue in the early days of municipal competition. It seems to us, however, a matter for regret that this system of payment should be reintroduced. If the rates meet with any success they foreshadow a harvest of congested lines, which as telephone men know will affect not only the outgoing calls of the rural subscribers themselves, but will react through the incoming calls to the detriment of the telephone service in general.

Whilst experience has proved the principle of payment in accordance with use to be the right one for general purposes, it is especially so in the case of a party line service. When from five to twenty people are connected on one line to the exchange it is obvious that any one of that number wishing to speak must wait until any other one who may be engaging the line has finished speaking. It is not difficult to see that the chances of the line being available when required will be increased if each subscriber has to pay for each individual call (resulting, in practice, in an average of between two and three calls a day) than if he can make calls as often and for as long as he pleases. That is one point. Another, concerning chiefly the financial point of view, embraces the telephone borrowing nuisance, inseparable from unlimited service. In America, the success of whose system of farmers' lines has been instanced, the telephone is accessible to few people only, owing to the distance between farms, but in England the instrument might be accessible to and borrowed by a whole village, which would militate greatly against the chances of getting further orders in the same place. Where a telephone message, so to speak, costs nothing, borrowing the use of the telephone always goes on. It is by no means unknown in rural America, and the cause of much detriment to the service.

Whilst, therefore, the Postmaster-General's desire to extend the telephone to the farmer will have the commendation of every telephone man, the adoption of unlimited rates may prove unfortunate both from the service and from the financial point of view.

THE NEED OF ENGLISH.

THE paper by our contributor, Mr. PEET, which bears the above title, concludes with the request: "Who will volunteer a paper on English as she is spoken and written?" This, however, like matrimony, as set forth in the English Prayer Book, is "not to be lightly enterprised or taken in hand." It is a subject on which even the well-educated Briton will think twice before he ventures; for there is an elasticity about the construction of English which often renders it hazardous to lay down the law. It is, moreover, a delicate matter to take anyone to task concerning his English. As it is polite to assume that theoretically all men are brave and all women chaste, so also every educated man's grammar must be supposed to be above suspicion. So much for the written language.

When we come to English as she is spoken, however, our difficulties increase tenfold. So many mis-pronunciations become sanctioned by custom that to pronounce certain words correctly is to court a charge of pedantry. It is not a question of North country and South country, of East End or West End. It is not a question of vowels and consonants, for, of course, no Englishman makes any mistake about the varied sounds of *ough*, *eigh*, the effect of *w* on the vowel following, or similar combinations which perplex a foreigner. It is the question of accent, especially of Latin and Greek derivatives, which puzzles the native. Then there are the words given in modern dictionaries with alternative pronunciations, such as *demonstrate* and *abdomen*, a constantly increasing number, for accents have a tendency to change with other changing customs. Lists of words, such as *funereal*, *illustrate*, *accessory*, *peremptory*, *exigence* could easily be compiled, one in ten of which would be wrongly accented by people of education, to their great surprise.

Of the value of being able to express oneself clearly and tersely there can be no two opinions. That it is not so easy as the unthinking might suppose is shown by the cumbrous constructions and ambiguous sentences which the unskilled produce when they have to put on paper any ideas a little out of the common. It is a knowledge which is well worth the trouble of acquiring.

TELEPHONE WIRES LAID BY FERRETS.

MR. F. H. LAWRENCE, of the Engineering Department of the Chicago Telephone Company, thus describes the method adopted in the United States to lay telephone wires: "A rat is loosed in a pipe through which a cable is to be placed. A string is tied to a ferret, which pursues the rat, carrying the string through the pipe. On the small string a larger one is attached, and on that a still larger, until a wire cable is pulled through."

EDINBURGH EMPIRE THEATRE DISASTER.

ONE of the victims of the recent fire at the Edinburgh Empire Theatre of Varieties was Alexander R. Joss, a former servant of the National Telephone Company. During the last twenty years he had served on the outside staff at various times, and was regarded by his superiors as a quiet and steady worker.

He was employed by the Company up to the Thursday previous to the date of the fire, and left owing to his having obtained employment as a stage-hand at the ill-fated theatre.

THE NATIONAL TELEPHONE COMPANY v. THE POSTMASTER-GENERAL.

A FURTHER stage in the proceedings relating to the transfer of the Company's property and undertaking to the Postmaster-General was commenced on May 9 last in the Court of the Railway and Canal Commission, before Mr. Justice A. T. Lawrence, the Hon. A. E. Gathorne-Hardy and Sir James Woodhouse, when an application was made by the Company for an award that certain notices of objection to buy plant, land and buildings of the Company given by the Postmaster-General were void and inoperative. Under the Purchase Agreement of 1905, by which the Postmaster-General agreed to buy the Company's plant, land and buildings on Dec. 31, 1911, a power was reserved to him to object to buy plant, land and buildings of the Company which he considered would be unsuitable for the actual requirements of the telephonic service of the Post Office on that date. This power could be exercised, in non-competitive areas, only in respect of plant which was not constructed in accordance with an agreed specification. In competitive areas, such as London, Brighton, Portsmouth, Hull and Newcastle, the power of objection was wider, and extended to plant of any kind, whether constructed in accordance with the specification or not, and to land and buildings. Any notices of objections had to be given to the Company not later than Jan. 1, 1911. Acting under this power the Postmaster-General gave the Company seventeen notices of objection, two of which related to non-competitive areas, and the others to competitive areas. The Company did not accept the notices, and took steps, under other provisions of the Purchase Agreement, to seek an award of the Railway and Canal Commission, to the effect that the plant, land and buildings objected to will on Dec. 31 next be suitable for the actual requirements of the Post Office telephonic service. The Company claimed that the notices, so far as they were by way of general description, were insufficient and void, that they included private wire plant to which the Postmaster-General was not entitled to object, that they also wrongly included switchboards and internal exchange plant which are exempt from objection, and that, so far as any questions of suitability had been properly raised, the plant objected to will be suitable for the Postmaster-General's purposes and cannot be objected to. The Postmaster-General denied the Company's allegations, and contended that the plant he had objected to will be unsuitable for his purposes on Dec. 31 next because he will on that day be in possession of other sufficient plant suitable for the requirements of his service. It was seen at an early stage of the proceedings that two very important questions would have to be decided before the case could be concluded, and eventually it was agreed that these two points should be discussed first, as the decisions upon them would affect the result of the case to a marked extent. These two questions are, first of all, as to the meaning of the expression "suitable for his actual requirements." The second point of discussion was as to whether the notices are void or not for want of definiteness.

The Company had prepared a series of interesting models and photographs to illustrate the general lay-out of a telephone system and various difficulties arising out of the Postmaster-General's notices of objection, and these were explained to the Court by Sir Alexander Kennedy, the eminent electrical engineer. The Post Office also exhibited several models of magneto and central battery apparatus, which were worked in court for the purpose of illustrating the differences in operating them. Subsequently the Commissioners visited various exchanges of the Company and the Post Office.

The case concluded on May 18 and at the time of going to press the decision of the Court had not been given.

The counsel engaged in the case for the Company were Sir Alfred Cripps, K.C., Mr. W. O. Danckwerts, K.C., Mr. E. Forbes Lankester, K.C., Mr. Edward Morten, K.C., and Mr. H. H. Gaine; and for the Postmaster-General: the Attorney-General (Sir Rufus Isaacs, K.C., M.P.), the Solicitor-General (Sir John Simon, K.C., M.P.), and Mr. Branson.

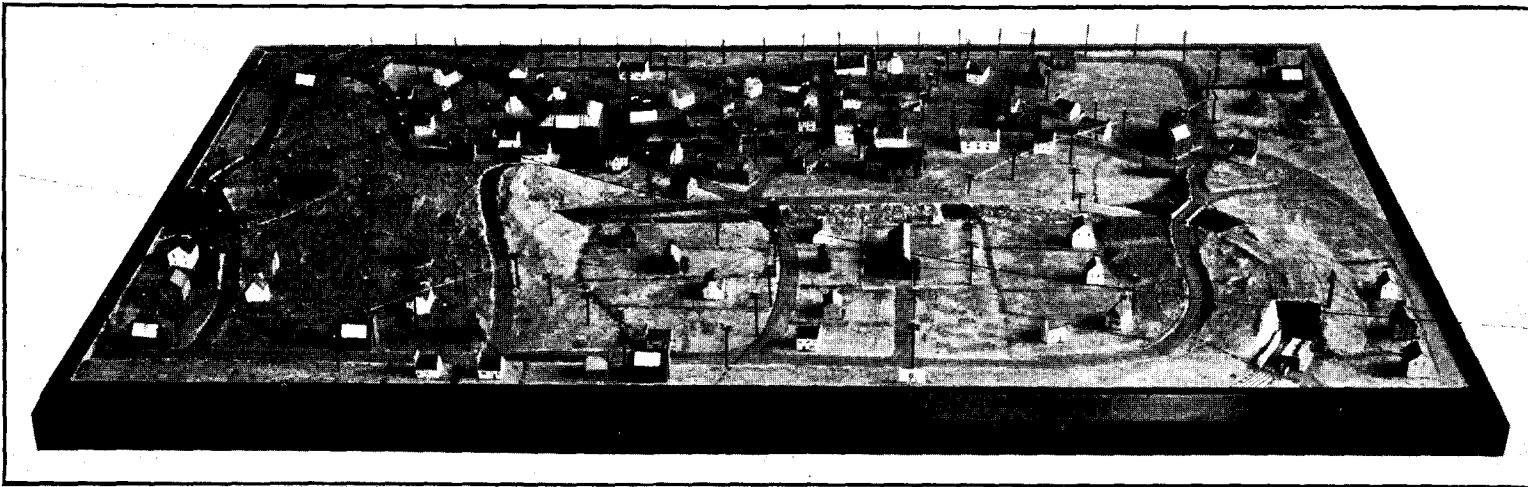


FIG. 1.

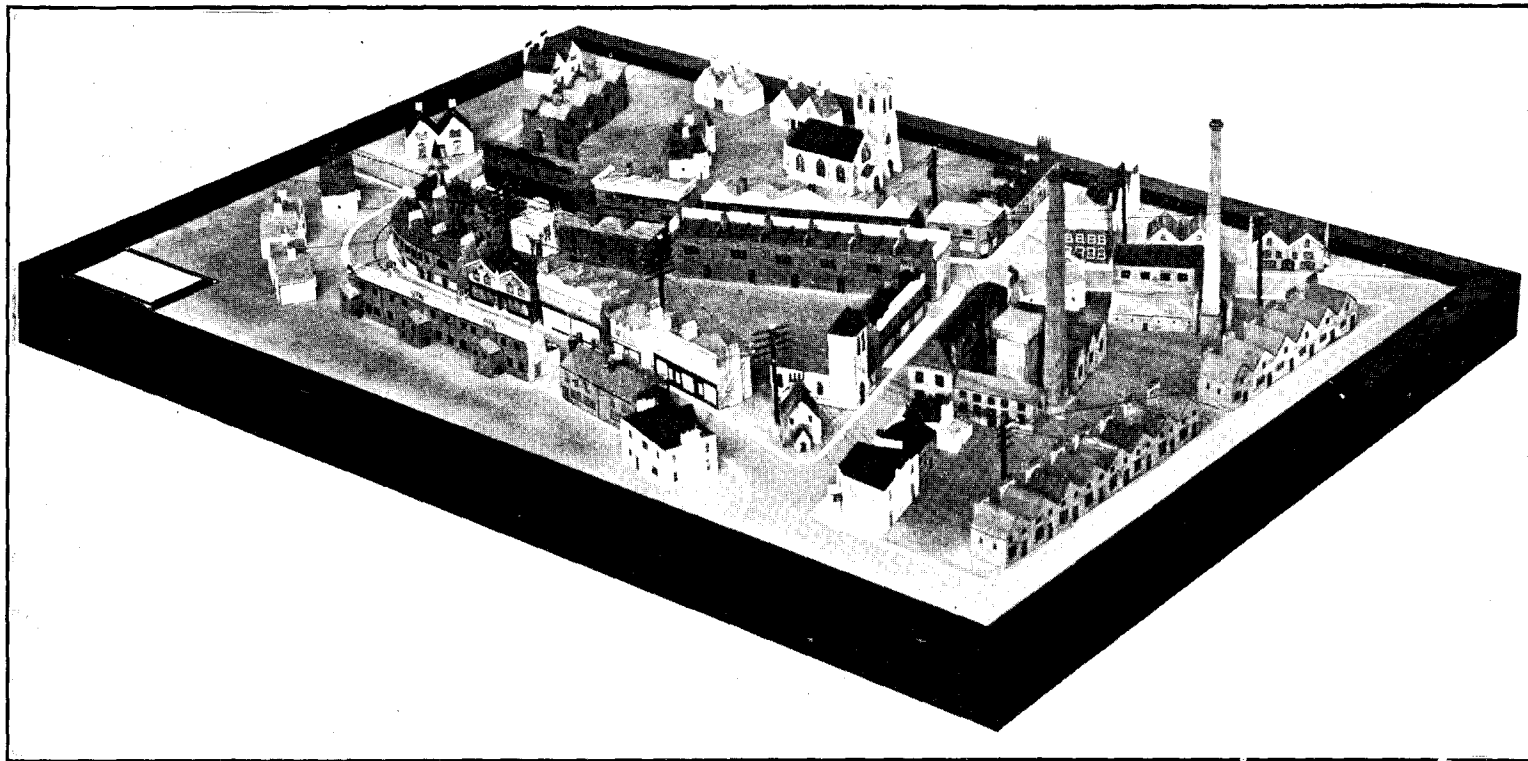


FIG. 2.

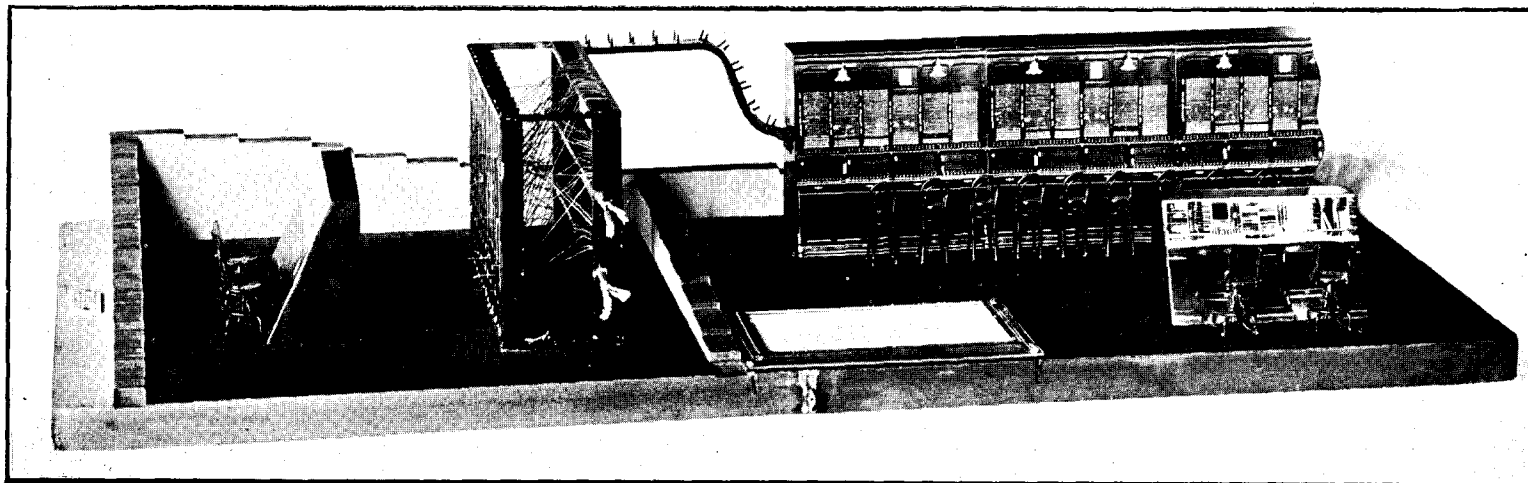


FIG. 3.

THE MODELS USED IN THE PROCEEDINGS BEFORE THE RAILWAY AND CANAL COMMISSION.

THESE models were designed with the object of making any engineering point which might arise as clear as possible to the court, and all, except that shown in Fig. 1, were constructed at Head Office.

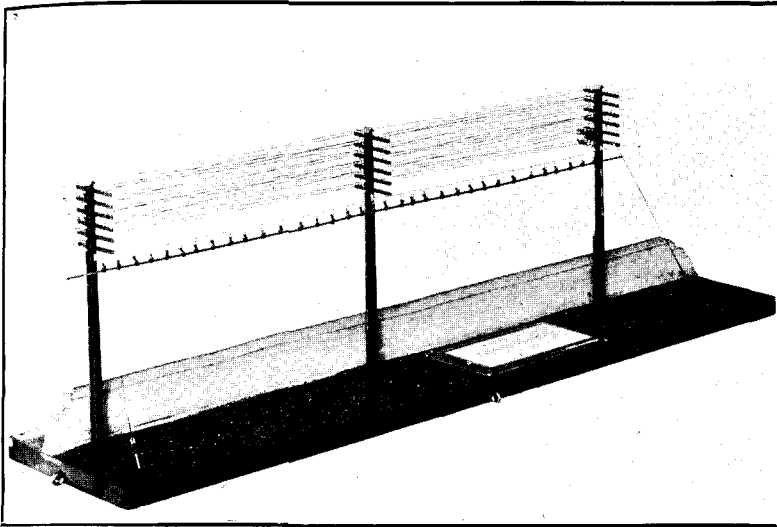


FIG. 4.

The model shown in Fig. 1—on opposite page—was designed by the Company to illustrate a typical telephone system with several exchanges connected together by various types of line construction. It was constructed under the Company's supervision by Mr. John B. Thorp, of Gray's Inn Road.

The railway and tramway are introduced simply to show the different methods in which telephone wires and cables cross or run alongside of them.

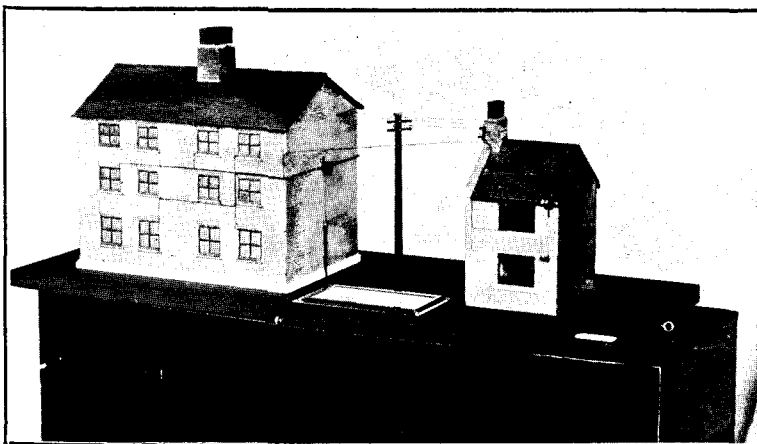


FIG. 5.

Fig. 2 is intended to show overhead distribution. The churches and factories are introduced to indicate some obstructions to overhead line work which are met with in practice.

Fig. 3 represents an exchange with switchboard, main frame, test clerks' and monitors' desks.

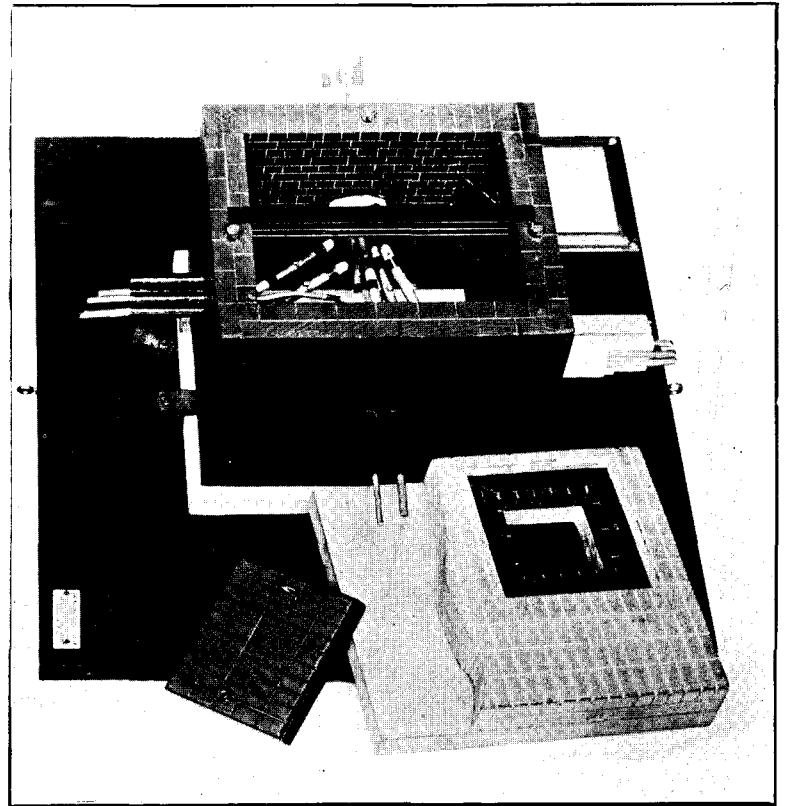


FIG. 6.

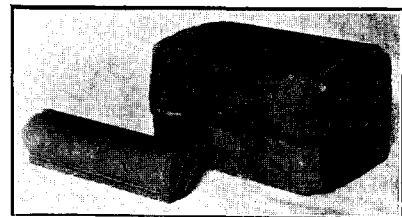


FIG. 7.

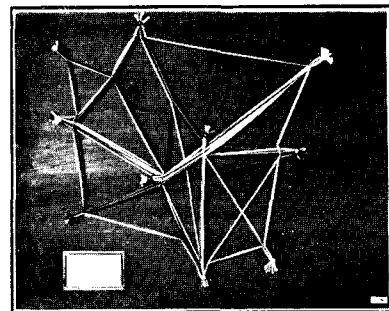


FIG. 8.

with threads of various colours to represent different services, and shows clearly the method of grouping wires in a test-room.

Fig. 4 shows a route of overhead wires and an aerial cable. Certain of the open wires are connected to an underground cable at the right-hand pole.

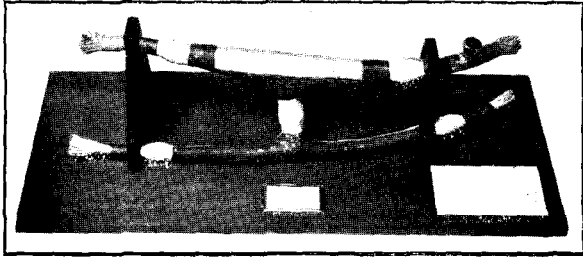


FIG. 9.

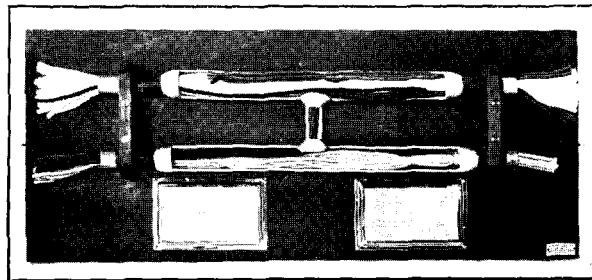


FIG. 10.

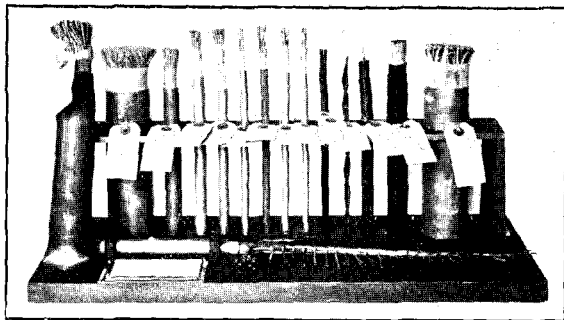


FIG. 11.

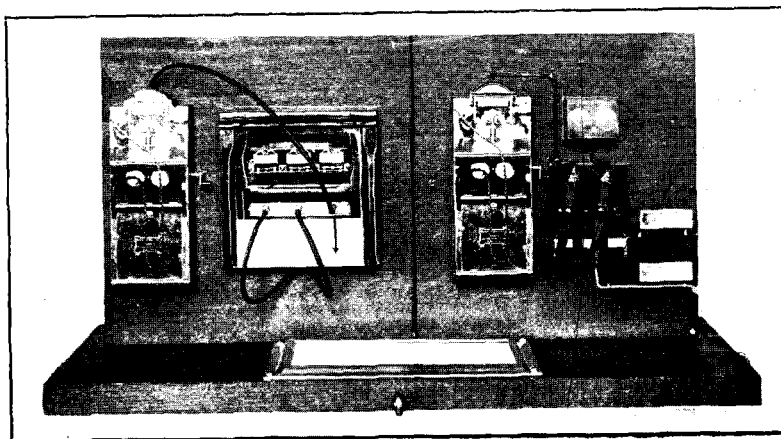


FIG. 12.

Fig. 5 is intended to show the various methods of leading lines into subscribers' premises. The larger building is served completely by covered distribution.

Fig. 6 shows a manhole with conduits and cables. The top portion is removed to show the interior.

Fig. 7 shows 3-way and 25-way concrete conduits.

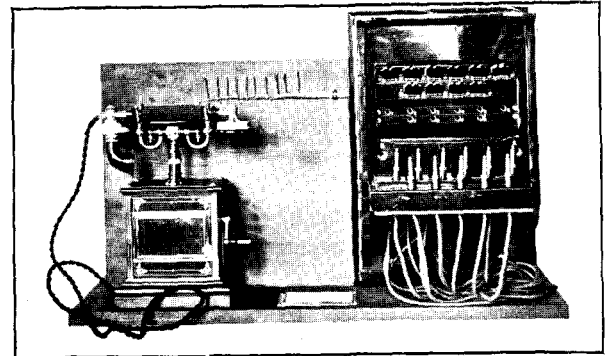


FIG. 13.

Fig. 8 is a diagram of junction routings. The pin heads, which are of different colours, represent exchanges, and the various junctions are distinguished by similarly coloured wools.

Fig. 9 shows a composite cable joint, and Fig. 10 a similar joint in section. In the latter the wires are represented by coloured wools to indicate the different directions which they take.

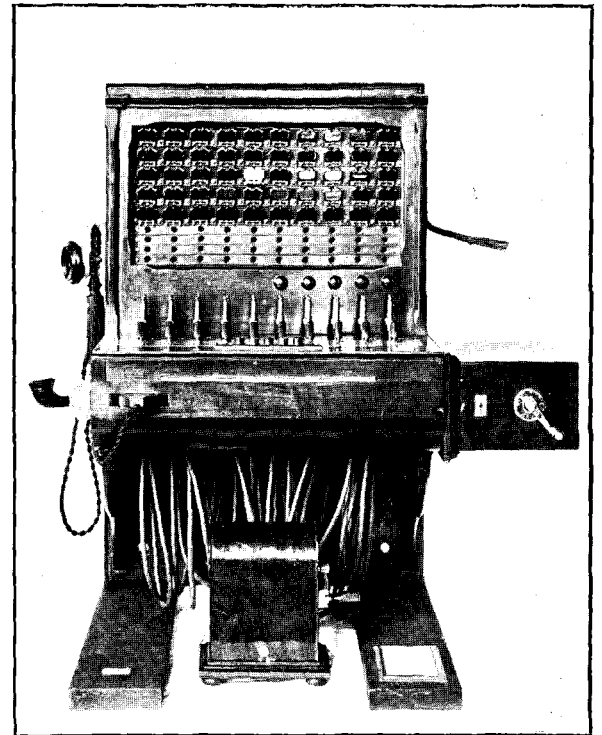


FIG. 14.

Fig. 11 shows various samples of cables and wires used by the Company.

Fig. 12 represents a 3-line switchboard and an intermediate switch, and Figs. 13 and 14 show a 10 and 24-line switchboard respectively.

TELEPHONE WOMEN.

XCII.—EDITH MAUD VAN RIEL.

MISS EDITH MAUD VAN RIEL, Clerk-in-Charge, Newport (Mon), entered the service of the Company at Cardiff in December, 1898, shortly after a clerk-in-charge had been appointed in the Cardiff Exchange and at a period when the competition between the Company and the Post Office was very keen. She recollects very well the hustle at that time to maintain a good service to National subscribers.

After close on ten years' service as an Operator, Miss Van Riel was promoted to be Junior Supervisor in the Cardiff Exchange in 1908, from which time her promotion was fairly rapid, as in September, 1908, after three months as Junior Supervisor, she was promoted to be Senior Supervisor, and on Oct. 29, 1909, was transferred to Newport (Mon) as Clerk-in-Charge, the whole of the Company's exchanges in the Newport area being under her control.

Miss Van Riel has thoroughly deserved the Company's recognition of her services. She takes a keen interest in the progress of her exchanges, and has been instrumental in commencing a thrift club amongst the staff at Newport, and has also used her influence towards bringing about a better feeling of co-operation. She has not only an efficient, but a contented staff, with whom she is deservedly popular.



EDITH MAUD VAN RIEL.

Miss Van Riel is a strong supporter of the Cardiff Telephone Society, and has been secretary and auditor of the Operators' Thrift Club. She is very fond of painting and music.

XCIII.—EVELINE ANNIE RICHARDS.

MISS EVELINE ANNIE RICHARDS, Clerk-in-Charge, Barry, joined the service at Cardiff in March, 1900, and was promoted to her present position in March, 1904.

Miss Richards was chosen to take the position of Clerk-in-Charge at a time when the conditions were very exacting, it being necessary not only to have a capable operator, but some person who could control staff. She had very great difficulties to face at a time when the Post Office competition was very keen in the district, and although the exchange was at that time only small it was considered to be an exceptionally busy one, the junction traffic between Barry and Cardiff being very heavy, so that her knowledge of the conditions prevailing at Cardiff was of great assistance.

Miss Richards has done remarkably well during the six years she has been at Barry, and although the increased junction accommodation between the two exchanges has done a good deal



EVELINE ANNIE RICHARDS.

towards removing many difficulties, very great credit is due to her for the success in bringing about the improvement which has taken place at Barry Exchange.

Miss Richards is very popular with the operators under her control, is a strong supporter of the Operators' Telephone Society and has been auditor of the Thrift Club for the past two years.

INVENTORY STAFF NOTES.

THE following additions have been made to previous lists:—

TRAVELLING STAFF.	
Briers, A.	Clerk Birmingham.
Clark, O.	Clerk Metropolitan.
Lakes, A. C.	Draughtsman Manchester.
Lucena, H. G.	Instrument Inspector Birmingham.
Moon, W. J.	Engineer's Clerk Birmingham.
Russell, G. H.	Cost Clerk Chester.
Taylor, F. W.	Exchange Manager in Training Leeds.

Name to be deleted from previous lists:—

TRAVELLING STAFF.	
Quartermain, J.	Wireman Reading.

THE evening of May 2 was notable in the annals of Inventory men, being the occasion for a large gathering, when the Inventory staff met, under the congenial circumstances of a smoker, their *conferres* of the Manchester service. This took place at the new premises of "The Old Royal," Mosley Street, Manchester.

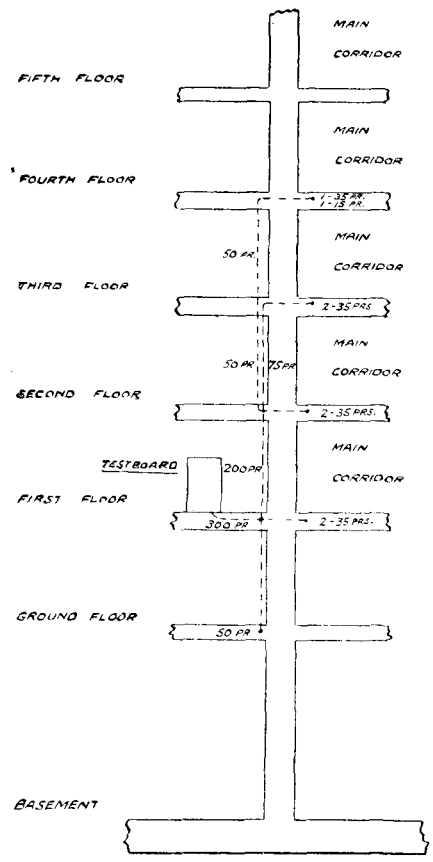
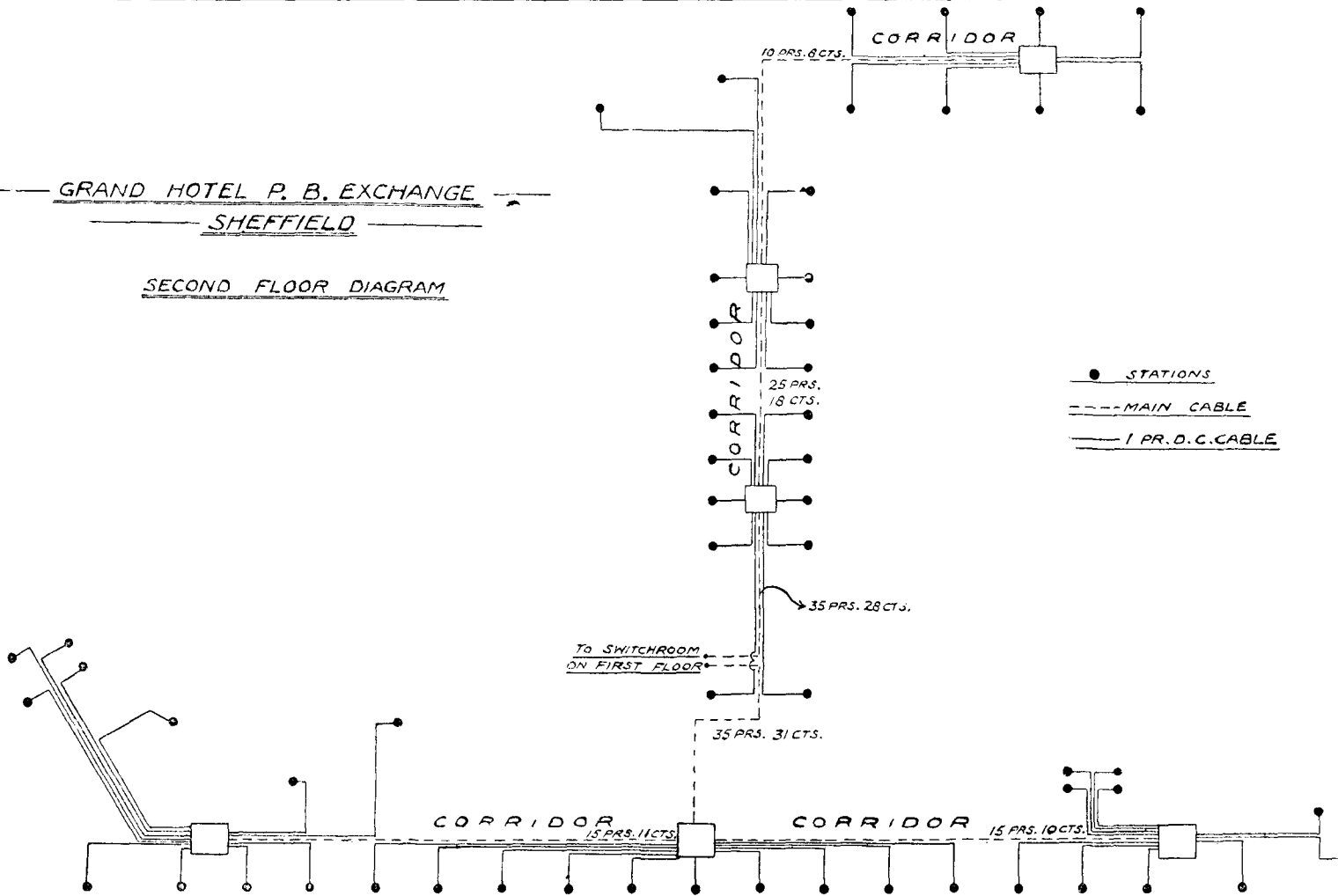
Under the able chairmanship of Mr. A. Magnall a varied and excellent programme of music, recitation and song was furnished by many talented members of both staffs. All these efforts were of so excellent a nature that one had great enjoyment from each in turn. Mr. G. R. Scott, who had a great reception, was decidedly humorous in his skilful impersonation in "Foo' th' Noo'." Mr. Alan Roberts, after great persuasion, necessary to overcome the reticence usually accompanying those who can do things, gave a fine rendering of "The Mighty Deep."

Mr. Magnall, in his speech from the chair, told us how heartily he and the local staff welcomed our visit, and how each member would heartily co-operate in the furtherance of the work in hand. To this he added with fervour, "For Heaven's sake get out as soon as you can!"

Mr. D. B. Fulton, in reply, expressed a keen appreciation of the efforts the staff had made to facilitate the work of Inventory, and the high appreciation held by the Inventory staff of the local assistance, which had so greatly helped forward the important work in hand.

Both sentiments were warmly applauded, and upon the resumption of the programme a pleasant evening was brought to a close with feelings of pleasure in the good fellowship which inspires the members of the telephone service.

GRAND HOTEL P. B. EXCHANGE
SHEFFIELD
SECOND FLOOR DIAGRAM



GRAND HOTEL P. B. EXCH.
SHEFFIELD.

CORRESPONDENCE.

HOTEL WIRING.

TO THE EDITOR OF THE NATIONAL TELEPHONE JOURNAL.
 THE following is a reply to Mr. Greening's letter in the March JOURNAL. I regret that absence from Sheffield on account of Inventory work prevents my replying to Mr. Greening's letter in full.
 The building in question is a new one. (See paragraph 2 of "Notes.") Speaking generally and especially in regard to old buildings, I am in accord with Mr. Greening as to the advisability of mechanically protecting loose wires under floors.
 In the present case, apart from the fact that the contractor objected to deep cutting of joists (which would have been necessary had tubes been laid) and without going into detail, it was considered quite safe to run them loose.
 The distribution on each floor is similar to the diagram shown above. The sectional diagram shows the main cables from the test board to each floor.
 Birmingham, March 20. FRED BARR.

PROVINCIAL TELEPHONE TRAFFIC.

TO THE EDITOR OF THE NATIONAL TELEPHONE JOURNAL.
 MR S. J. PHARO in his article on "Provincial Telephone Traffic" deals with some interesting and debateable points in connection with the use and abuse of service observations.
 In my opinion the use of the "Figure of merit" column for the purpose he describes constitutes an abuse of the observation records for which the system was not intended.
 The "Figure of merit" makes no allowance whatever for the conditions under which the service is given and takes into account only the speed of answer and disconnection.
 Mr. Pharo is quite correct in stating that "the quality of the service determines the extent of our expansion as a telephone company," but the speed of answer and disconnection is not an index, in itself, of the quality of the service.
 Speed is one of the factors which go to make an efficient telephone service, but equally important are the factors—accuracy and economy. This fact was realised when the "Figure of merit" on the observation prints was abolished.
 Mr. Pharo makes a great point of the two-seconds answer, and aims at 100 per cent. calls answered in two seconds. From a subscriber's point of view a two-second answer is too rapid to be of commercial value, and observation on the Swansea Exchanges goes to show that the average magneto subscriber rings for two seconds and is not really prepared for an answer in much less than five seconds.

If an operating staff "hitch their wagon to a star" by aiming at 100 per cent. calls answered in two seconds in the hope of attaining 100 per cent. answers in five seconds no criticism could be levelled, but the accuracy or economic working of any exchange must suffer if the impossible standard of 100 per cent. answers in two seconds is set up.

There is no doubt that the psychology of the individual carrying out the observation tests has a decided bearing on the records, the human element playing much the same part in observation work as it does in operating. It would be interesting to see the effect of a change of observation clerks on Portsmouth's percentage of two-second answers.

With regard to Mr. Pharo's remarks as to the load per operator at Portsmouth compared with other exchanges, it will be noted from the quarterly statistics compiled from the record taken in January last that the number of valued calls per operator's position during the busy half-hour at Portsmouth is 83, whereas at the Swansea Central Exchange, which has a similar type of switchboard, the busy half-hour valued calls per position works out at 120.

From these figures it would appear that the high percentage of two-second answers is paid for by a comparatively low operating load.

If observation returns are compared, consideration should at the same time be given to the operating load and the type of switchboard.

One other point referred to by Mr. Pharo is that of "seeing that operators have always a cord ready for answering calls."

It is questionable whether the practice is good, as in order to prevent unnecessary crossing of cords which may lead to "disconnections in error," the pair of unoccupied cords nearest to the answering jack of the calling subscriber should be used. If the operator is waiting cord in hand, either unnecessary crossing will be likely to occur, or else the cord held will be dropped in favour of a nearer pair, involving a certain amount of waste labour.

Swansea, May 17.

A. G. BRISTOW, Traffic Manager.

THE TELEPHONE MASONIC LODGE.

If any proof of the unimpaired vitality of this flourishing young lodge had been needed, it would have been amply afforded by the highly successful installation meeting which was held at the Café Royal, Regent Street, London, on Saturday, May 20, when the retiring Master, W. Bro. Stanley J. Goddard, was succeeded by the newly elected Master, Bro. F. A. B. Lord.

The ceremony of installation was most ably performed by W. Bro. P. P. Kipping, P.M., and the newly installed W.M. appointed his officers as follows:—

W. Bro. Stanley J. Goddard..	..	..	I.P.M.
" P. J. T. Kenny ..	..	..	S.W.
" C. E. Tattersall ..	..	..	J.W.
W. " P. P. Kipping, P.M. ..	..	..	Treasurer.
W. " F. O. Harke, P.M., L.R. ..	..	..	Secretary.
" A. F. Paddon ..	..	..	S.D.
" W. M. France ..	..	..	J.D.
W. " E. J. Reid, P.P.G.D.MX. ..	..	..	Dir. Ceres.
" W. J. Downes ..	..	..	Assist. D.C.
W. " C. G. Sleigh, P.M. ..	..	..	Almoner.
" V. Baldwin ..	..	..	Organist.
" J. E. Pullin ..	..	..	I.G.
" F. E. Sims ..	..	..	1st Steward.
" J. R. B. Gall..	..	..	2nd "
" M. B. Stephens ..	..	..	3rd "
W. " W. R. Thompson ..	..	..	Tyler.

The customary addresses to the W.M., officers and brethren of the lodge were then impressively given by W. Bro. P. P. Kipping. Letters of regret for unavoidable absence were read from R. W. Bro. Lord Balfour of Burleigh, K.T., P.G.W.; W. Bro. B. Marr Johnson, P.G.D.G.C.; W. Bro. Geo. Franklin, LL.D., P.P.G.W.; W. Bro. Wm. Shackleton, P.G.Std.Br., and others.

The brethren, to the number of about 130, afterwards dined together.

Amongst the company present, in addition to those mentioned above, were:—V.W. Bro. Sir Edward Letchworth, G.Sec.; R. W. Bro. Ald. Sir Walter Vaughan Morgan, Bart., P.G.W.; V.W. Bro. W. M. Stiles, P.G. Treas.; V.W. Bro. James Stephens, Pres.Fd.of Benev.; W. Bro. R. Clay Sudlow, P.G.D.; W. Bro. Rev. J. Farrington Downes, P.A.G.Chap.; W. Bro. Thos. Taylor, P.G.D.; W. Bro. G. C. Kent, P.G.A.D.C.; W. Bro. T. A. Bullock, P.G.Swd.Br.; W. Bro. J. M. McLeod, P.G.Swd.Br.; W. Bro. J. F. Roberts, P.G.Std.Br.; W. Bro. Martin Roberts, P.P.G.D.Mdx.; W. Bro. A. M. Barnard, L.R.; W. Bro. E. W. Wainwright; W. Bro. G. P. Simpson; W. Bro. J. W. Murllis Green; W. Bro. W. Slingo; W. Bro. W. N. Roger; W. Bro. C. Wilson; W. Bro. Miles Mole; W. Bro. R. McLean, G.Supt., Wks., Guernsey and Alderney; W. Bro. T. Fletcher; W. Bro. A. Theobald; W. Bro. R. H. Willis; Bro. H. B. Fagnani; W. Bro. J. M. Bathgate, L.R.; W. Bro. E. Petley; W. Bro. J. R. Creasey; P.P.G.D. Kent; W. Bro. E. A. Fisher; W. Bro. J. Ferguson; W. Bro. C. F. Elles; W. Bro. G. Jack; W. Bro. J. Macgregor; W. Bro. H. A. Caslon; W. Bro. R. Colsell; Bro. C. E. Musgrave; W. Bro. J. Phillips; W. Bro. E. R. Harby, Prov. S.G.D., Herts; W. Bro. F. Mott; W. Bro. C. Bassett; W. Bro. Rev. F. Hickin, Prov.G.Chap., Kent; Bro. T. Bond Sims; Bro. W. Noble.

During and after the banquet an excellent musical programme, arranged by Bro. V. Baldwin, was gone through by Bros. Oakley, St. Aubyn, Beckwith, Dunn, Rome and Bassett, and the Misses Bartle and Herwin.

GLASGOW NOTES.

In connection with the evening class work in the Technical College, the results for the Company's students for the session now past have come to hand; 167 members of the staff enrolled, and 46 first class, 41 second class and seven attendance certificates have been gained.

THE Scottish National Exhibition was formally opened on May 3 by H.R.H. the Duke of Connaught. Although the weather conditions were not all that could be desired, the attendance for that day was highly satisfactory, and, judging from the attendance on subsequent days, the success of the 1911 Exhibition seems assured. A building of special interest to telephone men is the Kelvin Hall, in which is housed an interesting collection of apparatus which was used by the late Lord Kelvin. There is also on view a large amount of engineering and electrical plant, which is bound to prove interesting to even non-technical visitors.

The Post Office Telephone Department has installed a 200-line C.B. switchboard in the Industrial Hall, and the sight of the two deft-fingered operators carrying through their ordinary duties under the observant eye of the visitor is well worth seeing. The demands of the telephone public have not been overlooked, there being an adequate supply of call offices at convenient points in the buildings.

Bell Golf Club.—The April medal competition was held at Carntyne on Saturday, April 22, and resulted in a win for W. Stewart, with 91 - 10 = 81.

The Spring meeting was held over the same course on Saturday, May 13, when the prize winners were (1) Jas. H. Murray, 100 - 26 = 74; (2) a tie, H. Thomson, 94 - 12 = 82; and J. F. Murray, 104 - 22 = 82. Other scores were A. C. Thomson, 107 - 24 = 83; G. Martin, 94 - 8 = 86; R. Brough, 99 - 12 = 87; and J. Paton, 111 - 24 = 87.

MR. J. R. BROWN, the Contract Manager, who has for a number of years taken a keen interest in the orphan children of Cambuslang, has, following his usual custom, organised a picnic for the Cambuslang orphan children. On Saturday, May 20, some 400 youngsters, ranging in age from five to fourteen, journeyed *via* special train and boat to Rothesay and thence by electric tram to Ettrick Bay, where an enjoyable outing was spent.

THE Gaine Memorial Fund, which was founded on the death of the Company's late General Manager, has been most useful in enabling eight different members of the staff in Glasgow alone since the inception of the fund, to get the necessary treatment in sanatoria in cases of consumption.

WE asked last month for any suggestions through the columns of the JOURNAL which might have the effect of raising the enthusiasm of the staff on the question of telephone societies, and an answer has been got from our own local society. A meeting of the society's new committee for the ensuing year was held last month, when the question of the programme for next year was considered. Various schemes in order to rekindle enthusiasm were put forward and it will be rather surprising if the syllabus committee have not got a special treat in store for the members next session. The question of attendance for the past session received a good deal of discussion, and while it was agreed that the conditions which prevailed then were abnormal, there being so many of their number absent on inventory duty, and in all likelihood the same conditions might obtain this session, the committee unanimously decided that so far as they are concerned no efforts will be spared to make the average attendance a record one.

A SUBSCRIPTION in aid of the Lifeboat Institution has resulted in £4 6s. 4d. being collected. This is an increase on last year's figure.

MISS MARGARET BALLANTYNE, Douglas Exchange, who has been in the service for some five years, left on May 18 for Toronto. Before leaving she was the recipient of a silver purse bag from her colleagues.

LONDON NOTES.

THE close of the highly successful first session of the London Telephone Operators' Society was marked by a social evening of an interesting and varied character, which was held at the Bishopsgate Institute on April 28, and attended by a large number of the members and their friends. The pivot of the proceedings was the distribution of prizes by Mr. Harvey Lowe to the successful competitors in the recent essay competitions. This interesting function was preceded by a concert of excellent music provided by members of the Company's staff, and followed by a dance, while the graver and more sedate amongst the guests played whist. This happy idea of catering for the most diverse taste resulted in a most enjoyable evening. It is hoped that whatever the uncertain future may bring forth, this youthful and vigorous society will play a prominent part.

THE staff connected with the Stores Department and the Workshops took advantage of Mr. H. Davis' week-end visit from Cardiff to secure his presence in the chair at their social on May 5. What the reporters call "a sumptuous repast" formed the first stage of the proceedings. Needless to say, all acquitted themselves admirably. Afterwards a concert, the programme of which was entirely sustained by members of the staff, was entered into with much flow of

spirit and enthusiasm. Congratulatory speeches followed, and were the concluding and not least appreciated items in the evening's enjoyments.

MR. R. P. LOWE, who recently left the Company's service, has acted as secretary of the Chess club since its inception. He has been indefatigable in his efforts to make the club a success. As a mark of esteem and appreciation of his work, the members presented him with a fountain pen, umbrella and traveller's chess set, Mr. Alsop making the presentation.

THE "London Wall" operating staff have, during the last few months, been combining enjoyment to themselves and their friends with a good deal of commendable work for charitable causes. The Staff Benevolent Fund has, in particular, benefited handsomely from the proceeds of some successful social evenings. Miss Butcher, the Clerk-in-Charge, and the committee, who have so willingly aided her in organising them, are to be congratulated on the success of their final effort on May 11. Whist parties are rather at a discount in London after April, so that a gathering of 200 speaks well for the attractive and persuasive powers of the lady organisers. Whether it was the desire to show that their success in the telephone business had not robbed them of their ability in less arduous fields, or simply that when they put their minds to it in any field, they are irresistible, it is difficult to decide, but the outstanding feature of the evening was that the ladies won all the prizes. Some of them had to play as "gentlemen" instead of with them, to accomplish this feat, but in either role they seemed equally at home, and were certainly equally victorious. It was a somewhat chastened group of men who wended their way homeward from that whist drive; probably they were consoled by the fact that part of the evening's entertainment had been an excellent supper.

MISS ALICE PARSONS, a Clerk in the Fee Department at Salisbury House, and who has been in the service since 1903, has just resigned. On leaving she was presented by her colleagues with a gold watch wristlet and pearl brooch.

IN connection with the Festival of Empire at the Crystal Palace the Company has had a busy time providing telephone service for the organisers, the caterers and the stall holders. At the time of writing, 87 direct lines have been connected to the exchange, the total stations being 172. Included in these are seven call offices, all within the palace, for the purpose of supplementing the four which were already in existence at various entrances, but outside the grounds. If the traffic on the day when the King opened the Exhibition is any guide, there is a busy time in store for the operators during the six months the festival is to last. Wires for a fire alarm system have also been erected by the Company, and a private installation of six stations constructed along the route of the "All Red" railway.

NEWS OF THE STAFF.

Messrs. R. L. BELL, B.Sc., and J. N. HINDLE have been promoted from Exchange Inspectors, Manchester, to the Engineer-in-Chief's Department. Mr. Bell joined the Company's service in August, 1907, and Mr. Hindle in February, 1909. Prior to their leaving Manchester they were presented with silver cigarette cases by the Traffic and Electrical Departments as a token of esteem and regard.

Mr. H. WOOD, Rentals Clerk, Manchester, has been transferred for reasons of health to Dover as Contract Clerk. Mr. Wood joined the service in October, 1896, and has spent the whole of his service with the Company in the Manchester Rental Department. Prior to leaving Mr. Wood was presented by the clerical staff with a watch as a memento of his long stay in the district.

Mr. T. CORNFOT, District Electrician, Birmingham, has been appointed District Electrician, Liverpool.

Mr. W. H. GRINSTED, of the Exchange Equipment Department, Head Office, who recently resigned in order to take up a position with Messrs. Siemens Bros., was presented with a handsome suit case and set of hair brushes by his colleagues when he left the service of the Company.

Mr. C. HUNSWORTH, on the occasion of his transfer from York to the district office, Leeds, was the recipient of a handsome present subscribed for by the whole of the York staff, where he has been local office clerk for four years.

Miss E. H. LONG, Storekeeper's Despatch Clerk, Nottingham Factory, on resigning after ten years' service, was the recipient of a handsome music stool, copper kettle, cruet and other things together with the best wishes of her many friends on the Factory Manager's staff and on the Engineer-in-Chief's local staff.

Miss LUCILLE WHITTELL of the Huddersfield operating staff was presented on her resignation with an electro-plated tea service and autograph book signed by the members of the staff. She has been fifteen years in the Company's service, and has become extremely popular with all grades. Her loss is keenly felt, especially by those with whom she came in immediate contact.

Miss EDITH A. MANLEY, Operator at Atherton Exchange, resigned on March 31, after five years' service, owing to ill-health.

Mr. WILLIAM HISLOP, Contract Officer, Edinburgh, has been transferred to Dumfries in the same capacity.

Mr. GEORGE ARCHIBALD, Senior Clerk, Greenock, has been appointed Contract Manager.

Mr. J. P. ROSS, Cost Clerk, Greenock, takes up the duties of Senior Clerk in that centre.

Mr. S. T. CARRICK has been promoted from Dumbarton local office to be Stores Clerk in the district office, Greenock.

In connection with Mr. BURY's promotion to be Acting Chief Clerk, the Dublin staff took advantage of the opportunity of presenting him, through the District Manager, with a case of pipes in recognition of his long service and deserved popularity in the district.

Miss DOROTHY LYONS, Operator, Cardiff, left the Company's service on April 6 to take up a position as private branch exchange operator with a large firm in Cardiff. Prior to leaving the service she was presented by her colleagues in the Cardiff Exchange with an ebony-backed brush and comb as a mark of esteem and with best wishes for her future welfare.

Miss GERTRUDE A. LATHEY, Senior Operator, Cardiff, left the Company's service on March 15, after several weeks' absence through ill-health. Miss Lathey joined the Company's service in August, 1904, and having become very efficient it is to be regretted she finds it necessary to terminate her service with the Company. Miss Lathey's colleagues presented her with an ebony-backed brush, comb and mirror with her initials in silver as a mark of their esteem and respect, and with best wishes for her speedy restoration to good health.

Mr. G. H. RASTALL, Nottingham, has been transferred from the position of Observation Officer to that of Acting Sub-Engineer.

Mr. M. B. OLDBURY, Nottingham, has been transferred from the position of Instrument Inspector to that of Observation Officer.

METROPOLITAN STAFF CHANGES.

Mr. H. A. SARGEANT, Electrophone Construction Staff Fitter, to be Test Clerk, New Cross.

Mrs. A. REDMAN, Typist, Chief Accountant's Department, to be Clerk, Metropolitan Engineer's office, Salisbury House.

Mr. G. BRIMS, Assistant Joiner, City, to be Fitter, Gerrard.

Traffic Department.

Miss HARRIETT MUSTOE, Supervisor, East, promoted to be Senior Supervisor-in-Charge, Wanstead. She was presented with a silver-backed mirror and handkerchiefs by her colleagues.

Miss ROBERTIA SEABROOK, Supervisor, Avenue, promoted to be Senior Supervisor, Lee Green.

Miss MARGARET BRYDEN, Operator, Avenue, promoted to be Supervisor, East.

Miss ELSIE J. SAMSON, Operator, Gerrard, promoted to be Supervisor, Avenue.

Miss ADA FOSTER, Operator, Streatham, promoted to be Supervisor, London Wall.

Miss MILLICENT RALPHS, Operator, Kensington, promoted to be Supervisor, Holborn.

Miss MAUD FOOTMAN, on leaving the Company's service to take up a position as Operator at a subscriber's office, was presented with a gold pendant by the operators at East Exchange.

Miss ANNIE TAYLOR, on leaving the Company's service, was presented with a handbag by the operating staff at East Exchange.

Miss ALICE WEST, Operator, East Exchange, has obtained the St. John's Ambulance certificates for first aid and home nursing.

MARRIAGES.

Mr. W. U. LONNON, of the Exchange Equipment Department, Head Office, was presented with an "Eureka" electric clock by his colleagues on the Engineer-in-Chief's staff on the occasion of his marriage last Easter.

Miss MARGARET DOBIE, Operator, Maryport, who resigned from the Company's service to be married, was presented by the staff of the Whitehaven centre with a pair of pictures.

Mr. A. M. LYNN, Chief Clerk, Cork district, was presented with a pair of gold sleeve links and sovereign purse by the Headquarters Inventory staff on the occasion of his wedding.

London Traffic Department.

Miss MARY BROOKES, Operator, Stratford Exchange, on resigning to be married, was presented with a china cabinet by the operating staff of the East district.

Miss MINNIE DOOUSS, Operator, Avenue, was presented with a set of cutlery by the staff of that exchange on her resignation. Miss Doouss, who is journeying to New Zealand to be married, was also the recipient of many other gifts from her colleagues.

Miss MAUDE NEWELL, Operator, Dalston, on resigning to be married, was presented by the staff with a tea service.

OBITUARY.

It is with sincere regret we record the death of Mrs. G. A. GREAVES, a Senior French polisher at Nottingham Factory, which occurred on April 30 after a short but painful illness. The funeral service held at St. George's Church, of which deceased was a member, was attended by representatives of the department, a number of floral tributes testifying to the respect of her fellow employees.

NATIONAL TELEPHONE STAFF BENEVOLENT SOCIETY, LONDON.

GRANTS to the amount of £23 16s. were made during April, 1911.

Total number of grants made since formation of society, 343; value, £1,076 15s. 4d.

Amount of subscriptions received during April—£11 3s. 8d.

Donations received—£15 0s. 9d.

Membership.—New, 29; ceased, 13; number of members at April 30, 2,913.



INVENTORY STAFF (DIVISION L).

LOCAL TELEPHONE SOCIETIES.

Dover.—The seventh and last meeting for the 1910-11 session was held on April 21. The evening was devoted to the discussion of "Knotty Points," which various members of the staff had submitted, and which other members of the staff whose departments were affected were invited to answer in writing. Each question was in turn read out, together with its answer, and discussion of a few minutes' duration was then allowed. The evening proved a most interesting one, and should have a beneficial effect on the staff.

Douglas.—The final meeting of the telephone society was held on April 21 at the Victoria Café, Douglas, the District Manager presiding. The balance sheet was passed, and new officers elected for next session. Prizes were given as follows:—Papers read: Instrument Department—W. E. Cain, T. Clucas, E. H. Vick. Office—J. E. Cowley. Gang—J. King. Best time keepers:

Instrument Department—E. H. Vick. Office—E. Qualtrough. Gang—J. Kennedy and J. Bain. Storekeeper—W. Quayle. Night Operator—H. Kelly. Instrument inspectors for lowest faults on district: R. Gawne, W. E. Cain, T. Clucas. Keeping work up to date: J. E. Cowley, E. Qualtrough, C. Quayle, T. Cain, and W. Quayle. Suggestions: J. King, Acting Foreman; J. E. Cowley, Clerk. Books on electrical subjects have been purchased to lend to members. A new blackboard stand has been purchased, and after paying off all debts there is a small balance to next session. After the meeting the District Manager kindly entertained the members to supper, lantern entertainment and musical evening, in which the following members took part:—Misses J. Barnes and A. G. Ireland; Messrs. J. King, W. Quayle, P. Campbell, E. T. Shimmin and J. E. Cowley. Phonograph selections were also provided by the District Manager.

Dundee.—The closing meeting of the session was held in the Masonic Hall, Meadow Street, on April 27, Mr. A. Mackenzie, Traffic Manager, being in the chair. A paper was read by Mr. W. Brown, District Manager, who took for his

subject "Telephone Societies and Other Aids to Efficiency." Mr. Brown traced the history of the telephone society from its inception and touched on several matters which he thought might be taken up with a view to improved results. The question of efficiency was very fully dealt with in its relation to the various departments, and Mr. Brown was heartily thanked for a most interesting paper. Office bearers were then elected for next session.

Gloucester.—The seventh and last meeting of the session was held on April 27. Mr. C. Elliott, District Manager, being in the chair. Three excellent papers were given, as follows:—"Operating," Miss M. Beard; "D. P. Work and Block Distribution," Mr. E. A. Rich; "Fees Department Work," Mr. J. Jenkins, which afterwards provided plenty of valuable discussion. A committee was then formed to judge the papers for two prizes given by the District Manager and Engineer respectively. The meeting then terminated with a vote of thanks to the chairman, and another very successful session ended.

Hastings and Eastbourne.—A meeting of this society was held at the Y.M.C.A. Rooms, Hastings, on April 24, when a very interesting and useful paper was given by Mr. L. Parsons, Chief Clerk, Brighton, on "The Importance of Local Records." The visitors numbered three, these being from the Inventory Department, which was at Hastings. A lengthy discussion took place at the end of the lecture the lecturer most ably answering all questions raised. Mr. R. W. Bell, of the Inventory Department, occupied the chair.

Leeds.—The meeting held on April 26 was of a general character. First, a paper was read by Miss E. M. Brooks, entitled "Applicants," which gave a short but pithy description of the mode and incidents connected with the selection of candidates for the operating staff. Next the president (Mr. W. V. Morten) presented awards, principally educational books, to 23 members who had made full attendances during the session. Then the election of officers and committee took place, with the following result:—President, Mr. W. V. Morten; chairman, Mr. E. J. Gillett; secretary, Mr. C. H. Crawshaw; treasurer, Mr. T. W. Lawrence; committee, Miss K. Fotherby, Mr. J. H. Swain, Mr. T. W. Baker, Mr. W. R. Senior, Mr. T. Parker, Mr. G. Sargeant and Mr. H. S. Casson. Lastly, refreshments were partaken of, and a few minutes spent in social intercourse.

Newcastle.—This society held its seventh and general meeting on April 10 before a moderate attendance, Mr. J. P. Urwin presiding. Owing to the transfer to the Inventory staff of Mr. Livingstone, who was to give a paper on "Electric Units and Measurements," no paper was read. The secretary and treasurer submitted reports on the society's work and finances, which were considered satisfactory. Officers were appointed for next session and a general discussion ensued on the best means of making the society more interesting and of bringing the members of the staff more into touch with it for the next session.

North Midland.—A meeting was held on April 27 at MacGregor's Café, Wolverhampton. The paper on "Electrical Transmission and Transmitters" was by Mr. W. Dalton, Local Manager, Walsall, who very clearly dealt with his subject, illustrating it with many diagrams prepared by himself. The number present was 50 and the chair was occupied by Mr. C. F. Spears. After the above paper there was a fault-finding competition, for which a prize was given for the first one finding the fault and rectifying it. Mr. C. F. Craddock won the prize. This closed a very interesting evening.

Plymouth.—On May 10 an interesting paper was given by Mr. E. P. Stokes on "Line Construction," on which occasion 80 per cent. of the members were present and a good discussion took place. Mr. G. A. G. Evans was presented by Mr. G. Hooper (District Manager) on behalf of the staff with a suit case as a token of appreciation and esteem. He had acted as hon. secretary and treasurer of the Plymouth Telephone Society since it was organised five years ago. The presentation was made at the annual staff dinner on April 21.

Portsmouth.—On May 10 the session of 1910-11 was brought to a close when Mr. Stanley Waincoat gave a paper on "Wireless Telegraphy." Most of the forms and methods of wireless telegraphy were explained by some good lantern slides which had been made by the lecturer; the theoretical as well as the practical side was explained, and a very interesting evening was spent. The chair was taken by Mr. Thomas Collins. A discussion followed, and a hearty vote of thanks was passed to Mr. Waincoat for his paper.

Southern (London).—The last ordinary meeting of the session took place on May 8 at Hop Exchange, when Mr. F. Woollard read an instructive paper on the "Conversion of Energy for Telephone Purposes." The descriptions, also aided by slides, of the Mercury arc, Noden valve, and electric magnetic rectifiers were very clear, and as each was quite new to most of the audience the subject was engrossing. By the instructive data which Mr. Woollard gave he quite sustained his prophecy that in the future the engine will be the medium of conversion of power. Very interesting curves were shown relative to power costs and the economies which can be effected by a judicious selection of the power plant, and also the periods during which it is run. Mr. T. M. Inman occupied the chair. The annual general meeting is fixed for June.

North East (London).—The last meeting of the session was held at East Exchange on April 26. Mr. F. Morley Ward being in the chair. Papers were read by Messrs. T. Wade and F. L. Sherburn, entitled "Faultfinder's Duties" and "Fault Clerks Statistics" respectively. Mr. T. Wade, in the course of a very interesting and humorous paper, described the various connections and make-offs used in overhead routes, the nature and courses of faults and how they are localised. Mr. F. L. Sherburn gave a short account of the progress of the district for the past four years on lines and stations. He showed curves of faults in lines, instruments, etc., for the same period. He also gave an account of a method for calculating the number of inspectors required for a given area. The following officers were elected for next session:—President Mr. G. J. Gadsby; vice-presidents, Mr. F. Morley Ward, Mr. F. J. Saunders; hon. secretary and treasurer, Mr. F. L. Sherburn; committee, Messrs. D. C. Crouch, W. J. Downes, J. Gardiner, W. W. Gibson, H. Missen and W. Rowell.

STAFF GATHERINGS AND SPORTS.

Brighton.—Not long ago the Inventory staff presented Mr. F. W. Roberts with a silver tea service as a memento of his long association with the Company, and on Friday, May 5, some of the Brighton staff seized the opportunity for a friendly dinner by way of a final farewell. This took place at Chatfield's Hotel, West Street, where 22 sat down to an excellent spread, the principal members of the staff present including Mr. C. F. Moorhouse (District Manager), Mr. L. Parsons (Chief Clerk), Mr. H. Hatton (Electrician), Mr. G. Dowman (Engineer), Mr. F. J. Frost (Traffic Manager), Mr. D. Wallace (Contract Manager), Mr. J. H. Watkins (Engineer-in-Chief's Office, London), Mr. J. G. A. Ewing (Engineer, Warrington), and Mr. H. Drury (District Office), who carried out all arrangements. A smoking concert followed, with a large accession to numbers, those contributing to the harmony of the proceedings being Messrs. S. Lindfield, H. Lutchford, J. Gladman, W. Knight, C. Hooper, F. W. Roberts, H. Baker and F. Roberts. Messrs. Starley, Gladman and F. A. Gillam were accompanists. During the evening Mr. Moorhouse, in a eulogistic address, gave the toast of the evening, "Mr., Mrs. and Miss Roberts," wishing them health, happiness and success in Buenos Aires, where Mr. Roberts will be Engineer-in-Chief to the United River Plate Telephone Company. He also briefly alluded to the various efforts made by Mr. Roberts on behalf of both the Company and the staff, specially mentioning the benevolent society, the telephone society and the Staff Transfer Association. The toast was accorded musical honours, and Mr. Roberts very feelingly responded, paying a glowing tribute to the qualities of the Brighton staff, and recalling the happy times they had spent together. He wished all present success, and parted with them with much regret. Mr. L. Parsons followed, and spoke in high terms of Mr. Roberts and his relations with the staff.

Dublin.—Although late in the season, the Dublin staff engaged in two football matches in April, on the 22nd and 29th. The team was drawn mainly from the electrical and clerical staffs and was very successful, winning both matches, the first by two goals to one and the second very easily by seven to one. It is hoped that a regular club will be formed next season as, judging by the display given by the team, there is no doubt that a strong eleven could be raised.

London.—On May 20 a very successful outing was held by the electrical staffs of Avenue, Bank and London Wall exchanges. A party of about 35 journeyed to the "Fish & Eels" Hotel, Broxbourne. The afternoon was devoted to sports and boating. After an excellent repast Mr. W. E. Smith took the chair (supported by Messrs. Humphery and Grove) at an evening concert under the direction of Mr. W. Riches. It is rumoured that owing to the great success it has already been decided to hold another during the season.

Luton.—On May 18 the Bedford local staff, with a few friends, undertook the first of what is hoped will be a series of evening outings. The trip (which was made on bicycles and by brake) was through country which at this time of the year is very picturesque. An enjoyable time was spent.

Manchester.—*Swimming Club.*—The second season of this club has opened with a gratifying increase in membership, especially in the ladies' section, the number of members at date being 43 ladies, 39 gentlemen. An instructress has been appointed for the ladies, and it is hoped that at the gala (which it is intended to hold this season) the results of the tuition will enable many of the ladies to compete. A very satisfactory feature of the past season's work has been the success of Miss Doris Robinson (Fees Department), Miss C. Reynolds (City Exchange) and Mr. T. W. Williamson (District Office) in obtaining the medallion and certificate of the Royal Life Saving Society. It is confidently anticipated that a larger number of members will enter for this very useful examination next winter.

Nottingham.—The Nottingham District National Telephone Provident Society's balance sheet for the past year shows a very satisfactory state of affairs and proves how beneficial the society has been to the staff. Out of the total receipts of £57 9s. 11d. no less than £24 13s. 6d. was distributed to sick members, and £15 10s. to various charitable institutions in Nottingham, Derby and Lincoln.

MR. PERCY R. COCKREM, previously mentioned in the JOURNAL as having been transferred to Head Office Inventory staff, was the recipient of a handsome bookcase from the staff of the Nottingham district and the Engineer-in-Chief's Department at the Nottingham factory in recognition of his valuable services as local secretary to the Staff Transfer Association, which post he has most reluctantly had to resign owing to his transfer. The presentation was made by Mr. Briggs.

Plymouth.—The annual staff dinner and smoking concert took place on April 21 at Genoni Café, when about three dozen of the staff, under the chairmanship of Mr. G. Hooper (District Manager) had a most enjoyable evening. The concert programme, which was arranged by Mr. A. Bennett, was exceptionally good and was largely contributed to by the staff.

Swansea.—The annual dinner and smoking concert promoted by the Swansea district Engineering Staff took place at the Hotel Grosvenor, Swansea, on April 29, when a company numbering 70 spent a most enjoyable evening. In the absence of Mr. W. E. Gauntlett (District Manager), who was unable to be present during the earlier part of the evening, but was fortunately able to attend later on, Mr. W. J. Hodgetts (Engineer) presided, and was supported by Mr. W. H. Crook (Chief Clerk) and Mr. A. G. Bristow (Traffic Manager). After an excellent repast a first-rate musical programme was carried out, the artistes being Messrs. F. Tagholm, J. A. Thomas, A. Harris, L. C. Manning, B. Francis and F. Dennis. Mr. H. P. Poole did excellent service as pianist. During the evening Mr. Morgan Evans, a member of the Line Staff, who was recently married, was presented by Mr. W. E. Gauntlett, on behalf of the Engineering Department, with a handsome clock. Messrs. W. King and F. Tagholm, who acted as secretary and musical director respectively, are to be congratulated on the signal success attending their efforts.