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TELEPHONE MEN.

LI.—LT.-COL. SIR ALBERT KAYE ROLLIT, D.L., J.P.

SIR ALBERT KAYE ROLLIT is a Yorkshireman, having been born at Hull, and a Londoner by education and business connections, for he was educated at King's College and the University of London, of each of which he is a Fellow, and also a Member of the Senate of the University and of the Council of his College. He took his B.A. degree, with first-class honours, in 1863; his LL.B, with double first-class honours in Laws and the Principles of Legislation, in 1864; subsequently he proceeded to his LL.D., double first-class honours, and became the University Gold Medallist in 1866; received the D.C.L. of Montreal in 1870, D.C.L. of Durham in 1890, and D.C.L. of Victoria in 1902, and subsequently the Litt.D. of Leeds. Then Sir Albert won the Incorporated Law Society's prize, and was elected to the premier position of his profession, the Presidency of the Law Society: he was chiefly instrumental in establishing, and drew up the report on which was founded, its great and most successful School of Law in 1903. Sir Albert was also District Registrar of the High Court of Justice and Registrar of the County Court at Hull for many years.

Sir Albert is a politician, both imperial and municipal, having been member of Parliament for twenty years, in which capacity he is said to have passed more Acts of Parliament than any other unofficial member, including the County Courts Act, 1903, which doubled the jurisdiction of those tribunals, and the Registration of Deeds of Arrangement Act. He has also been Alderman, Sheriff and Mayor of Hull in 1883-4-5. He is an Honorary Freeman of the City of Hull, and also of Huddersfield; Lieutenant of the City of London, and also of the Tower of London; Deputy Lieutenant of Yorkshire; and J.P. for the County of London, for the County of Berks, and for the Royal Borough of Windsor. He is also an Elder Brother of Trinity House. He is, too, a leader in Technical and Commercial Education, and a horticulturist, being President of the National Chrysanthemum Society, and an active member of the Council of the Royal Horticultural Society, and formerly for many years Chairman of the Hull Botanic Gardens. He is, moreover, interested in shipping and commerce generally, and was a Director of the Hull Docks and the representative of the Board of

Trade on the Humber Conservancy Commission. He is strongly opposed to the spirit of insularity, and has given practical effect to his opinions by an intimate and most varied connection with other countries. That he is much esteemed on the other side of the channel is evidenced by the fact that President Loubet made him an Officer of the Legion of Honour, and also of the French Academy, for his active service in favour of l'Entente Cordiale, the campaign for which he commenced at Bordeaux in 1895, on the occasion of the visit of the Lord Mayor of London, Sir Walter Gilbey, and

himself to the Bordeaux International Exhibition. Other honours that have fallen to him include those of Grand Cross of the Order of Merit of Portugal for Commerce, and the high distinction of honorary membership of the Royal Geographical Society of Lisbon; also Grand Cross of St. Sava for Science, Art and Commerce, Grand Officer of Belgium (Order of Leopold), of the Crown of Italy, and Grand Commander of the White Eagle of Servia, the Lion and the Sun of Persia, and of China (the Double Dragon), conferred upon him by Li Hung Chang—whom he received as President of the London Chamber of Commerce; Knight Commander of Russia, Austria, Denmark (the Dannebrög), of the Rising Sun of Japan, and of the Mejdidi and the Osmanieh of Turkey, the Crown of Roumania, and of the English Order of St. John.

Among his many other avocations and pursuits Sir Albert was President of the Yorkshire Society, of the Society of Yorkshiremen in London, Lt.-Col. in the Royal Engineer Militia (Submarine Miners, Humber division), he having become a Volunteer on the first day Volunteers were enrolled in 1859, while he subsequently

raised a Volunteer, and afterwards a Militia, Division of Submarine Miners, with headquarters at Paull Fort on the Humber. As a Volunteer he was a marksman. He was for several years President of the Association of Chambers of Commerce of the United Kingdom, and also of the London and Hull Chambers, and also a Director of the British Chamber of Commerce in Paris, where for some years he had a residence.

Sir Albert was a steamship owner at Hull, London, Newcastle and Lisbon, as a member of the leading firm of Bailey &



Leatham—which had regular lines to Russia, Denmark, Germany, Belgium, the Adriatic and Black Seas, and carried the Royal Mails to Constantinople and to the Portuguese Colonies in Africa. Sir Albert Rollit has been, from its first foundation in 1891, and is still Chairman of the Statutory Inspection Committee of Savings Banks, in which he rendered honorarily for many years the best and most responsible public service, in the protection of between 60 and 70 millions sterling of deposits, in acknowledgment of which his portrait, painted by Sir Hubert Herkomer, R.A., and exhibited at the Royal Academy, was presented to him by the Banks; he has also served for many years in the position of President of the Municipal Corporations Association of Great Britain, consisting of the City of London and all the county and other municipalities; and he is a member of the Commercial Intelligence Committee, and also of the Shipping and Lighthouses Committee, of the Board of Trade, and, representing the Royal Horticultural Society, of the Joint Committee of the Education Department and the Board of Agriculture; also of the Council of Foreign Bondholders, and of the Local Marine Board of London.

It is his connection with the telephone, however, which will chiefly interest our readers. Sir Albert Rollit, as an electrician, took a great interest in Dr. Graham Bell's invention from the very first, and was presented by him with the second pair of telephones brought into this country. He was for many years President of the Hull Literary and Philosophical Society and other scientific societies, and frequently lectured on the subject in those early days and also upon the first phonograph invented by Edison. He was a member of the Board of the New Telephone Company, of which the late Duke of Marlborough was Chairman, and from the absorption of that company by the National Telephone Company in 1893 he has held a seat on the Board of the latter Company, of the Works Committee of which he is a member.

Sir Albert Rollit resides at St. Ann's Hill, near Chertsey-on-Thames, in the highlands of Surrey, formerly the home of the Rt. Hon. Charles James Fox, the eminent Liberal statesman of a century ago, and he is Commodore of the Thames Valley Launch Club, and owns the steam launch *White Rose of York*. Sir Albert has been married twice—to Eleanor Anne, daughter of Mr. William Bailey, J.P., steamship owner of Winestead Hall, Holderness, E. Yorks, by whom he has one daughter Eleanor Kaye, married to Captain Ellison, late 2nd Life Guards, of Boultham Hall, near Lincoln, and secondly, to Mary Caroline, Duchess of Sutherland, daughter of the Rev. A. Michell, D.D., Principal of Hertford College, Oxford, and Public Orator of the University.

Sir Albert is descended from Peter Rollit, who was French Secretary of State to Mary, Queen of Scots, and shared her imprisonment in Sheffield Castle, where he died. His tomb still bears the words "*Rollit, Gallus.*"

Sir Albert is never tired of promoting the cause of education, technical, commercial and general; his principle is that a man should know something of everything and everything of something. He believes in the encouragement of learning by the institution of scholarships, and in the advantages of travel to widen the mental horizon. He is himself a man of wide and varied culture.

Sir Albert Rollit sat as a "Progressive and Independent Unionist" member for Islington (South Division) from 1886 to 1906. That his independence was no empty boast he proved by his action on the Free Trade question, which probably cost him his seat in 1906. The closing up of the Conservative ranks against Free Traders drove him into the Liberal camp, and he contested the Epsom Division of Surrey, near which he resides at Chertsey, in that interest in 1910, but without success.

Sir Albert is a keen business man and a ready and witty speaker—a fact well known to the staff of the National Telephone Company, for his speeches are one of the established institutions of the Annual Staff Dinner. On several occasions he has made special efforts, which were much appreciated by the staff, to attend this annual gathering. His good and always illustrative stories are proverbial.

NOTTINGHAM FACTORY OUTING.

A PARTY, comprising a number of the staff of the "Sundry Instruments Department," Nottingham Factory, had a splendid trip to Liverpool and New Brighton on June 25, the day being fine. The party travelled by reserved carriages, and landed in Liverpool about twelve o'clock noon, lunch being served on the train.

THE TELEPHONE LOAD LINE.

By H. DEANE, Assistant Traffic Manager, London.

(Concluded from page 75.)

I pass now to the requisite staff an exchange demands in order to deal with its originating and incoming traffic. For any particular load line two points must be considered—namely, the staff required to deal with the traffic during the busy hour, and that required to deal with the day traffic. It by no means follows that the staff based on the busy hour traffic is that which can deal with the day traffic. We must, I think, agree with this principle: that just as it is necessary for a clerk to do a day's work so it is necessary for an operator to deal with a fair day's load. This naturally suggests that we should have figures representing fair days' loads for operators at different types of exchanges. Such figures are, as a matter of fact, much better to work upon, for general purposes, than anything else. The number of working "A" positions at an exchange is, of course, ascertained from the busy hour traffic, and they should naturally all be filled during the busy hour. When it happens that more "A" operators are required during the busy hour than are required for the day traffic we have to requisition the services of the half-time operator. It will be noticed in curve No. 4 that during the busy half-hour the operators appear overloaded. This is due to the fact that the number of working "A" positions is based on the busy hour which is usually less than double the busy half-hour as regards traffic. At Holborn, in October last, the busy half-hour was quite a rush period. If we had based the number of working positions on the busy half-hour traffic, we should have required four or five positions more than the number based on the busy hour traffic. We should also have had to employ four or five additional "A" operators at the switchboard during the busy half-hour. We see therefore the economic reason for taking the busy hour as the standard when considering switchboard equipment. By the busy hour is also meant the busy even hour, but there are some who think that this restriction is unnecessary.

Now if we wish to ascertain theoretically the number of "A" operators required to deal with the day traffic, we simply have to determine by the method I have already described the number of "A" operators required half-hour by half-hour. If we add these figures together, we obtain the number of operator half-hours required. Knowing the number of hours an operator works during the time she is on duty, we can easily calculate the number of operators required. If the number of operators required to deal with the day traffic exceeds the number of operators we require during the busy hour, it follows that some operators must come on duty after the busy hour is over. On the other hand, if the number of operators required for the day traffic is less than the number required during the busy hour, we must obtain the requisite number of individuals for the busy hour traffic by substituting two half-time operators for a full-time operator until the conditions for the day and busy hour traffic are satisfied.

Having once obtained the number of operators theoretically required to deal with the day traffic in this way, it is easy to ascertain for particular exchanges what day load each operator takes. In the lower portion of table G, I give the day loads for three exchanges obtained by actual calculation. For practical purposes, however, and for general calculations the day loads given in the upper portion of the table, are adopted. These loads allow a sufficient margin for the fact that in actual practice it is impossible to prevent some wastage especially in the arrangement of operators' meal times. If we used a strictly theoretical day load, we should sometimes find that it would be impossible to allow a considerable proportion of the operating staff to have lunch until late in the afternoon. The day loads at other than the standard type of exchange vary in the same proportion as the busy hour loads given in table D.

It is unfortunate that for general calculations we cannot employ a standard day load for "B" operators, any more than a standard busy hour load, but this point will be readily appreciated when it is considered that different kinds of "B" positions imply different loads.

TABLE I.

ARRANGEMENT OF "A" OPERATORS' DUTIES ILLUSTRATING PRINCIPLE OF MAKING EACH DIVISION SELF-SUPPORTING. EXCHANGE WITH 60 WORKING "A" POSITIONS (5 DIVISIONS OF 12). SIXTY-FIVE "A" OPERATORS' REQUIRED ON DAY LOAD.

	8	8.30	9	9.30	10	10.30	11	11.30	12	12.30	1	1.30	2	2.30	3	3.30	4	4.30	5	5.30	6	6.30	7	7.30	8
Theoretical number of "A" operators required..	10	14	23	45	55	60	60	60	56	48	36	34	47	54	55	55	55	55	50	41	23	15	10	10	
Practical number of "A" operators required..	10	15	25	45	55	60	60	60	55	45	35	35	45	55	55	55	55	55	50	40	25	15	10	10	
Preliminary trial with full-time operators	8-4.30	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10							
8.30-5	..	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5							
9-5.30	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10							
9.30-6	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20							
10-6.30	10	10	10	10	10	10	10	10	10	10	10	10	10	10							
10.30-7	5	5	5	5	5	5	5	5	5	5	5	5	5							
11.30-8	5	5	5	5	5	5	5	5	5	5	5	5							
Total	10	15	25	45	55	60	60	65	65	65	65	65	65	65	65	65	65	55	50	40	20	10	5	5	
Final arrangement of duties	8-4.30	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10							
8.30-5	..	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5							
9-5.30	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10							
9.30-6	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15							
9.30-1	3.30-8	..	..	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5						
10-6.30	10	10	10	10	10	10	10	10	10	10	10	10	10	10							
10.30-7	5	5	5	5	5	5	5	5	5	5	5	5	5							
11.30-8	5	5	5	5	5	5	5	5	5	5	5	5							
Total	10	15	25	45	55	60	60	65	65	65	60	60	60	60	60	65	65	55	50	40	25	15	10	10	
Operator half-hours available for meals	5	10	20	25	25	15	5	5	10	10								
Meals	
Operator quarter-hours available	
Lunch	11.30-12.15	5	5	10	10	20	20	25	25	25	25	15	15	5	5	5	5	10	10	10	10				
12-12.45	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5							
12.15-1	5	5	5	5	5	5	5	5	5	5	5	5	5	5							
12.30-1.15	10	10	10	10	10	10	10	10	10	10	10	10	10							
12.45-1.30	5	5	5	5	5	5	5	5	5	5	5	5							
1-1.45	10	10	10	10	10	10	10	10	10	10	10							
1.15-2	10	10	10	10	10	10	10	10	10	10							
1.45-2.30	10	10	10	10	10	10							
2.30-2.45							
2.45-3							
3-3.15							
3.15-3.30							
3.30-3.45							
3.45-4							
4-4.15							
4.15-4.30							
4.30-5							
Operators above or below traffic requirements	

WHEEL OF DUTIES FOR EACH DIVISION.

Duty.	Lunch.	Tea.
8-4.30	11.30-12.15	2.30-2.45
9.30-6	12.45-1.30	3.30-3.45
8.30-5	12.15-1	3-3.15
9.30-1 3.30-8		4.30-5
9-5.30	12.30-1.15	3.15-3.30
10-6.30	1.15-2	4-4.15
8-4.30	12-12.45	2.45-3
10-6.30	1.15-2	4-4.15
9-5.30	12.30-1.15	3.30-3.45
10.30-7	1.45-2.30	4.15-4.30
9.30-6	1-1.45	3.45-4
11.30-8	1.45-2.30	4.15-4.30
9.30-6	1-1.45	3.45-4

The last great use of the load line record is that which affects the design of exchange equipment. The time at my disposal will prevent me from considering this subject very fully. What the traffic engineer first wants is a good summary of operating statistics. The official summary is good as far as it goes, but it does not go far enough. For some time past a distinct want has been felt for a more detailed summary of the statistics, and this has been supplied to a great extent by the Metropolitan Traffic Department. Our summary is one of the most useful records we have.

These statistics should, to begin with, refer to all exchanges. If the Traffic Department is responsible for furnishing the figures in connection with new exchanges, or the extension of existing exchanges, a complete record is of course very necessary. I wish it to be understood that this in no way affects what I have already said concerning the number of times the load line should be taken. Separate totals, averages and percentages for groups of exchanges are desirable. It will be understood that

there are certain conditions that prevail at small exchanges which do not blend with the conditions at large exchanges. Our present practice is to group the C.B. exchanges of 500 subscribers and over; the magneto exchanges of 500 subscribers and over; and all exchanges of less than 500 subscribers. Perhaps it would be more logical to group exchanges together which exceeded a certain amount of traffic. The distinction between exchanges on the C.B. and on the magneto systems should, however, still be maintained.

Table J is a copy of a portion of our operating statistics. The first figures of interest are those in columns 8 and 9, which should always be considered together. If all the working "A" positions are not filled during the busy hour, an explanation should be forthcoming. Where the equipment per position is such as will produce the standard load during the busy hour, then all the positions should be filled during the busy hour. Among the smaller and older exchanges it often happens that the equipment per position is

insufficient to produce the standard load during the busy hour. This implies that the "A" operators can never work at their maximum efficiency. It sometimes happens that the "A" positions are filled during the actual busy hour, but not during the busy even hour.

TABLE J.

THE NATIONAL TELEPHONE COMPANY, LIMITED, TRAFFIC DEPARTMENT, LONDON.

OPERATING STATISTICS COMPILED FROM A ONE DAY RECORD (8 A.M. TO 8 P.M.) TAKEN DURING WEEK ENDING OCT. 30, 1909.

Type of Switchboard Equipment.	Derivation.	Gerrard.† Stand.
1 Number of unlimited rate direct exchange lines (service lines included) ..	—	3,452
2 Number of message rate direct exchange lines ..	—	3,980
3 Number of measured rate direct exchange lines ..	—	263
4 Number of party line rate (main circuits) ..	—	—
5 Number of call offices ..	—	264
6 Total number of direct exchange lines ..	1 + 2 + 3 + 4 + 5	7,959
7 Number of exchange stations ..	—	18,777
* 8 Number of working "A" positions ..	—	99
* 9 Number of "A" positions filled during busy hour ..	—	99
10 Number of direct lines per working "A" position ..	6 : 8	80
11 Number of originating calls per day ..	—	110,424
12 Number of originating calls per direct line per day ..	—	13.9
13 Number of originating calls per exchange station per day ..	11 : 7	5.9
* 14 Number of originating calls per "A" operator per day (2 half-time operators — 1 full-time operator) ..	11 : 36 (B)	818
15 Number of originating calls per busy hour ..	—	14,614
* 16 Number of originating calls per "A" operator per busy hour ..	15 : 9	148
17 Originating traffic: ratio of day to busy hour ..	11 : 15	7.6
18 Average value of junction call in terms of local call ..	determined	1.6
19 Number of valued originating calls per day ..	11 valued	158,113
* 20 Number of valued originating calls per "A" operator per day (2 half-time operators — 1 full-time operator) ..	19 : 36 (B)	1,171
21 Number of valued originating calls per busy hour ..	15 valued	21,162
* 22 Number of valued originating calls per "A" operator per busy hour ..	21 : 9	214
23 Number of originating junction calls per day ..	—	79,481
24 Number of outgoing junctions (excluding junctions used exclusively for lending purposes) ..	—	745
* 25 Number of calls per outgoing junction per day ..	23 : 24	107
26 Percentage of outgoing junction calls ..	(23 × 100) : 11	72
* 27 Number of working "B" positions ..	—	33
28 Number of incoming junctions ..	—	846
* 29 Number of incoming junctions per working "B" position ..	28 : 27	26
30 Number of incoming junction calls per day ..	—	97,562
* 31 Number of calls per incoming junction per day ..	30 : 28	115
32 Number of incoming junction calls per working "B" position per day ..	30 : 27	2,956
33 Number of incoming junction calls per busy hour ..	—	13,471
* 34 Number of incoming junction calls per working "B" position per busy hour ..	33 : 27	408
* 35 Average busy hour load which "B" operators should take based on working "B" positions of different classes ..	calculated	325
36 Number of "A" operators sanctioned— (A) 1 half-time operator = 1 full-time operator .. (B) 2 half-time operators = 1 full-time operator ..	—	135
37 Number of "B" operators sanctioned ..	—	38
38 Number of "A" and "B" operators sanctioned in excess of working "A" and "B" positions ..	(36 (A) + 37) - (8 + 27)	+ 41
39 Number of supervisors sanctioned ..	—	14
40 Number of monitors sanctioned ..	—	9
41 Managerial, clerical and record staff ..	—	13

Type of Switchboard Equipment.	Derivation.	Gerrard.† Stand.
42 Ratio of "A" and "B" operators to supervising staff ..	(36 (A) + 37) : (39 + 40 + C. in C.)	6.9
43 Number of operators at private branch exchanges— (A) 1 half-time operator = 1 full-time operator .. (B) 2 half-time operators = 1 full-time operator ..	—	68
44 Total staff on which relief is sanctioned (less residents) ..	(36 (B) + 37 + 39) : (+ 40 + 41 + 43 (B))	68½ 27½
* 45 Number of relief staff sanctioned ..	—	27
* 46 Number of absentees, including absentees at private branch exchanges ..	—	14

* These columns are of special interest for purposes of comparison and should be carefully studied.

† Not including exchange manager or assistant.

‡ Record taken at these exchanges 8 a.m. to 10.30 p.m.

It is well to point out that if for some reason the requisite number of "A" positions is not filled during the busy hour, column 22 will be artificial. In the case of small exchanges where no "B" operators exist, and where the incoming traffic is dealt with by "A" operators, the incoming calls have to be valued and added to the originating traffic.

Columns 34 and 35 are interesting. We have a comparison between the actual busy hour loads handled and those which should be handled by "B" operators on the average when the various classes of "B" positions are considered. Unfortunately, however, the figures in column 34, if they differ from those in column 35, only give a general indication of the course to be adopted. We cannot make a simple calculation as we can for the number of "A" operators required during the busy hour. Each case has to be dealt with on its merits. It must be remembered that different groups of junctions have their particular busy hour, a point which, in practice affects the question.

The calling rate, the percentage of junction working and the ratio of the day to the busy hour traffic (columns 11, 26 and 17) are the three most important items in connection with the design of "A" equipment. Once we are sure of these items, and are satisfied that our junction call valuation is reasonable, everything else is comparatively simple.

As regards the ratio of the day to the busy hour traffic, it is often difficult to estimate in particular cases the changes, if any, that will occur in this figure in the course of time. Speaking generally, this ratio decreased during 1907 and the first part of 1908. Since then the figure has shown a tendency to increase, as will be seen from curve No. 7. It is difficult to account for this change, unless it is assumed that there is some connection between the ratio and the class of subscribers connected. Everyone knows that during the past year the rate of connecting flat rate subscribers has increased. The figures I have given in curve No. 7 show this clearly. If there is any connection between these figures and the curve it must be that flat rate subscribers, on the average, distribute their calls during a longer period of the day than limited rate subscribers do.

A question which is often asked is to what extent we should expect this ratio to alter as an exchange increases in size. From an examination of three years' figures it would appear as if the ratio increases gradually as an exchange grows to about 350 direct lines, and then remains wonderfully constant.

The natural tendency of the percentage of junction working is to remain steady. Where an exchange shows variations in this figure, in the past, an explanation is generally simple. At Holborn, for instance, where the rate of increase in direct lines has been steady, the variation in the percentage of junction working has been negligible during the past three years. At Avenue, where the direct lines have decreased in number for some years, the percentage of junction working has increased gradually. This is naturally what we should expect. If there has been no development at an exchange for some time, the percentage of junction working usually increases because the system, as a whole, is increasing. At some exchanges, the development is great compared with that at other exchanges in the same group. Here the percentage of junction working will fall. London Wall Exchange is an example of this.

I will only speak of the rate of calling in very general terms. When the message rate system was introduced, the general rate of calling naturally began to fall. The average column in table K is

an indication that the past year or so has seen an end to this decrease, and that the general rate of calling is now increasing. It will be seen how the figures relating to the measured and flat services have shown a continued increase. The variations in the call office rate of calling are due probably to abnormal canvassing,

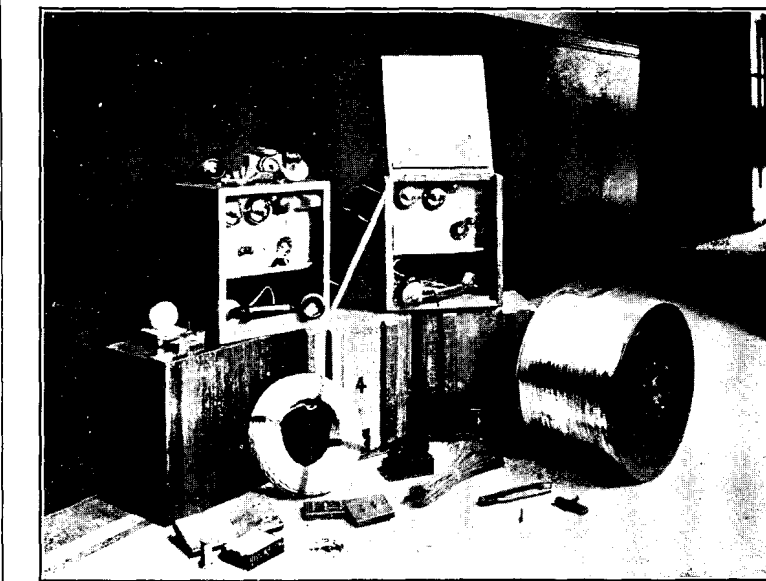
NOTES ON THE TELEPHONE INSTALLATION FOR THE BRITISH ANTARCTIC EXPEDITION, 1910.

By B. S. COHEN.

In connection with the presentation of a telephone installation to Captain Scott's Antarctic Expedition, an illustration of the apparatus will be interesting. In this photograph will be seen the five instruments in wooden cases. Two of the instruments with hinged lids are designed for fixing in the open on poles, where they will be used in connection with observations of the Aurora Borealis, and will require to stand the rigour of at least two arctic winters. Owing to the extreme dryness, due to the very low temperature, these wooden instruments will, it is thought, stand the exposure better than if placed in the open during a couple of English winters.

The lowest temperature the apparatus will have to stand will be about - 70° F., i.e., 102° of frost.

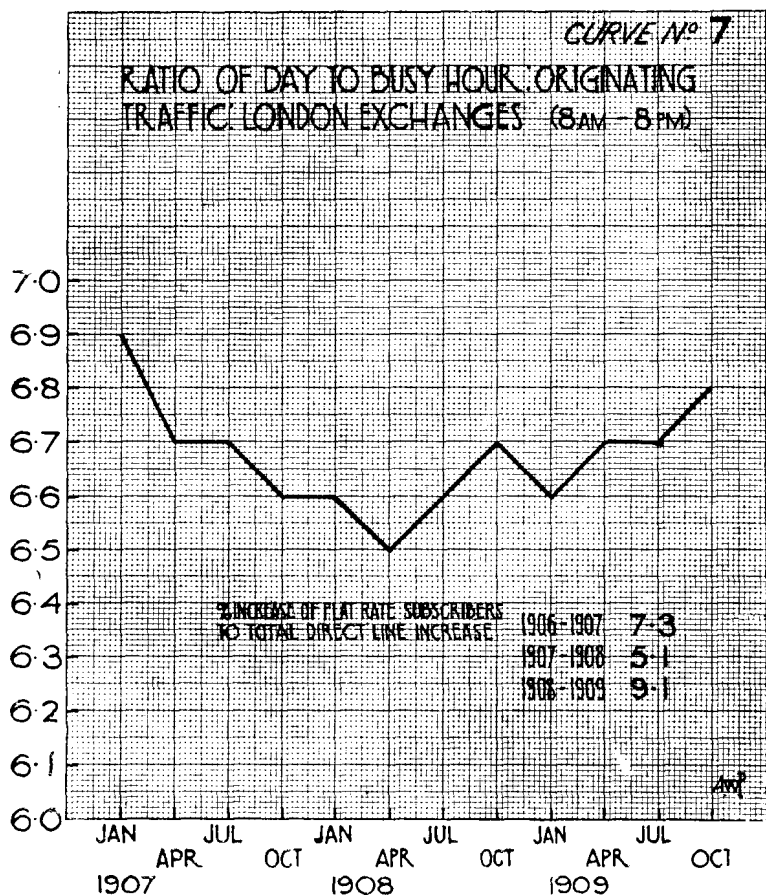
On the right is one of six drums of wire. The latter is bare uninsulated aluminium 19 S.W.G., and on each drum there is about thirteen miles, weighing 100 lbs. The drums are iron, and are of a convenient size to mount on the back of a sledge, from which the wire will be paid out. It will be laid direct on the snow, and, owing to the extreme dryness already referred to, no trouble from leakage is anticipated, although one of the lines



will be 26 miles long. Metallic circuits will be run, as it will probably be impossible to obtain an earth return. A number of McIntyre sleeves are supplied for jointing purposes. The instruments are Ericsson hand micro-telephones with the receiver and transmitter in series, and at the main but a common battery of 24 volts is inserted in series in the line circuits to provide talking current, as owing to the extreme cold it was not considered possible to fit local batteries at each instrument. The battery is not specially supplied for telephonic purposes, but is used also in connection with the scientific work of the expedition. It is interesting to note that the low temperature will improve the transmission over the aluminium lines by something like 15 per cent., owing to the increased conductivity.

The receivers and transmitters are supplied with wooden earpieces and metal mouthpieces respectively in addition to the ordinary ones, in case the latter, which are ebonite and celluloid, will not stand the low temperature.

An ample supply of spares has been included. The five instruments were built in one week at the Head Office workshops.



resulting in unremunerative call offices. The message rate of calling, with the exception of a slight drop in 1908, which accounts for the fall in the average also, has shown a steady increase. The figures relating to the party line rate of calling are unimportant as far as London is concerned.

TABLE K.

RATE OF CALLING PER DIRECT EXCHANGE LINE PER WEEK FROM THE YEARLY RECORDS OF EFFECTIVE CALLS.

	Nov. 1904.	Nov. 1905.	Nov. 1906.	Nov. 1907.	Nov. 1908.	Nov. 1909.
Measured service ..				91.7	111	117.9
Unlimited service ..	66.67	66.74	71.85	79.4	82.6	85.4
Call offices ..	77.4	74.75	60.44	50.8	60.2	78.9
Message rate service ..	15.18	16.37	16.9	17.6	17.3	19.8
Party line service ..	30.29	18.17	20	11.2	26.3	19
Average ..	45.97	42.49	42.22	43.48	43.22	45.42

When the traffic engineer, in the case of particular exchanges, projects these figures into futurity, he finds himself confronted with problems of absorbing interest. He also finds that it is essential for him to keep his mind free from bias and to avoid hasty conclusions. A conscientious man will, in a word, feel like Emerson, when he exclaimed:

"Give me truths:
For I am weary of the surfaces,
And die of inanition."

THE STAFF PENSION FUND.

MEMBERS of the Staff Pension Fund will be interested to hear that the Directors of the Company have appointed Mr. Samuel Herrick Sands to be an additional Directors' trustee of the Pension Fund Trust Deed, and the staff's trustees, Mr. Albert Anns and Mr. Frank Gill, have appointed Mr. Vincent Alsop to be an additional staff's trustee of the fund.

The photograph is by H. Kingsbury, of the Investigation Department.

[A letter has been received from Captain Scott, R.N., of the British Antarctic Expedition, conveying to the staff an expression of his gratitude and appreciation of their kind and generous interest in the expedition.]

TELEPHONE WOMEN.

LXXII.—EDITH DORAN.

MISS DORAN entered the service of the Company at Jersey as a Junior Operator in July, 1901, under her sister, who was at that time clerk-in-charge. At that period the principal exchange in the Island of Jersey was at Bath Street, St. Helier, in very inadequate premises. The switchroom was a small back room on the first floor, and the switchboards consisted of seven 50-line standard pattern boards bolted together, the operating staff totalled four, and the subscribers' lines terminating at this exchange were less than 300. Miss Doran did not, however, have long to endure the cramped conditions referred to, as new premises had been secured, underground cables laid, a 1,000-line multiple switchboard fitted in a room some 35 feet in length, well lighted and ventilated. The removal of the exchange thereto was effected in September, 1901, the transition being one that was greatly welcomed and appreciated by all the operating staff of those days.

Resignations and marriages of the staff had the effect of bringing about the gradual promotion of Miss Doran, who in October, 1908, was appointed as Clerk-in-Charge of St. Helier's Exchange. She now supervises a staff of six operators and



EDITH DORAN.

upwards of 700 subscribers' lines, and also keeps an eye on the general working of the junction lines that radiate to the fourteen sub-exchanges in the district.

Miss Doran takes her duties very seriously, and does her utmost to give satisfaction both to her subscribers and the Company. She is fond of reading and singing, and also takes a great interest in Sunday School work.

LXXIII.—VICTORIA ADELAIDE SLATER.

MISS SLATER entered the Company's service at Bolton in January, 1897, at which period the area consisted of the central and four sub-exchanges, with 350 subscribers and twenty junctions for trunk communication. Her service of over twelve years covers a period of great development, the exchanges in the area having increased to seven, with 2,380 subscribers, or 3,280 stations, and there are now 130 junctions and record lines for trunk service.



VICTORIA ADELAIDE SLATER.

In May, 1907, Miss Slater was transferred as Clerk-in-Charge to Rochdale centre, which is a busy manufacturing town in the Bolton district. For two years she carried out her work in Rochdale in a very able manner, making her daily journey, which, in this rainy district, was a trying experience. In February last, however, she was rewarded by promotion to the more important position of Clerk-in-Charge of Bolton, her native town, in which position she is a most enthusiastic worker.

SINGULAR FAULTS CAUSED IN UNDERGROUND CABLE.

By J. T. WHITELAW, *Hamilton.*

A PECULIAR fault developed not long since on the Company's underground cables at Motherwell, in the Mid-Lanark district. A 50-pair cable from a manhole to a distributing pole is laid in private ground in close proximity to the Burgh Electricity Works. For road-making purposes the burgh recently decided to tip and store on this vacant ground the ashes from the boiler fires in place of carting them to a free coup as had been done previously. These hot ashes generated such heat in the ground that the paper insulation within the Company's cable for a distance of about five yards was burned to a cinder, although the lead sheathing was in no way affected. This fault, to my mind, shows us that after underground cables are laid a careful watch over the whole route for alterations is necessary, more particularly where any section of a cable is laid on private vacant ground where the purposes to which that ground is put may be changed very frequently and result in damage to the Company's plant.



C. H. BRANDRETH. J. H. BIGLAND. W. V. PEGDEN.
 R. P. LOWE. G. W. LIVERMORE. F. P. MARTIN.
 R. F. CROW. W. F. TAYLOR (Contract Manager). G. E. NICHOLLS.

LONDON AND ITS ORGANISATION.

CONTRACT DEPARTMENT.

By J. STIRLING, *Metropolitan Chief Accountant*, and W. F. TAYLOR, *Metropolitan Contract Manager*.

"I CERTAINLY think that it is better to be impetuous than cautious, for fortune is a woman, and it is necessary if you wish to master her to conquer her by force; and it can be seen that she lets herself be overcome by these rather than by those who proceed coldly."

It is not necessary to commit oneself either to the letter of the doctrine proclaimed in those lines, or to the illustration by which it is enforced. Its spirit, however, must have actuated those who originated our Contract Departments, and must also have inspired much of the energy and activity which have characterised that branch of the Company's business ever since its inception.

The words quoted above, from a famous Italian statesman and writer, were penned four and a half centuries ago, but how applicable they are to many phases of modern life. In business to-day, "the race is to the swift, and the battle to the strong." Our strenuous bustling age demands of its sons a vigour and aggressiveness hitherto uncalled for. Like other enterprises, the telephone

industry has responded to the touch which modernism has applied to our commercial life; the work of our Contract Departments is the result.

Richard Whiteing in *Little People* tells, in his own inimitable way, the story of an old man who kept a second-hand furniture shop. The poor man was, like his own goods, second-hand too. His methods, his notions were old; he labelled his stock at fancy prices which were the despair of the customer. The time came when the wayfarer, as he glanced at the shop, smiled and passed on. The old dealer labelled on a little longer, then succumbed. At the risk of labouring the obvious, and drifting into what the theologians call "apologetics," we say that no business concern—be it telephone or any other—can afford to sit still and wait for what chance may fling into its lap. This is not special pleading, but the fruit of experience; the gospel of "justification by works" is the only one that can have weight in business life.

Looked at from outside, London seems an unwieldy unit to control and provide for; when seen from inside, however, most of the difficulties incident to a huge and congested area disappear. Economic and effective distribution of labour, with a sufficient but not excessive amount of central guidance and supervision, form the simple combination which opens the formidable looking gate. The staff diagram (Fig. 1) shows how the contract forces of London are disposed, while at the head of this article is a photograph of the leaders who direct their operations.

It will be seen that the Metropolitan area is divided into six districts. In each of the six is stationed a contract agent, with offices at a convenient point for attacking the territory allotted to him; and with a staff of officers and clerks commensurate with the telephone possibilities. At Salisbury House is situated the contract manager's office, from which all general instructions are issued, and to which the divisional officers refer the knotty problems on tariffs and kindred topics which help to keep the mental hinges from rusting.

The City, with its square mile of wealthy streets, is the most important of the districts. Next is the Western division, with its panoply of rank and fashion. The others form a group of fairly equal potentialities, although of varying size and type. A comparison of the work dealt with for the twelve months ending March last is not without interest:

	City.	Western.	Other districts.
New stations	6,274	4,564	8,073
Removal orders	3,357	2,346	2,445
Orders for additional apparatus	820	704	1,828

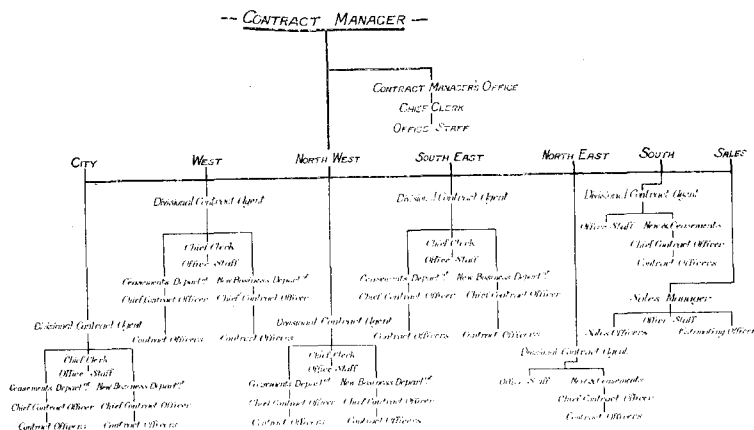


FIG. 1.

Procedure varies little, if at all, from that of the provinces, and need not therefore be detailed. Usually each "new business" officer has a definite slice of territory allotted to him, and he is not allowed, excepting under very special circumstances, to trespass on his neighbour's vineyard. With each division clearly mapped out, and each man's special preserve also defined, it becomes a simple matter to cover the whole of the area effectively, and at the same time prevent overlapping. If the first call on a prospective subscriber is abortive, a date for another interview is diaried, and entered on the "interview card"; the chief canvasser keeps a special watch on all these "call-backs."

The work of inducing subscribers who have given notice on their lines to continue for a further period is by no means the least important of a Contract Department's duties. In four of the London divisions special men are set aside for dealing with "notices to cease" only. In the other two contract divisions the ordinary "new business" men deal with cessations also, being assisted by the senior officers in special cases. The special staff numbers sixteen, four of these being clerical and the remaining twelve contract officers; they deal with 87.6 per cent. of the total notices received in London.

Financial difficulties of one kind or another account for most of our ceased lines, and a fair number of the cases dealt with are naturally hopeless from the outset. The preliminary difficulty to be encountered in the majority of cases, of course, is that the circumstances are known only to the subscriber, and any general argument may not apply to his particular case. In that very disadvantage, however, lies the opportunity for an intelligent officer who can, by judicious questioning and suggestion, get at the facts and from his experience combat the reasons advanced. Indeed, a subscriber's own admissions often form the strongest and most persuasive arguments for the retention of his installation.

To retain a station the loss of which is threatened, is now rightly regarded as even of greater moment than securing new ones. In the former, the Company stand to lose some capital

value on which, it may be, an adequate return has not yet been obtained, to have spare plant thrown on its hands, and thus earning no revenue, and to incur the cost of recovering equipment which was originally fitted at some expense. To preserve what is in existence, therefore, is financially better business even than large numbers of easily constructed new lines, desirable and welcome as these latter are.

The results achieved have on the whole been very creditable, and have justified the special watchfulness exercised by the Contract Department over all subscribers who desire to leave the telephone fold.

In every large undertaking, the existence of an amicable spirit in the relations between departments does much to make the wheels of business run smoothly. The contract staff probably experience the benefit of this friendly feeling as much if not more than any other section, for their success so often depends upon the work and co-operation of others. This is perhaps emphasised more in London than in other parts of the country, owing to the necessity for sectionalising to a much greater extent than will apply elsewhere. With the engineering officers especially does the Contract Department come in close touch, for development studies, estimates for new lines, prompt completion of orders, concentration of canvassing on the best paying areas, are all important matters of daily intercourse between the two, and a joint friendly settlement means absence of friction, the likelihood of satisfaction to the subscriber, and a moral as well as commercial gain to the Company. It is gratifying that this is thoroughly appreciated, and in the recent campaign instituted for the purpose of utilising spare plant before the end of the Company's license, the benefits of this reciprocal working were particularly noticeable. The card system in vogue for keeping a watch on spare circuits has recently been described in the JOURNAL, and need only therefore be alluded to here in order to say that it works well in practice, and is a simple yet comprehensive method of keeping both engineer and contract agent informed from week to week of the position in the various distributing pole areas.

Experiences of many sides of human nature fall to the contract officer's lot. Some are diverting, many are disappointing, all are instructive. We can probably place in all three categories the case of the lady who told her maid to say that "Mrs. ——— was already a subscriber to so many hospitals and other charities that she could not see her way to help the gentleman, although she had no doubt it was a deserving case." Boarding-house residents will doubtless sympathise with the lady who, when asked if she had a telephone connection, replied "No, and she didn't want one, as she had quite enough to do to look after her lodgers"; it transpired afterwards that the lady had some hazy notion that the wire would have to be attached to her person before she could get into communication with anyone.

Suburban London presents peculiar canvassing difficulties. About 90 per cent. of the houses are occupied by men who are "something in the City." As a rule, the City address will not be disclosed by the gentleman's family or servants, so that evening or early morning calls have to be resorted to. In the latter case, the chances are that "a rush to catch the train" is the rule of the establishment; in the former, the answer will probably be "I don't discuss business at home." It is indeed a case of Scylla and Charybdis; but as Ulysses was able, thanks to the advice of Circe, to steer his bark safely through the strait guarded by the two classical rocks, so the wise contract officer will seek to enlist the sympathies and support of the ladies in the household; that being secured, success is certain. In one case at least where an evening call was made, it seemed as if this desired result had been attained without any effort, for the door was opened by a young lady, who greeted the caller with "Come in, my darling; how late you are to-night." When the hall lamp revealed the case of mistaken identity, the result was somewhat disconcerting to both.

London's well-known cosmopolitanism results in the Company having considerable business transactions with men and women of various nationalities. The general view of the contract staff is that the foreigner is, on the whole, more difficult to deal with than the Englishman; he requires more explanation, is more suspicious, and generally less amenable to argument. His difficulties with the English language, too, are sometimes acute, the unconscious humour

of the misplaced words being amusing to the hearer at least. The writer of a recent letter certainly knew what he wanted, although his expression of it may be regarded as a trifle crude. "I should be obliged if you will send one of your representatives here to give us some information for the fixing of an operator on the limited or unlimited calls sisteme, and give prices as well." We can probably trust to the elusiveness of the sex to enable any operator to release herself from so unpleasant a position.

One feature of the Company's dealings with the foreign population of London may be of general interest. A few minutes' journey by omnibus or train from the heart of the City brings one into a new world, where the silk hat and frock coat of fashion would seem *bizarre* and out of place. Not only are the clothes of the people different, but their language is different too. In tram and omnibus and at street corner one hears the uncouth gutturals of

METROPOLITAN CALLS ONLY.
AUTOMATIC BOX.

(C.B. Working.)

דיא נאשיאנאל מעלעפאז האמפאנה למד.

פובליק האלד (רוף) אפפיס.

ט א ר י ה

לאהאלע רופונגען.

פיר יעדע 3 מינוטן שפרעכען. אדער איין טהיל דאפן (סיי) אנגעפאנגען אדער ערהאלטען מוז מען צאלען 2 פענס פיר דאס נוצען פון האלד אפפיס.

בעמערבונג.

אום צו רופען די עקסטענזש.

לייגט דעם רעסיווער (הערער) צום אויער (ארונטער נעמענדיג דעם טעלעפאן פון פלאץ, ניפט דעם צייכען צו די עקסטענזש) זאגט דעם אפעראטאר איז ענגליש דיא "עקסטענזש" אונד "נומער" פון דעם סוכסכרייבער ווערבען עס ווערט פערלאנגט. דאז ווארט מיט'ן רעסיווער צום אויער, סידען דער אפעראטאר זאגט: זיא וועט איהנען אנברענגען.

ווען עס ווערט פערלאנגט ביים אפעראטאר.

אונד נישט פריהער לייגט אריין א פענני

איז דעביל אונד דרעהט דאס הענטל, נאכהער לייגט אריין נאך 1 פענני אונד דרעהט נאך אמאל דאס הענטל, ווייטער האלטענדיג דעם רעסיווער צום אויער, דער אפעראטאר קען נאכזעהען דאס געלד, צוכונגען אדער קרומע פעננים זאל מען ניט נוצען.

אויב מען פערלאנגט מעהר ווי 3 מינוט צו רידען, מוז מען עקסטרא געלד אריינלייגען ווי עס ווירד פערלאנגט ביים אפעראטאר.

ווען איהר רידען איז גיענדיגט לייגט דעם רעסיווער צוריק אויפן פלאץ

FIG. 2.

a strange tongue; from shop front, music hall, and newspaper placard, curious-shaped letters stare at one. It is Yiddish, that quaint combination of ancient, mediæval, and modern, which to the present-day Jew of humble birth has replaced what Longfellow has called "the grand dialect the Prophets spake." So to advertise, and make more useful, the public call offices in those neighbourhoods, where the Jewish people most do congregate, special bell signs, with the words "Public telephone" inscribed on them in



FIG. 3.

Yiddish, were exhibited at the call office premises, and instructions for using the call office instruments were also got out in the same language, and posted alongside the instruments. A sample of the former is given in Fig. 3, of the latter in Fig. 2.

(To be concluded.)

REVIEW.

The Journal of the Municipal School of Technology, Manchester. Volume II, 1910, 297 pages.—This journal, which is printed by the school in its Printing Crafts Department, forms a record of the investigations undertaken by members of the staff of the several departments of the Municipal School of Technology, Manchester. It comprises chiefly papers reprinted from the journals of technical societies and from other technical periodicals. Volume II deals with the work published during 1908; approximately one-half of it is taken up by contributions on electrical subjects, and the remainder by papers on chemistry and on the technology of cotton spinning. Among the electrical papers those of chief interest to telephone men are Professor Haldane Gee's encyclopaedic paper before the Institution of Electrical Engineers on "Electrolytic Corrosion," which is one of the most useful essays on this complex subject ever published, and two papers by Messrs. William Cramp and C. F. Smith on "The Alternating Current Circle Diagram" and "Vector Algebra." The latter contains a very clear and succinct derivation of the equations determining the characteristics of an alternating current transformer. Professor Schwartz's paper on "Fuse Phenomena" and Mr. W. Cramp's on "The Electric Discharge and Production of Nitric Acid" are also reprinted.

The journal forms an admirable expression of the enterprise and energies of the authorities and staff of our great Lancashire technical college, and affords an example which might well be followed by some of our leading London schools.

Apart from its value as a work of reference, it has the effect of identifying the researches carried out with the school, and so stimulating that *esprit de corps* which is to a large extent lacking among the graduates of our technical colleges.

OPERATING LECTURES IN A CONVENT.

Miss E. M. Jones, matron of the Liverpool Traffic Department, had a unique experience during a holiday in Belgium, where she stayed for several days at the Ursuline Convent (*Pensionnat des Ursulines*), Thildonck, Wespelaer. In the course of conversation Miss Jones had occasion to refer to her connection with the telephone. Learning that she had held a position as schoolmistress in the Company's Liverpool Operating School, the nuns expressed a wish to know more about her work, and the Reverend Mother-General (head nun in the convent) requested Miss Jones to give the students an outline of the instruction which learners received in the operating school.

A lecture was accordingly delivered to the English-speaking residents of the convent, about 100 girls and twenty nuns being present. So delighted were the hearers that a further lecture was asked for, and again Miss Jones complied. In these two lectures

practically the whole range of subjects in which the telephone learner is instructed was touched upon.

The lecturer endeavoured to convey to her audience the appearance of a telephone exchange, and having no explanatory photographs, indicated by means of blackboard illustrations the general design of a switchroom, the switchboard, and its accessory apparatus. To this picture were added the continuous line of operators, the supervising staff and monitors, etc.; and the entire *personnel* of the switchroom and the correlation of their duties was briefly explained.

The lecturer then described the comfortable apartments which are now provided for the operating staff—the kitchens, dining-rooms, sitting-rooms and sick-rooms. The equipment of the latter, Miss Jones informed her hearers, included a medicine chest where restoratives of every kind were in readiness.

A description of fire-drill in a telephone exchange greatly interested the girls, the lecturer taking the opportunity to point out that the discipline observed by the staff at such times, as well as in the ordinary course of their duties, was equal to that demanded in an institution such as their own.

Throughout the lectures the audience showed the keenest interest and appreciation, and several questions were asked bearing on supposed detrimental effects arising out of the strain of an operator's work and the wearing of headgear telephones.

To have added to the knowledge and delight of the students in a foreign institution of such prominence is an experience which Miss Jones regards as a privilege and an honour, an experience made the more interesting by circumstances which were at once unexpected and unique.

THE ANNUAL MEETING OF OFFICERS.

THE POSITION OF THE STAFF.

THE usual Annual Meeting of Officers was held at Hamilton House, London, on June 24, when thoughtful and valuable papers on "Utilisation of Spare Plant" by the Chief Officers of the London staff, by Messrs. E. J. Hidden (Liverpool), A. M. Kidd (Cork), A. R. Lamb (Greenock), O. W. Stevens (Norwich), W. A. Valentine (Glasgow) and E. Williamson (Birmingham) were discussed. After some opening remarks by Mr. Goddard, interesting criticisms on these papers were contributed by Messrs. W. F. Taylor, A. M. Kidd, A. R. Lamb, W. A. Valentine, E. Williamson, L. Harvey Lowe, R. C. Bennett, E. S. Cooper, C. S. Wolstenholme, J. H. Rodger, Eustace Hare, F. Douglas Watson, P. F. Currall, E. J. Gillett, A. E. Cotterell, A. E. Ruddock, W. Napier, W. R. Senior, E. L. Preston, W. E. Gauntlett, D. Fulton, J. Stirling, R. A. Dalzell, J. L. McGrath, L. Price, J. L. Brown, A. B. Gilbert and A. Watts. Mr. Gill then addressed the meeting, after which Mr. Goddard, in summing up, made the following reference to the position of the staff:—

'Before winding up the proceedings there are one or two things I want to allude to, and the first and most important, from one point of view, although it is not quite germane to the subject of the meeting, is that raised by Mr. Lowe on the subject of 'staff.' It is an extraordinarily difficult question to deal with—that of the staff. I do not suppose that when the President, Mr. Gill and myself are in London, a day passes without our spending some considerable time in considering how the inevitable difficulty that has to be faced in reference to the staff can be either avoided or in some way mitigated. It is, I know, suggested that we should make all kinds of arrangements with the Post Office. Well, it takes two parties to make an arrangement, and the arrangements that we try to make are extremely difficult to carry through. I do not know why; but, whatever the reasons are, the facts remain that negotiations are extraordinarily difficult and take an inordinate time.

"We are trying to devise all kinds of methods by which we can help the staff. I know it is very difficult for the staff to realise that. We are, almost of necessity, looked at as the men who are sitting here, and who, apparently, do nothing, but I can assure you absolutely sincerely that if that impression exists, it is not a right one. We are, as far as we can, and of course having the interests

of the shareholders and the Company constantly in our minds, trying to mitigate any hardship to the staff, and we are doing that, I think I may say, quite unselfishly.

"Mr. Gill suggests to me, and I commend it to your attention, that the subject we have been discussing to-day indicates one of the best ways of helping the staff. If you can use up your spare capacity you are going to employ your line and instrument staff and canvassers. The devising of every possible method of doing this is, at all events, one way in which you all individually can help to employ the staff in your district."

(A GLASGOW CORRESPONDENT'S IMPRESSIONS.)

This meeting, which has become an institution, has again come and gone. Attending the meeting are all sorts and conditions of men; the *blase* member who has attended every meeting during the last sixteen years, and knows all there is to know of telephones, and the alert, open-minded officer who has come with the intention of getting all he can in the way of information.

English, Scottish, Irish and Welsh—we do hear them speak in their different dialects.

The businesslike chairman has his clock beside him and keeps the discussion within bounds, the inexorable six-minute gong pulling up the lengthy speaker.

We hear the various opinions of men in the fighting line and the matured opinions of men whose views we respect, and a good effect is produced which bears fruit.

One of the most interesting features of the meeting is undoubtedly the fact of seeing and hearing the men whose names are household names and whose personality for the rest of the year is seen only in correspondence. The more personal touch is experienced; we rub shoulders with one another and angles are knocked off. We find that our opinions and views, no doubt carefully formed, are overturned and fresh light is thrown on all the problems tackled. Impressions remain with us of the various men we have seen and heard and friendships are formed and renewed.

The annual meeting is an asset. Is it doomed?

GLASGOW NOTES.

THE Scottish contingent for the Officers' Annual Meeting travelled from Glasgow in reserved carriages.

"Shop" is supposed to be barred on such occasions, but who ever heard of a body of telephonists travelling together without raising the inevitable and always interesting telephone question in its most recent phase—spares, inventory, or something else.

A stranger travelling in an adjoining compartment must have wondered at the alternate dour discussion and hearty laughter.

ON the afternoon of Saturday, July 2, an interesting golf match was played at Hamilton between Scotland East and West. Fourteen couples took part, and although Edinburgh and Glasgow supplied the largest quota on their respective sides, there were also representatives from Berwick-on-Tweed, Galashiels, Kirkcaldy, Greenock and Kilmarnock.

The course is situate in the private policies of the Duke of Hamilton's magnificent estate, and the arrangements, which were carried out in a very capable fashion, were in the hands of Mr. Whitelaw, the Hamilton District Manager.

The results of the match were as follows:—

EAST.		v.	WEST.		
R. Allan ..	Edinburgh ..	0	J. Lowe ..	Greenock ..	1
J. H. Allan ..	" ..	0	W. A. Valentine ..	Glasgow ..	1
R. McHardy ..	Berwick ..	0	A. Ramsay Lamb ..	Greenock ..	1
T. Elliot ..	Galashiels ..	½	J. A. Swanson ..	" ..	½
W. Knox ..	Edinburgh ..	0	W. Lang ..	Glasgow ..	1
R. C. Wilson ..	" ..	0	T. Pettigrew ..	" ..	1
R. Inglis ..	Kirkcaldy ..	1	A. Niven ..	" ..	0
C. Macfarlane ..	Edinburgh ..	0	G. Martin ..	" ..	1
H. T. Main ..	" ..	½	D. B. Heberton ..	" ..	½
A. F. Dunn ..	" ..	½	W. Allan ..	" ..	½
J. Robertson ..	" ..	1	R. F. Gilchrist ..	" ..	0
C. L. Stewart ..	" ..	1	G. Millar ..	" ..	0
R. B. Rae ..	" ..	0	J. F. Scott ..	" ..	1
A. Lumsden ..	" ..	1	G. A. McDonald ..	Kilmarnock ..	0
		5½			8½

ON the occasion of his transfer to Dublin as Wages Clerk, John B. Hamilton, Cash Office Clerk, was presented by the Glasgow office staff with a Saratoga trunk and kit-bag.

JOHN McMAHON, Collector, who has resigned his position, was presented with a gold Albert as a token of the good wishes of the Glasgow Staff Office.

Bell Golf Club.—The monthly medal for July was held at Carntyne on Saturday, July 9, when Mr. A. G. Thomson was returned the winner with the nett score of 81.

The National Telephone Journal.

"BY THE STAFF FOR THE STAFF."

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Vol. V.]

AUGUST, 1910.

[No. 53.]

CHARACTER.

LORD SELBORNE, in his recent speech on Founder's Day at Winchester, said:

"I wish now to say a word to those who are going to be the future workers for the KING and Empire. I say workers, because there are too many loafers in England, and Winchester is not going to turn out loafers. Between the rich man who does nothing but amuse himself and the tramp there is really no moral distinction. The only difference that I know is that one is presumably clean and the other was certainly dirty. (Laughter.) All work falls under two divisions, the work of thinking and the work of thinking and doing. All my experience has been with the latter class. What is the kind of man I want to help me in my work? It is not easy to find suitable men. The Empire is strewn with the wrecks of scholars and athletes who lack something which is far more important than Greek iambics and cricket. When I want a man to help me, I do not ask in the first place what class he got or what his intellect is, still less do I ask whether he was in Lord's. The question I ask is, Can I trust him? That is a short sentence, but it comprises a great deal. Can I trust him to obey my orders? A man you cannot trust to obey is a nuisance to be eliminated at the first opportunity. Can I trust him to command? The man who cannot command is a broken reed. Can I trust him to rely upon himself and not to come to other people for support or advice in an emergency? The man who cannot rely upon himself will never be fit for anything but an inferior position. Can I trust him to give me the whole of his strength in the work entrusted to him? If not he is playing me false. Can I trust him not to think of himself? There is no greater nuisance in the world than the man who is always asking himself 'How does this affect me?' or 'Have I been sufficiently considered?' He is a creature who has lost all perspective, and he never sees things in their true proportion, because his own miserable self is always dwarfing the

landscape. Can I trust him to be straight? There is no use in the best intellect or the best education if a man is an intriguer or if you cannot rely upon his word. Now if I find that a man answers to these tests, then I go on to inquire about his intellect and his education and his physical qualifications."

LORD SELBORNE further said that moral courage is the greatest of all qualities in this world, and that of these three: muscle, brains and character—by far the greatest is character.

Upon this inspiring text many a fervent and eloquent sermon might be preached. To preach, however, is not our intention or our *métier*, but only to make some comments from our own point of view. LORD SELBORNE'S pregnant words, while they apply to everyone who in the larger sense by doing his duty is serving his country, have a direct significance for the staff both as servants of the Company and as prospective servants of the State. The qualities which he enumerates may be grouped under two heads: the simple one of faithfulness or trustworthiness, and the more elusive and all-important one of character; for the one by no means necessarily includes the other. A man may be possessed of that characteristic which enables him readily to rely upon himself, to assume responsibility, in short, to lead men; but he may do so for his own advancement and without any sense of faithfulness to his employer. Another man may be the soul of loyalty and work eagerly for the advancement of the undertaking with which he is associated and yet be totally lacking in those forceful attributes which are roughly denominated "character." The ideal servant must, without doubt, combine the two quantities, and happily the possession of the first is often accompanied by the second. Certainly the man who possesses neither is "a nuisance to be eliminated at the first opportunity," as LORD SELBORNE has it.

The man who is naturally deficient in "character" may remedy that defect to some extent—though with great difficulty—by application to duty; for character may be built up by slow degrees from the successive experiences of life. He who serves with zeal, who is trustworthy in all things, who obeys orders faithfully, and makes himself proficient in his work, must imperceptibly acquire the makings of "character." If he has not that gift of rising to an emergency, of acting rightly when faced with the unexpected, which is perhaps only born in a man, at least his ripe experience will give him a very good substitute for that gift—that knowledge which is power, and confidence in himself.

The shirking of responsibility is a form of moral cowardice which those situated in any grade of an administrative body ought to avoid. It is the counterpart in civil life of hesitancy to face the enemy in military. It is a failure to neglect to accept the chance of exhibiting one's capacity. To accept responsibility when occasion arises does not always require abnormal nerve or a congenital aptitude for action at a moment's notice. It does, however, require self-reliance and thinking for one's self, both of which qualities may be acquired. Indeed, the second is one of the most imperative needs of the adult and the lack of it the most fruitful cause of all that illiberality or narrowness of thought, misjudgment, false sentiment, hypocrisy, parrotry, snobbery, worship of the mediocre; of all that encouragement of quackery, of inferiority, of whatever is easy, futile and not worth doing, having or knowing; and of all those other vices engendered by thinking

in herds. A man who can really think for himself will go far, for he may rest assured that he is one in a thousand.

It is not to the higher grades of a staff alone that Lord SELBORNE'S words apply. The necessity of doing something outside one's daily routine, something perhaps not provided for in rules and instructions, arises at times for everyone. The junior who may chance to be in the office after closing time often has the opportunity of dealing intelligently with a subscriber's complaint—an important matter, when a busy man might otherwise have to wait over the week-end for his line to be put in order. The operator, the call office attendant even, frequently find themselves confronted with cases in which instructions must be supplemented with personal discretion. Every man in an office has on occasion found himself called upon to deal with the work of someone absent, of satisfying some enquirer on the telephone, of expediting instead of delaying the business of the public: these are opportunities which zeal and capacity will not neglect.

If it is not given to all men to possess the supreme gifts of character and intellect which Lord SELBORNE looks for: if they are loyal, if they are proficient, and if they have trained themselves to habits of independent thought, they are, we think, in a fair way to become ideal servants of their country.

THE ANNUAL MEETING AND THE TELEPHONE SOCIETIES.

ALIKE in the papers read before the Annual Meeting of Officers and in the competitive papers read before telephone societies, now being adjudicated at Head Office, are to be found the most satisfactory evidences of the sound telephone theory and practice with which the staff of the Company is imbued. "It is perfectly remarkable," said Mr. GODDARD to the assembled officers, "in reading these papers to see the real, genuine, good telephone ideas which are being pumped into the staff by energetic men, who know their business, all over the country. When we think that these ideas are being disseminated throughout the whole staff it is most encouraging, and speaks in the highest degree of the energy and intelligence of the staff."

The telephone societies have amply justified themselves: as a means of promulgating the best and the standard practice of modern telephony they have been an unqualified success. In our art, as indeed in all arts, we have never finished learning; but that the staff as a whole is learning the right kind of thing in the right kind of way is especially satisfactory. In telephony there is much knowledge which can be acquired with great pains, but which is not practical; it is the right knowledge, the standard practice, which we are glad to see being apprehended and disseminated. By this we do not necessarily imply any limiting of the scope of knowledge, or slavish adherence to standards, but rather to emphasise the usefulness of harmony of action and the greater benefits which accrue from united effort. Nor do we by any means disparage those skilful engineers and telephone workers of the past whose education was developed before the days of telephone societies. *Vixere fortes ante Agamemnona.* There were always first-rate men in the past also; but what we consider matter for congratulation is the universal spread amongst the staff of admirable telephonic ideas.

THE SIXTEENTH ANNUAL STAFF DINNER.

THE sixteenth annual dinner of the staff of the National Telephone Company was held at the Empire Rooms of the Trocadero Restaurant on June 23, Mr. Albert Anns, the Secretary of the Company, presiding. On his right was Dr. George Franklin, President, and on his left Lord Harris. Among the guests were Major W. A. J. O'Meara, Sir Albert Rollit, Mr. W. A. Smith, Sir Robert Hunter, Sir Alexander Kennedy, Mr. Edward Morten, K.C., Mr. T. A. Welton, Sir John Gavey, Mr. H. Laws Webb, Mr. G. F. Preston, Mr. T. C. Jenkin, Mr. J. E. Kingsbury, Mr. A. N. Bromley, Mr. H. H. Gaine, Mr. L. Stokes, Mr. J. F. Bond, Dr. M. Walmsley, Mr. W. M. Crowe, Mr. A. E. Pingree, Mr. C. A. Baker, Mr. J. Andrews, and Mr. H. S. J. Booth. Amongst the guests of individual members of the staff were Messrs. W. Aitken, P. P. Kipping, and F. A. S. Wormull (ex-members), G. Sutton, S. Thirkell, H. F. Anns, and G. F. Lee. The chief officers present included Mr. Frank Gill, Engineer-in-Chief; Mr. S. J. Goddard, General Superintendent; Mr. W. E. Hart, Solicitor; and Messrs. C. B. Clay, J. C. Chambers, A. Coleman, W. W. Cook, F. Cowley, R. A. Dalzell, E. Hare, C. J. Phillips, R. Shepherd, and F. Douglas Watson. The following members of the staff were also present:—Messrs. R. Aitken, F. Albany, W. Allen, V. Alsop, C. F. Ashby, J. Ashton, J. S. Atkinson, J. C. Bacon, F. G. C. Baldwin, W. Barnett, F. Barr, T. A. Bates, A. H. Baxter, R. W. Bell, R. C. Bennett, J. S. Best, G. E. Bewick, R. J. Blackwood, W. R. Bold, C. A. Bostock, J. W. Briggs, H. H. Broomhead, F. B. Brown, J. R. Brown, W. Brown, C. W. Bufton, E. S. Byng, J. W. Champion, C. W. L. Carter, H. Chambers, P. Chester, R. Clunan, B. S. Cohen, J. O. Cooper, H. G. Corner, A. E. Cotterell, R. F. Crow, W. Cullum, P. F. Currall, J. Darke, H. M. Darville, F. H. L. Davies, H. Davis, H. E. Deane, P. R. Denham, F. C. Disher, W. J. Downs, A. L. E. Drummond, F. P. Dumjahn, J. D. Duncan, P. Edmond, J. F. Edmonds, C. Elliott, H. Elliott, L. J. Farries, C. E. Fenton, S. S. Firth, T. Fletcher, A. A. Forrow, W. M. France, E. S. Francis, F. W. Francis, D. B. Fulton, J. R. Gall, W. E. Gauntlett, F. W. George, F. J. Gerrard, A. B. Gilbert, E. J. Gillett, G. Gillmore, W. Goulden, H. C. Gray, W. J. Gray, G. F. Greenham, W. H. Grinstead, R. Grosvenor, W. H. Gunston, W. S. Haines, A. C. Haley, J. W. Hambleton, T. E. Hanson, F. W. Hanson, A. H. Harris, F. C. Hawker, P. G. Head, S. F. Hill, F. G. Hives, F. Homfray, G. Hooper, W. Howe, C. Hughes, J. A. Hunt, R. W. Jackson, J. James, E. J. Jarrett, J. H. Jenkins, A. M. Kidd, F. G. A. Kiff, J. King, E. A. Laidlaw, A. R. Lamb, F. D. Latimer, O. G. Lee, J. Lemon, J. N. Lowe, L. H. Lowe, R. P. Lowe, S. Maber, A. G. Mackie, A. Maclean, G. A. Macdonald, H. G. McFarlane, H. J. Maclure, A. Magnall, A. Martin, D. McIntosh, J. Mewburn, W. J. Miller, S. Moody, C. F. Moorhouse, W. V. Morten, A. K. Murray, W. Napier, E. W. Newton, A. F. Paddon, W. Padget, J. R. Peacock, W. E. Pearson, A. Perkins, S. J. Pharo, H. Phillips, H. S. Plymen, S. H. Pook, J. Poole, H. W. Powell, P. H. C. Prentice, L. Price, E. L. Preston, T. A. Prout, A. Pugh, J. E. Pullen, C. G. Ransley, E. J. Rathbone, C. H. Redhead, A. Roberts, T. Rodger, A. E. Ruddock, C. W. Salmon, N. A. Saltmarsh, J. Scott, J. Shea, G. M. Shepherd, F. W. Shorrocks, C. H. Sibley, F. E. Sims, E. C. Sleath, A. W. Smith, S. C. Smith, S. J. Smith, C. F. Spears, Hy. Starkie, O. W. Stevens, J. D. W. Stewart, J. Stirling, E. E. Stockens, J. H. Storrie, C. F. Street, D. Stuart, C. H. Summers, H. B. Sutcliffe, J. W. Swithinbank, C. E. Tattersall, J. T. Tattersall, W. Taylor, J. S. Terras, G. G. Tennant, H. S. Thompson, H. H. Thompson, J. E. Tinker, J. P. Urwin, W. A. Valentine, B. Waite, J. T. Walker, J. H. Wall, G. S. Wallace, A. S. Wallis, F. E. Waters, A. Watts, W. E. Weston, J. W. Wheeler, J. T. Whitelaw, R. H. Williams, E. Williamson, J. H. Wilson, C. S. Wolstenholme, J. Wrigley. The following newspapers were represented:—*The Times*, *Standard*, *Daily Telegraph*, *Daily News*, *Daily Mail*, *Electrician*, *Electrical Engineer*, *Electrical Review*, *Electrical Times*, and *Electrical Engineer*.

After the usual loyal toasts—with a feeling reference to the death of the late King Edward—had been proposed by the CHAIRMAN and duly honoured,

The CHAIRMAN, who was cheered on again rising, said: My Lord and Gentlemen, I am quite sure you will all join in my regrets that neither the Postmaster-General, the Assistant-

Postmaster-General nor the Secretary to the Post Office are able to be with us here to-night. Our disappointment is intensified because Sir Matthew Nathan had accepted your invitation and was hoping to be with us. Unfortunately, the Post Office estimates have been put down for discussion to-night, and it is imperative that Sir Matthew should be present in the House of Commons. I can only hope that on a future occasion we may be more fortunate. ("Hear, hear.") Gentlemen, the General Post Office is a marvellous organisation. I doubt if we quite realise when we drop a letter into a pillar box the wonderful machinery which is at once set in motion, and how, without any further trouble or effort on our part, that letter, if so desired, will be safely and swiftly carried and delivered to a friend at the other end of the world. We are justly proud of the British Post Office, and it is a real pleasure to have with us to-night so many distinguished representatives of that great department of the State. The last twelve months have been, like many years that have gone before, a period of hopes and disappointments. Last year when we met there were rumours and suggestions of an earlier settlement of the many difficulties which confront not only the National Telephone Company but also the Post Office, but during the last few months we have been actively engaged in preparing for the great fight which is apparently now inevitable. Some of our friends and guests of this evening, under the force of circumstances, will on that occasion be our adversaries. They are great fighters but they are fair fighters, and whoever comes out on top will, I hope, deserve the situation. (Laughter.) To give you some idea of the great task which is in front of you, I estimate that the cost to both parties before the purchase is finally settled will not be less than £100,000. When the National Telephone Company's staff is merged into that larger national staff of the General Post Office, the civil service will certainly be increased in quantity and I do not think it will be decreased in quality. We are now spending on the development of our business about half the amount that we were expending two years ago, but notwithstanding this, our revenue and our profits are progressing in the most satisfactory manner. The reason for this is that during this year and next year we shall be reaping golden harvests from the seed which has been sown in the past. The prospects from the shareholders' point of view are very bright, but I do not think they are quite so brilliant from the point of view of the staff. The reduction in the capital expenditure of course means less employment, and although efforts, and successful efforts, have been made to provide other work for our construction staff yet it has resulted in many hundreds of our men having to seek employment elsewhere. We were very sorry to lose them and we wish them the best of good luck in the future. The saying that competition always ends in combination is, perhaps, more true of the telephone business than any other, and although competition still flickers and smoulders at Hull and Portsmouth, it cannot be very long now before, in the words of Sir W. S. Gilbert, it will be extinguished by the hose of common sense. (Laughter.) Last year I ventured to put a value on our undertaking as a business proposition, and it was a pleasant surprise afterwards to be told that I had been too modest in my estimate. I do not think I will try again, as perhaps next time I may overdo it. (Laughter.) But of this I am quite sure, that when the curtain is rung down on the final scene of our operations, and the amount to be paid for our business has been ascertained, it will be found, viewed from the standpoint of the benefits which pass to our successors—for we are going to hand over to them more than 500,000 stations with a revenue of between £3,500,000 and £4,000,000 a year—to be a transaction unique in the commercial history of this or any other country. ("Hear, hear.") As you know, the dead assets—the poles, wires, switchboards, instruments and so forth—are to be scheduled and valued, but the live assets—the brains and the energy and the devotion which have created this wonderful business, and which to-day give it life and being—are not to be valued. I call these latter assets, and I use the word with its double meaning, priceless assets. I know that many of you are worried and very unhappy about your future prospects as servants of the State, and I know also how very sincerely the President and the other members of the Board have regretted that they have not been able to give you those assurances, those full assurances, that would make you as happy and contented as you

deserve to be. I still hope and believe that all will be well with us in the end, and that we shall have "a happy issue out of all our afflictions." I should like to say a word or two about the Staff Transfer Association. First of all I wish to congratulate it on the good work it has already done. I understand the one burning and outstanding question is the claim which has been made by the association on behalf of the staff that service with the Company should be counted for the purpose of pension and other things as service with the State. ("Hear, hear.") May I venture to express the hope that our future masters will consider that a very reasonable request, and that they will in their wisdom remove the last barrier which, I think, remains between you and your future happiness and prosperity. It means so little to the State; it means so much to the staff. I will now ask you to drink to the continued prosperity of "The National Telephone Company," and I couple with that toast the name of one who has been, and always will be, a true friend of the staff, our esteemed President, Mr. George Franklin. (Cheers.)

The toast was drunk with great cordiality.

Mr. FRANKLIN, who was given a very cordial reception on rising to respond, said: Mr. Chairman, Lord Harris and Gentlemen, for many years it has been the custom at the staff dinner of the National Telephone Company to toast "Success to the Company," and its Board of Directors. For several years it has been my good fortune to respond for the Company and its Board. It is difficult to express in new thoughts our appreciation of the kind hospitality extended to the Directors, but we may certainly say that all that is uttered on these occasions with regard to the Company and its Board is indicative of the most harmonious relations existing between the Directors and the staff of the Company. (Cheers.) Our Chairman to-night referred to his speech of a year ago, and he told us that he considered the last year had been one of both hopes and fears. Well, with regard to the hopes, they may still come to fruition; with regard to the fears, they may still come to nought. A year ago our Chairman did, as he says, greatly daring, venture on an estimate of the value of the business as a going concern. Whatever may be the result of these estimates, I think, at all events, we can put them on one side for the present and congratulate ourselves that we meet to-night on one of those most interesting occasions, when the board and the staff can assemble as friends and discuss high politics or low politics or no politics at all. At all events we can discuss those things that are of vital importance to the mutual interests of the staff and the Company. ("Hear, hear.") At the present time there is one thought upon which the minds of both the staff and the board and also of the shareholders are concentrated. That is what the Scotch divine would call "our latter end." (Laughter.) By that I mean the transfer to the State. This transfer to the State involves considerations of the highest importance as well as the utmost delicacy, and just as in the past the Company has been able to count upon the loyalty and devotion of a united staff, I venture to think that the Company may still count upon the loyal co-operation of a united staff until the transfer to the Post Office takes place. (Cheers.) Those who show the greatest loyalty to the Company will also show to the Post Office how loyal they can be to their new masters. I venture to think that the same loyalty which has been extended to the Company will when the transfer takes place be given to the Post Office also. I believe that the Post Office will find that amongst the Company's priceless assets, as our Chairman described them—I would rather call them quick assets—will be that loyalty and energy and ability of the staff which has made the telephone enterprise what it is to-day. ("Hear, hear.") When the Post Office takes over the 17,711 servants of the National Telephone Company it will find in them its most important asset. The Chairman has also spoken of the development of our enterprise. During the past year we have added 32,153 stations, and we now have a total of 516,888 stations. We have 1,569 exchanges, or fourteen more than a year ago, while the total number of messages transmitted over the wires of the Company during the past year has been 1,362 millions, being an increase of 39 millions over the previous year, the cost per message amounting to only 51d. We often find that comparisons are made between the telephone industry here and the telephone industry in Europe and in the United States. We all know that the United States is the Mecca

of telephone enterprise. They have shown there what can be done with an enterprise like ours when it is unhampered by State control or State supervision and enjoys a free flow of capital and fair play. Great Britain has one telephone for every 77 of the population, Germany has one for every 71, France one for every 202, Italy one for every 625 and Spain one for every 955 of the population. When one thinks of those men and women who have made this telephone enterprise what it is, it is with some reluctance that we look forward to the time when the conditions may be different. There never was a time when the telephone staff of the Company was as highly organised, as efficiently managed as it is to-day. Both the operating staff and the technical staff are showing month by month what they can do, and they are bringing the organisation to a very high pitch of excellence. I say that deliberately to the staff, because I think it is due to them for their efforts which are made month by month both in London and in the provinces. It is due to them that I should express the cordial appreciation which the Board of Directors have of the zeal, the enterprise, the industry which they have shown, and which has made this great business what it is. (Cheers.) I have referred to the development of the Company. When we remember that we are within a year and a half of the expiry of the licence I think it says much for the public spirit of the Company to find it still catering for the needs of the public by putting on over 30,000 subscribers, and spending money for that purpose, in the course of the year. I can imagine that companies with less public spirit and with a less high ideal might be content with a much more meagre performance; but the Board of this Company have determined deliberately that their policy shall be to maintain the plant and the enterprise as far as possible at concert pitch until the moment comes for the transfer of the undertaking to the State. (Cheers.) It will require great judgment and great consideration, but I want to say at once, on behalf of the Company, that it will indulge in no churlish spirit, but will cordially join hands with the Post Office to arrive at a satisfactory solution of the problems before them, and, by hearty co-operation on both sides, I venture to think, after all, it may be found that justice is done alike to the staff and to the shareholders of this Company. (Cheers.) I want to say here and now, in case I have not already said it, that the Board of Directors appreciate very much the spirit which lies behind the performance of the duties of the staff, and I hope you will accept that assurance as being the sincere and unanimous view of my colleagues on the Board. (Cheers.)

Mr. C. B. CLAY: Mr. Chairman, my Lord, and Gentlemen, I am called upon to propose the toast of "Our Guests." It is one which it is easy to do, because I know the enthusiastic reception which it will receive. I may remind you that this being a staff dinner, our Directors are on this occasion our guests. We have with us our President (Mr. Franklin), Lord Harris, Mr. Smith, and Sir Albert Rollit. (Cheers.) We regret the absence of the other Directors, which in more than one case is due, I am afraid, to ill-health. We wish them a speedy recovery, and certainly hope to see them with us next year. ("Hear, hear.") We have here many friends from the Post Office—Sir Robert Hunter, Major O'Meara, and, I think I may still say, Sir John Gavey. (Cheers.) We have also an old member of our staff whom we are always delighted to see, Mr. Preston. (Cheers.) While mentioning old members, may I say that last night I saw Mr. Sinclair, and he greatly regrets that he is unable to be present. We have also among us many representatives of the legal and engineering professions, as well as a host of other friends. We have Mr. Morten, and we have with us, I am glad to say, this time Sir Alexander Kennedy. We have tried to get him on previous occasions, but unsuccessfully. We are glad to see him to-night, and we hope that this will not be the last time. ("Hear, hear.") We have also with us a gentleman who is also known to many of you, Mr. Leonard Stokes. (Cheers.) When a company or anybody else makes a choice it is always very pleasant to find that choice is endorsed from the highest possible quarters. The Company chose Mr. Stokes as one of their architects, and the Royal Institute of British Architects has chosen him as their President. (Cheers.) At our Metropolitan staff dinner Mr. Edmonds, who was speaking on that occasion, suggested continuing our annual dinners after the fateful time when we are taken over by the Post Office. He said that we should continue

these dinners so long as there was any staff left to attend them. (Laughter.) I think we might very well adopt that suggestion, and as Mr. Edmonds somewhat humorously said, continue the dinners until ancient accountants, enfeebled engineers, cunning contract officers, tired traffic managers, melancholy maintenance, stricken storekeepers, superannuated superintendents and doleful Directors are all that remain of the old brigade—that the dinners should go on as long as they were able to come either on crutches or in bath chairs. (Laughter.) Supposing that that is adopted, we should then have the pleasure for many years, I hope, of still entertaining our guests of to-night. Gentlemen, I give you the toast of "Our Guests," and I couple with it the names of Sir Albert Rollit, who is well known to us all, and of Sir Robert Hunter. (Cheers.) I am told that Sir Robert Hunter very rarely loses a case, but if he does he takes it to the House of Lords, and there you are. (Laughter.) I wish to add that I have a letter from Mr. Ogilvie. The Chairman has explained to you that Sir Matthew Nathan is unable to be present on account of the Post Office estimates. Mr. Ogilvie is absent for the same reason. He writes: "I very much regret to miss the opportunity of meeting the staff of the National Telephone Company, with so many of whom I have been so long and so pleasantly associated, though I am looking forward with pleasurable anticipation to a still closer association in the future. With my best wishes that you may have a pleasant and successful evening." I have also a telegram from Mr. Norway, who was to have been with us: "Greatly regret domestic illness prevents attendance to-night."

The toast was very cordially received.

Sir ALBERT ROLLIT: Mr. Chairman, Mr. President, Lord Harris and Gentlemen, immediately I entered the room to-night I was served with this document (the toast list) by my august friend, the toast-master, which makes me appear as a co-respondent with my friend, Sir Robert Hunter, to this toast. (Laughter.) That was sufficiently disconcerting at a time when a certain Commission is sitting, but my fears were increased when the Chairman spoke of a curtain being rung down, disclosing we know not what, and of £100,000 of costs to be paid. The only relief and comfort I have heard since is, in the words of the last speaker, that Sir Robert Hunter always carries his cases to the House of Lords and always wins them. (Laughter.) As a co-respondent with Sir Robert Hunter, and if we are cast in £100,000 damages, I hope that the House of Lords will at least continue to exist, if only for that particular purpose. (Laughter.) Now, I have to thank my friend, Colonel Clay, for the very kind manner in which he referred to the Directors. We have always tried to continue on good terms with all those with whom we are associated in this enterprise, and it is pleasant to hear from the lips of one so representative of the staff as Colonel Clay of the reciprocity that exists towards us in that respect. But I must confess I thought he treated his Directors rather as what I may call "Clay pigeons"—(laughter)—when he spoke of doleful Directors and Directors in bath chairs. (Laughter.) Well, I have not come to that yet, for, if I am getting into the old age of youth, I am still in the youth of old age—"Hear, hear"—and if I may speak for my colleagues, dolefulness will only be in the last act and not yet. We hope that curtain will not be rung down yet, and that we shall still have the privilege of representing this Company for some time to come. ("Hear, hear.") Now, in one respect the association of my friend, Sir Robert Hunter, with myself to respond to this toast of "The Guests" is at any rate suitable, because coming events cast their shadows before, and you are really speeding the parting and welcoming the coming guest. As the parting guest, and one sorry to think of the time of parting, I thank you most heartily, and I am quite sure that when the coming guests arrive they will be typically represented by my friend Sir Robert Hunter, not only with his universal success in the House of Lords and everywhere, but, what is still more important, with kindness and regard for others in every path of life and also with a fair and frank interest in and consideration of the rights of those who have served the community so well and are going, I hope, in many cases also to serve the State. (Cheers.) May I again express to Mr. Anns and the staff the obligation of any Board to those who serve them as we have been served. I remember in my Greek history there was a critical moment, I think at Salamis, when the

staff of the Greek general came to him and said: "We are outnumbered by the Persians; we must retreat." He answered: "Outnumbered? How do you make that out? How many have you put me down for?" Well, our staff contains many men who are makers of generals, and those are the men who are wanted to command the allegiance of industry in this modern world of industrial competition, and our President, who presides over us so ably, will be the first to acknowledge, with his co-Directors, that it is the staff which in a very large degree have not only made him equal to the exacting work which he has had to conduct, but have executed that work with despatch and with credit and honour and advantage to the Company and the commercial community. Now, though dying gladiators as we may be, and though as such we salute all those surrounding us in the arena of our work, I think we may all be proud of having belonged to the National Telephone Company. (Cheers.) The Company may pass away but that pride will remain. We have been pioneers of speedy communication in the world. Here, we take our part first in the history of that speedier communication, and let me say there is no personal friendship of which I am more proud than that of having had the privilege of intimate acquaintance with my friend Graham Bell, one of the greatest scientists who ever lived, who gave me the second pair of telephones which came to England. (Cheers.) The National Telephone Company has developed that speedy communication which, to quote a lady who spoke to me yesterday, may be expressed in three degrees of comparison—tel-egraph, tel-ephone, and tell-a-woman. (Laughter.) By that I understood—you laugh, you take it, I think, satirically—no doubt she meant tell a National Telephone girl if you want the extreme of speed in communication—(laughter)—and, rendering their services as they do, I confess my sympathies are very frequently with them. ("Hear, hear.") Not unnaturally, when they hear cursory remarks addressed to them they use Telephonese English sometimes—(laughter)—and I do not defer it, but at any rate they, like the staff, have served us well, and I hope that they too will not be forgotten under any new arrangements in 1912. (Hear, hear.) Ours is a great organisation, gentlemen, and why is it a great organisation? Because we have always, and not merely on these convivial occasions, as a Company and a staff pulled together. ("Hear, hear.") We have never been at cross purposes. We have never been like those two cross-eyed, squinting people who met in the middle of a busy street and collided. One said to the other, "I wish you would look where you're going," and the other said "I wish you would go where you're looking." (Laughter.) (On the contrary, we have co-operated in every possible way, and we have been dealing with a great invention, perhaps the greatest of all modern inventions. Oh, no, I do not think the greatest because I was recently spending a horticultural day, and I heard there of apparently an even greater invention than the telephone. The head of the Agricultural Department at Washington was telling us—to use his own words: "We have made more, I think, in our country, of intensive cultivation than you have done here or even in France. We have discovered how to make an arid, dry, unfertile plot of land become irrigated by automatic means, and the way we have done it is this—we have planted onions and potatoes in alternate rows, and the onions have grown so strongly that they have drawn tears from the eyes of the potatoes, and have raised the level of saturation of the whole surrounding district." (Laughter.) I do not think we can surpass that. But there is one way, I am sure, in which we surpass everybody, and that is in the hospitality which you have extended to us to-night and on so many previous occasions. There has been no spirit of parsimony or parsnips about it, nothing niggardly like the feeling of the gentleman who went to engage apartments in a boarding-house. When the terms had been arranged, he said, "Well, but you must make some allowance, because I am a vegetarian." "Oh," said the landlady, "then you are one of those, I suppose, as I have heard of—what they call herbaceous boarders. We do not take them at any price." (Laughter.) Now I conclude by saying that this hospitality has, I hope, never been abused by myself or anyone here, and never will be, greatly as we have enjoyed it. Two Scotsmen had been dining, even as well as we have been dining to-night, when one said to the other, "Now, Saundie, we must part." We have heard a great deal about parting to-night, and

they had to part. "Be careful, Saundie, how you go down the steps, for they're steep, and be careful how you tread the garden path, for it's slippery, and when you get to the gate you will see two cabs. Tak' the first of them, for the other won't be there." (Laughter.) Well, I hope that the hospitality you are kind enough to extend to us will always be appreciated, as it is, in the spirit in which it is given, and on behalf of your Guests, especially the Directors of the National Telephone Company, I return you our most hearty thanks, with a feeling of that gratitude which is the memory of the heart. (Cheers.)

Sir ROBERT HUNTER: Mr. Chairman, Mr. President, Lord Harris and Gentlemen, in rising to return thanks for your guests, and particularly for your guests of the Post Office, I desire to repeat the regrets which were expressed by your Chairman at the absence to-night, owing to the exigencies of Parliamentary business, of both the Postmaster-General and the Secretary to the Post Office, either of whom would have responded to this toast with a weight of authority and a felicity of expression to which I can lay no claim. My qualification for representing the guests from the Post Office is one upon which it has become painful for me to reflect. It is sometimes said unkindly that when ladies reach a certain age they prefer that their age should be considered uncertain. That is rather the stage at which I have reached in my relations to the Post Office. There is a story—I have no doubt it is one of Sir Albert Rollit's—(laughter)—of a man in the Army, who was continually returning his age as 30. At last the authorities remonstrated and said, "There must be some mistake. You have been 30 for five years." He said, "I am very sorry, but I cannot help it. I have a sister who is one year younger than I am. She is always 29, and I cannot run away and leave her." (Laughter.) Well, gentlemen, that is my feeling now. I am rather tired of doing simple addition sums in relation to my age, and I should like to choose a good round figure, say 50, and stick to it.

There is, however, one advantage which age possesses, and I think it is about the only one. It is that it has many memories. Some of them, no doubt, are sad, but I think—at least, I hope—that most of them are pleasant. Amongst my pleasant memories are those of dinners of this kind. My mind reverts to prehistoric days when I had the honour of attending these gatherings, before that break in our social intercourse which was brought about by the fancy of a member of a bygone Government—I am glad to remember it was a Unionist Government—who thought that to eat your bread and drink your wine once a year would have such a corrupting influence on the servants of the Post Office that they would neglect their public duties. (Laughter.) Well, gentlemen, it is foolish for any man to boast of his virtue, but last year I had the pleasure of sitting next to Mr. Smith, one of your Directors, and he gave me most glowing accounts of the wonderful matches they were inventing at Bryant & May's. I should like to mention for his guidance and yours, that even if he undertakes to supply me with the best kind of matches, those you strike on the wrist-band, for the rest of my natural life, free of charge, it will not induce me to connive at the reduction by a single penny of the purchase money of this undertaking. (Laughter.)

Gentlemen, amongst my memories of those prehistoric days is the memory of that genial railway magnate, Mr. James Staats Forbes. I negotiated with him. I dined with him, I heard him give evidence before a Select Committee, and I am at a loss to say in which capacity I admired him most. It seems to me he made only one mistake in his public life. When the amalgamation of the Chatham Railway and the South-Eastern Railway took place, as was his due, an annuity was granted to him, and he had the power to commute it. He did so, and died almost directly afterwards. If he had been satisfied with the annuity, no doubt we should have had him with us still. Another memory which comes to me from those prehistoric days is that of your late Manager, Mr. Gaine. During the whole time of his connection with your Company I had occasion to see him constantly upon important and delicate business, and the more I saw of him the greater was my admiration for his abilities and character, and my regard for him as a man, so that when the sad news of his sudden premature death came, I can assure you that I felt it as a personal loss. ("Hear, hear.")

Now I will leave prehistoric memories and come to a recent incident. At your last dinner your Chairman, Mr. Anns, said he had a presentiment that that dinner would be the last, and your President, Mr. Franklin, premised that on the next occasion Sir Henry Babington Smith might be in the chair. I have never believed in presentiments, and my scepticism has been confirmed. The curious thing is, that the only difference between this gathering and last year's is that our friend Sir H. Babington Smith has left us, and on thinking it over I have just hit on the real reason why he has left us. Sir H. Babington Smith gained a great reputation by reason of his dealings with States and companies over wireless telegraphy. After that he had many interviews with your President, Mr. Franklin, and they culminated in one very solemn secret interview to which no one else was allowed access. Well, I am convinced that Sir H. Babington Smith learned at those interviews that he could make nothing out of Mr. Franklin, and that he was destined to undergo a crushing diplomatic defeat if he remained at the Post Office. (Laughter.) He therefore looked out for any employment outside the service which might present itself, and he is now living on the shores of the Bosphorus in comparative poverty, but in the enjoyment of a well-earned repose after six years' hard labour at the Post Office. (Laughter.)

Gentlemen, it is not for me to say why Mr. Anns' prophecy has not been fulfilled, and I am certainly not going to prophesy myself to night. But one thing is certain, that before long you, the gentlemen of the staff of the National Telephone Company, will become directly the servants of the State: and when that event occurs I need hardly say you will receive a most cordial welcome at the hands of your colleagues already in the service. ("Hear, hear.") From that time there will be nothing but a friendly rivalry in efficiency and in zeal for the promotion of the interests of the public. (Cheers.) Gentlemen, I will go further. I do not see that I need consider that fellow-service as postponed. That fellow-service between the servants of the Post Office and the servants of the Telephone Company already exists, and it has existed for nearly 30 years. For nearly 30 years you have conducted a great and most important branch of the telegraph service. A means of communication which is within the monopoly of the Postmaster-General has been conducted and developed by you. You have not only conducted that system of telephonic communication; you have developed and adapted it in the interests of the public. You have familiarised the public of this country with a most ingenious and beautiful invention, an invention which enables men to hear the voices of their fellow-men over a distance of many hundred miles and to speak with one another as though face to face in the same room, an invention which has profoundly affected social life and which has given a great impetus to economic progress. On the last occasion of my visit to one of the great exchanges I was filled with admiration and wonder, so delicate is the adjustment, so fine the apparatus, which is necessary to enable that commonplace everyday occurrence of a conversation between A and B to take place. When one reflects that the force which actuates that delicate mechanism is the same force which dazzles our eyes with the lightning flash and rolls and reverberates through the heavens in the thunderclap, it seems to me that telephonic communication represents one of the most marvellous instances of the subjugation of the forces of Nature to the service of man. Gentlemen, the tale is not yet told. I daresay many of you were present last night, as I was, at the lecture which Sir John Gavey gave at the Institute of Civil Engineers. That lecture reduced my spirits to the lowest point, for it made me realise how profoundly ignorant I was upon matters with which I have in a certain sense some concern. But the particular point of that lecture to which I wish to refer was this. While Sir John Gavey dwelt on the great progress made by telephonic art during the last 30 years, he also indicated that a gigantic step in advance was likely soon to be made. We are soon to have, he told us, an automatic exchange. The ladies in the exchange room are to be relieved from the maddening task of responding to impatient subscribers. Each subscriber will sit in his own chair by his own table, and by simply moving some apparatus will put himself in communication with his neighbour, and will do all that delicate work which is at present done in the exchange room. Well, gentlemen, our expert friends must tell us whether these arrangements

are practicable, but their mere suggestion shows that telephonic invention is not yet at an end, and that momentous developments are in the air and are still to be expected. Mr. Chairman, there are those who profess a doubt as to whether these great discoveries add to the sum of human happiness or the development of human individuals. I confess I have never been quite able to share in the sincerity of this doubt. I believe every increase in the power of man over Nature enables happier, fuller lives to be lived by a greater proportion of men and women; and in particular I believe that anything which facilitates intercourse not only conduces to the better realisation of the material resources of Nature, but also tends to make life happier, to dissipate superstition, to dispel prejudices and to enhance good feeling between different classes, different nations and different races of mankind. ("Hear, hear.") You, gentlemen, have been engaged in developing and promoting a new and most wonderful means of communication, and you are entitled to cherish the proud thought that by your exertions you have materially advanced the civilisation of the world. (Cheers.)

Mr. A. E. RUDDOCK: Mr. Chairman, my Lord, and Gentlemen, I do not intend at this late hour to disregard the old adage in regard to brevity, and on this occasion, if for the first time in my life, I am going to be short. (Laughter.) We have gathered here from all parts of the country, and before I come to the actual toast I have to propose I should like to give you a series of epigrams I heard the other day describing the characteristics of the different nationalities. We have men here from every corner of England, Scotland, Wales and Ireland, from every remote hamlet it might almost be said, and it may be a help to our friends of the Post Office to know the characteristics they have to look for in the men likely to be taken over at the end of next year. It was the Bishop of Liverpool who, when asked to distinguish the characteristics of the different four nations of which we are composed said: "An Englishman dearly loves his Bible . . . and his beer; a Scotsman keeps the Sabbath and everything else he can lay his hands on; a Welshman prays on his knees on Sunday . . . and on his neighbours every other day in the week; an Irishman never knows what he wants—and he will not be happy till he gets it." (Laughter.) Gentlemen, this toast should be an easy one. It is bound to be received with enthusiasm, and yet I feel a certain difficulty in proposing it in proper terms. It is very difficult to express in adequate terms our appreciation of Mr. Anns without appearing fulsome, or perhaps what might be worse, raising the demon of jealousy in the hearts of his colleagues. I often think that it is a great pity we cannot be brought into more close personal touch with our chiefs. Mr. Anns' abilities are evident to all of us: his calligraphy is very well known—once a month it is very welcome. (Laughter and cheers.) But, gentlemen, it is not these qualities which has made him what he is to us all. It is his high character, his personality, the absolute assurance that every one of us has in his fairness—(cheers)—the fact that there is no suspicion of favouritism of any kind. It is these which have made Mr. Anns what he is to us. There is an element of pathos about our proceedings at this time. We have had many pleasant functions, business and pleasure, and though they may continue, and probably will under the State—at least I hope so—I think most of us will miss the old Company and we shall regret that the days have gone when we were working under it. But I can assure Mr. Anns that whether he remains and takes an active part in telephone matters in the future or transfers his activity to other spheres, we shall one and all remember with esteem and affection his connection with us. I give, you, gentlemen, the health of our Chairman. (Cheers.)

The toast was received with enthusiasm, the whole company rising and singing "For he's a jolly good fellow."

The CHAIRMAN: Mr. Ruddock, my Lord and Gentlemen, I thank you very heartily for the way in which this toast has been proposed and received. If I were to dwell too much on the very complimentary remarks which have fallen from Mr. Ruddock's lips I am afraid I might become so conceited that my friends would never recognise me. I thank you all very sincerely.

The proceedings shortly afterwards terminated.

TELEPHONE CURRENTS.*

PROFESSOR PERRY'S paper is another instance of the interest which is now being taken in matters telephonic, and is heartily to be welcomed on that account.

The paper gives formulæ to determine the effect of inserting any kind of apparatus in series with or in shunt across the line. Mathematical accuracy is not claimed, but the formulæ are said to be sufficiently accurate for practical purposes.

The first half of the paper deals with uniform lines of infinite length, and has not been abstracted here, since the formulæ given are the ordinary ones which have been frequently published before. The only difference lies in the different nomenclature adopted and the somewhat modified arrangement of terms.

The second half deals with the insertion of what Professor Perry calls "contrivances." These may be any arrangements of apparatus whatever. It is much to be regretted that in this important part of the paper no indication is given as to how the formulæ are derived, nor what assumptions have been made. Throughout the paper the lines have been assumed of infinite length and no terminal apparatus allowed for.

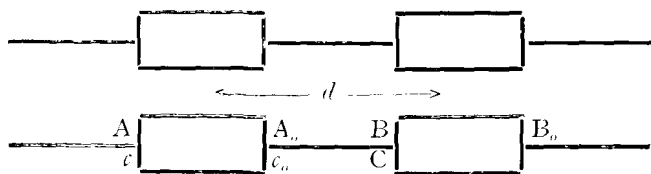
In the following abstract the nomenclature has been modified to conform with that in use by the National Telephone Company.

The line constants are:—

Resistance per mile...	...	...	R ohms.
Inductance „	...	...	L henries.
Capacity „	...	...	K Farads.
Leakance „	...	...	S Mhos.
Frequency „	...	...	$\frac{f}{2\pi}$

DETACHED CONTRIVANCES.

Consider a circuit as shown below.



Let c , c_n , and C be the currents at A , A_n , and B respectively, and v_1 , v_n , and V the corresponding voltages.

At corresponding points of the "contrivances," viz., A and B , we have

$$\frac{V}{C} = \frac{v}{c} = \rho, \text{ say,}$$

$$\text{Then } V = v_n \cosh Pd + \frac{R + L \rho j}{P} \text{shin } Pd$$

$$\text{and } C = c_n \cosh Pd + \frac{P}{R + L \rho j} \text{shin } Pd$$

$$\text{where } P = \sqrt{(R + L \rho j)(S + K \rho j)}$$

For any kind of contrivance

$$\frac{V}{C} = \frac{\theta + \phi \rho}{a + b \rho}$$

where θ , ϕ , a and b are given in value; they are usually vector quantities.

Solving for ρ and finding C , two results will be obtained, viz., C_1 and C_2 .

$$\text{Generally } C_1 C_2 = 1$$

Therefore if $\frac{1}{2}(\theta + \phi)$ is called Q

$$C = Q \pm \sqrt{Q^2 - 1}$$

Example.—Let the contrivance be a resistance r_1 (or its equivalent) in series with each line and a shunt resistance r_3 between their mid points.

Then if c is taken equal to 1

$$c_n = 1 + \frac{r_1}{r_3} + \frac{\rho}{r_3}$$

$$\text{and } v_n = 2 r_1 + \frac{r_1^2}{r_3} + \rho \left(1 + \frac{r_1}{r_3}\right)$$

from this it follows that

$$Q = \left(1 + \frac{r_1}{r_3}\right) \cosh Pd + \left\{ \frac{r_1 P}{R} \left(1 + \frac{r_1}{2 r_3}\right) + \frac{1}{2 r_3} \frac{R}{P} \right\} \text{shin } Pd$$

Take the case of a cable with the following constants:—

R = 18	ohms per mile
K = 0.055	mfd. „
S = 0	
L = 0	
$\rho = 5,000$	

$$\text{Then } P = \sqrt{R K \rho j} = 0.07036 \quad 45$$

$$P = 0.003909 \quad 45$$

$$\frac{R}{P} = 255.8 \sqrt{45}$$

Let the contrivances be spaced 4.263 miles apart and each consist of an inductive leak $L = 0.1388$, i.e., 0.5925 henry per mile.

$$\text{Hence } r_3 = L \rho j = 693.7 j$$

r_1 is a condenser of capacity $K = 0.206$ mfd. corresponding to 0.878 mfd. per mile.

$$\therefore r_1 = \frac{1}{K \rho j} = -971.13 j$$

$$\text{Cosh } Pd = 1.0007 \sqrt{2^\circ 35'}$$

$$\text{and Shin } Pd = 0.29994 \sqrt{45^\circ 51'}$$

Substituting these values of r_1 and r_3 it is found that

$$Q = -0.05384 - 0.068078 j \text{ from which}$$

$$C = 1.057 \sqrt{183^\circ 54'} \text{ or } 0.946 \sqrt{183^\circ 54'}$$

Since $c = 1$ there is an attenuation of 5.5 per cent. in 4.263 miles, or 1.3 per cent. per mile.

Tuning a Circuit for One Frequency.—This may be done by placing condensers in the line and an inductive shunt across it, as in the case just considered.

Given any particular value of d , r_1 and r_3 must be so chosen that C , as evaluated above, becomes equal to

$$1.0$$

If $d = 1$ mile the figures are $K' = 0.5917$ mfd. and $L = 0.8324$ henry.

If $d = 2.755$ then $K = 0.2273$ and $L' = 0.3692$, both for a frequency of 800 ~.

Isolated Contrivances.—When d is very large $\cosh Pd = \text{shin } Pd$

$$\text{If } \rho = 5,000$$

$$R = 88 \text{ ohms}$$

$$K = 0.05 \times 10^6 \text{ fds.}$$

$$\text{Then } \frac{v}{c} = \rho = \sqrt{\frac{R}{K \rho j}}$$

$$= 593 \sqrt{45}$$

$$= 419.3 (1 - j)$$

$$= \theta - \theta j$$

$$= \theta - \phi \rho j \text{ say.}$$

If an inductance L' be inserted at the middle of this line the best result is given by

$$L' = \frac{\theta}{\rho} = \phi = 0.11725$$

This multiplies the received current by 1.414 and causes a le of 45°.

* Abstract of a paper read by Professor Perry before the Physical Society Feb. 25, 1910.

An inductance of $L = 0.11725$ in series with the line and a leak consisting of a capacity $\frac{1}{f^2}$, i.e., 0.532 mfd. causes the received current to be multiplied by 1.414 and to get a lead 225° .

DISCUSSION.

Major O'Meara gave some figures regarding experiments which had been made to determine whether the formulæ usually given for loaded cables were applicable to gutta percha covered cables. These experiments, which were undertaken before deciding on the new loaded Anglo-French cable, gave the following results:—

The cable experimented on was 40 lbs. per mile covered with 50 lbs. of G.P. per mile.

$$K = 0.13 \text{ mfd.}$$

$$R = 44 \text{ ohms.}$$

The calculated attenuation constant with these figures was found to be 0.0427 per mile, whereas the experimental constant was found to be 0.0419.

The figures for the Anglo-French loaded cable are as follows:—

- $R = 12.5$ ohms per mile.
- Weight = 160 lbs. per mile.
- Insulation = 300 lbs. G.P. per mile.
- $K = 0.12$ mfd.
- R of coils = 6 ohms at 750 ~.
- L of coils = 0.1 henry „
- Coil spacing = 1 nautical mile.

Measured attenuation constant, 0.0140 per mile, loaded.

Calculated „ „ 0.0147 „ „

„ „ „ 0.045 „ unloaded.

Major O'Meara also pointed out the great importance played by leakage when lines were loaded.

Mr. A. W. Martin also laid stress upon the part played by leakage, pointing out that it is not the actual value of the leakage which is important, but the ratio of S to K . He showed a number of curves giving the equated lengths of various loaded lines both for iron-cored loading coils and also for air-cored coils. The latter are found to be inferior to the iron on account of their higher effective resistance per henry. A circuit tuned to any special frequency would be useless for telephonic purposes, but might be useful for telegraphy.

Experimental results show that coil loading by the Pupin method might give improvements of 370 per cent. The quality of speech becomes bad when the number of coils per wave length at 2,000 ~ is less than π .

The maximum improvement due to uniform loading by iron wire wrappings round the conductors was stated to be 100 per cent., and for wires of 2 sq. mm. and more, 60 per cent.

Mr. B. S. Cohen stated that it was a mistake to assume that tuning a circuit to the average telephonic frequency would be of advantage. He had shown previously that an average speech wave consisted of a fundamental of from 100 to 300 ~ and harmonics of importance up to the eleventh. Tuning would therefore be absolutely harmful. He quoted some figures worked out by Mr. G. M. Shepherd to illustrate this. In a particular case the variation of attenuation for the cable without contrivances was 300 per cent. as the value of β was increased from 1,000 to 9,000. Using Professor Perry's formula and adding 0.593 henry per mile as a shunt and 0.44 mfd. per mile in series, the variation of attenuation is 500 per cent. as β increases from 1,000 to 5,000. For $\beta = 5,550$ the attenuation becomes 0, that is to say, the contrivance acts as an infinitely low resistance shunt. For values of β greater than 5,550 the attenuation constant becomes negative, but the physical meaning of this is not clear. Compared with this increase in distortion due to the addition of contrivances the effect of loading by Pupin coils is to reduce the distortion.

Dr. Russell compared the author's solution for the case of zero leakage with Heaviside's solution for the distortionless circuit and stated that the attenuation was twice as great for the latter. It was very satisfactory that the behaviour of loading coils could be so accurately predicted.

Dr. J. A. Fleming (in a written communication) referred to the neat and convenient solutions obtained by the use of hyperbolic functions, and gave several formulæ for uniform lines. He stated that results

calculated for a frequency of 800 ~ enabled the effects of actual speech to be fairly accurately predicted. Dr. Fleming complained that the author did not make any reference to G. A. Campbell's paper on loaded lines, and which discusses a similar problem. The formula given by Campbell for the propagation constant P of a non-uniform loaded line in terms of the same line unloaded is as follows:—

$$\text{Cosh } P d = \text{cosh } P d + \frac{Z'}{2 Z_0} \text{shin } P d$$

Where d is the coil spacing
 Z the coil impedance
 Z_0 the unloaded line impedance.

This formula, however, is of doubtful accuracy when d is greater than one-eighth of the wave length of the loaded line.

Figures were also given to show the accuracy of the formulæ for uniform lines. In a certain case the calculated ratio of sending to receiving current was found to be 5.36, whereas from measurements made by the National Telephone Company the actual ratio was 5.3.

Mr. G. M. Shepherd (in a written communication) stated that the author's method of compensation was similar to Thompson's "compensated" line. Such a line is equivalent to a uniform line of which the constants are:

$$L = L - \frac{2}{\beta^2 K d} (\beta^2 L_0 L + R_0 R)$$

$$R = R - \frac{2}{K d} \left(\frac{L_0 R - L R_0}{\beta^2 L_0^2 + R_0^2} \right)$$

R_0 and L_0 are the constants of the inductive leaks. The rule governing the space is virtually the same as that for loading coils. The difference between the two systems is that one is tuned and the other not. The great variation of a with frequency given by this formula is shown in the following table for a cable of 18 ohms and 0.055 mfd. with 0.972 henry per mile leaks:—

\sim	a
1,035	0.189
1,115	0.284
1,430	0.487

It is evident from these figures that this method of compensation is not workable, and the only commercial solution so far advanced is loading with series inductance coils on the Pupin system.

Professor Perry, in reply (communicated), after thanking Major O'Meara and Mr. Martin for the results of the loading of Post Office cables, stated that his paper had been misunderstood. He was not advocating the use of inductive leaks and condensers, but simply used them to illustrate his formulæ, which can be applied to any sort of contrivance. The chief claim is to have given a formula which can be used by non-mathematical people.

CORRESPONDENCE.

Re SUBSCRIBERS' APPARATUS CARDS.

TO THE EDITOR OF THE NATIONAL TELEPHONE JOURNAL.

WITH reference to my letter in the April issue and to Mr. Rendell's comments in the June issue, I refrained from replying thereto in the hope that other members of the staff might perhaps express their views.

I quite agree with Mr. Sherburn, as it is obvious that records cannot be efficient until they have been properly checked. The point which I wished to make is the necessity for extreme accuracy in the cards, as they are now the only official record of the subscribers' apparatus. Where the whole of the subscribers' instruments and switchboards in large towns have been changed, possibly by temporary staff, there is a danger that inaccuracies may have crept in, and the simple form used in this district gives a means of ensuring the accuracy of the cards without additional expense. Both the records used by the above-mentioned gentlemen are very useful.

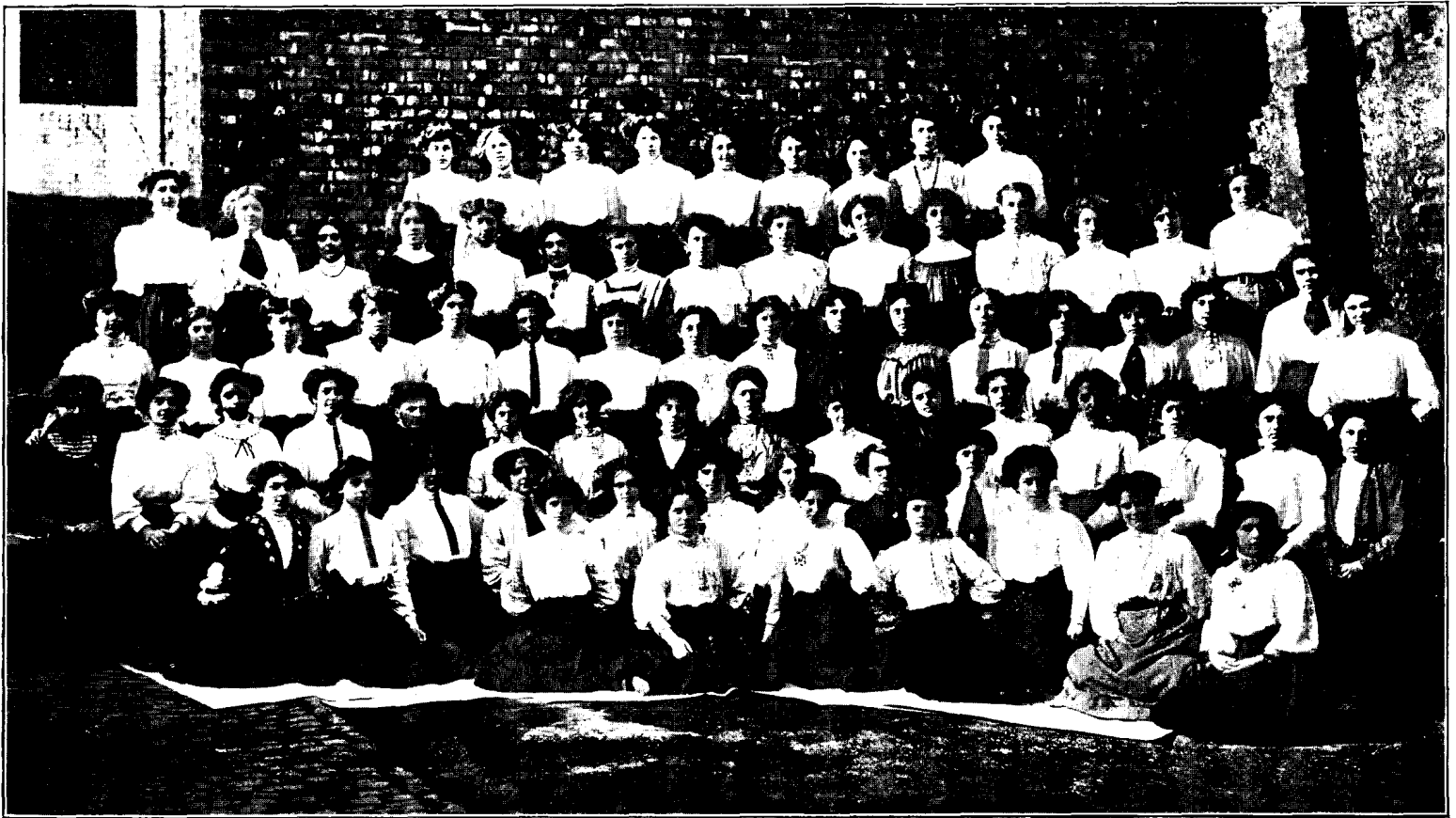
Nottingham, July 19.

P. R. COCKREM.

CORRESPONDENCE CLASS BOOKS.

TO THE EDITOR OF THE NATIONAL TELEPHONE JOURNAL.

REGARDING the above I should like to suggest that, in view of the transfer of the Company's business to the Post Office and probable stoppage of these classes either this year or next, the Telephony Papers "A," "B," "C" and "D" should be bound into one volume and sold to members of the staff. I think a large number would avail themselves of the opportunity of getting in a



THE NEWCASTLE-ON-TYNE OPERATORS' TELEPHONE SOCIETY.

permanent form information which is not to be found in any text books. Although most of the staff have already got these books it must be borne in mind that a great number have the earlier issues which are out of date.

Hoping this will be considered by the Correspondence Class Committee.
Glasgow, June 24. A. S. DUNCAN.

EDINBURGH CLASSES.

The following are the results of the past winter's work of members of the Edinburgh district staff:—

At Heriot-Watt College.

Practice of Commerce: Certificate, Edgar J. Fraser.
English: Medallist and prizeman, William Wilson; certificate, Wm. Hislop.
Commercial German: Certificate, Thos. Crawford.
Telephony: Medallists, J. A. Douglas and Robt. Goodfellow; certificates, Wm. Doig, John Wilson, Geo. Colquhoun, John McConnell, Thos. Cutt, Hugh Kilgannon, Peter Gilmour, Richard Clark, Wm. Knox, R. G. Richardson, John Robson, Michael McKenna and John Lockwood.
Telegraphy (honours): Certificates, David Christian and John G. Hare.
Telegraphy (ordinary): Certificates, Hugh Kilgannon and R. G. Richardson.
Wireless Telegraphy: Certificate, David Christian.
Special Class (calculus for Engineers): Certificate, David Christian.
Elementary Electricity and Magnetism: Certificates, Robt. Goodfellow, John McConnell, Arch. Pagan, Robt. M. Henderson, Jas. Waugh, Chas. Arthur, William Doig, Hugh Kilgannon and Thos. Cutt.
Hygiene: Certificate, Alex. McNab.
Physiology (senior): Certificate, Alex. McNab.

At Evening Continuation Classes.

Shorthand (speed 80 words): Miss M. M. Munro.
English: Certificate, Chas. Stewart.
Elocution: Certificate, Chas. Stewart.
Business Procedure: Certificate, Jas. Campbell.

At Leith Technical College.

Electrical Engineering (honours): Certificate, J. P. Melville.
Elementary Electrical Engineering: Certificate, John G. Hare and John McEwan Brown.
Electricity and Magnetism: Certificate, John G. Hare and John McEwan Brown.

PRESENTATION AT THE GENERAL POST OFFICE.

In the Deputation Room at the General Post Office on June 29, the Right Hon. Herbert Samuel, M.P. (the Postmaster General), presented the prizes in respect of the essay competition in connection with the course of lectures on telephony, delivered by Mr. D. H. Kennedy (of the General Post Office) at the Regent Street Polytechnic during last winter. The essay was limited to 5,000 words, with not more than 25 illustrations. The prizes in the form of cheques had been offered by Mr. A. M. J. Ogilvie, one of the Assistant Secretaries to the Post Office.

Besides the Postmaster-General, there were present Sir Matthew Nathan, G.C.M.G. (Secretary to the Post Office), Mr. S. J. Goddard (General Superintendent of the Company), Sir Robert Hunter, C.B. (Solicitor, P.O.), Mr. F. Gill (Engineer-in-Chief, Company), Major W. A. J. O'Meara, C.M.G. (Engineer-in-Chief, P.O.), Mr. Ogilvie, Mr. C. B. Clay (Metropolitan Superintendent), Mr. G. F. Preston, Mr. Phillips, Mr. Lowe and others.

The first prize was awarded to Mr. E. W. Pettitt of the Engineer-in-Chief's Office, G.P.O., and the second and third went to Messrs. H. G. Bishop and P. Prentice of the Engineer-in-Chief's Office of the Company.

An interesting point in connection with these awards was the closeness in the number of marks obtained by the successful three, only eight marks separating first and third. It was explained that the competitor placed third had been handicapped by a restricted interpretation of the conditions as to the number of drawings, and this, in view of the closeness in marking, had special significance.

Although the prizes, as originally announced, were three in number, two additional ones had been provided, one of these for competitors unconnected with any technical department, and the other for lady competitors. The first went to Mr. S. A. Paterson of the Secretary's Office, G.P.O., and the second to Miss Mary Phillips (daughter of Mr. C. J. Phillips), of the Post Office Telephone Service.

In the short speeches made by Mr. Samuel and Mr. Ogilvie, both dwelt on the need for, and the value of, technical education, and, in passing, Mr. Ogilvie paid a tribute to the Company for the work it has done in promoting technical knowledge among its staff.

LONDON NOTES.

THERE are four wedding presentations to be noted. Mr. A. Hough and Mr. T. Hack of the Cashiers' Department, were presented with a case of cutlery and a clock respectively. Mr. A. J. Gardner, Chief Inspector, Hop, was presented with a set of cutlery. Miss Bloomfield, Typist in the Divisional Engineer's office, Paddington, was presented with an electro-plate jug.

The following extract from the *London Gazette* will be of interest to the staff:

"General Reserve of Officers.—Honorary Captain Charles Noel French, late Captain the Lancashire Royal Garrison Artillery, to be Captain."

Mr. French is at present a Contract Officer in the Southern division. He served in the Army as an Honorary Captain during the South African war.

INSPECTOR F. E. ROBERTS, North-East district, recently won second prize for a twelve hours' walk at Stamford Bridge. The walk was under the auspices of the Middlesex Walking Club. Not only did Mr. Roberts secure second place, his distance being 70 miles, 1,716 yards, but he beat the previous world's record by over two miles.

A VERY enjoyable picnic, promoted by the staff's Hospital Saturday Fund Committee, took place at Hampton Court on July 9. Threatening weather early in the week rather militated against the sale of tickets. The holiday season also affected the attendance, as many of the staff were away or preparing to go. The party, although small, had a delightful time. An exploration of the rooms of the palace, with their fine sculpture, decorated ceilings, and historical associations, to say nothing of the splendid collection of pictures and tapestry, whiled away very pleasantly the time before tea. Afterwards the gardens, the maze, and the river filled up the afternoon and evening.

THE Traffic staff held a meeting on July 11, and elected the officers of the operators' society for next session. The arrangement of last year that the society should be worked as a branch of the London Telephone Society will not be continued, as it has been thought advisable to carry on the two bodies quite independently. It is hoped that the new arrangement will work quite satisfactorily, and that there will be an even larger membership than last year. It was decided not to have a lady chairman, owing, it is understood, to the difficulties of organisation and management which might be anticipated during the first year of the new regime. The reason given does not strike one as very adequate, particularly in view of the businesslike manner in which Miss Minter fulfilled the chairman's duties last year. Mr. Edmonds was elected chairman, with Miss Reekie and Mr. A. E. Abbott as vice-chairmen. There is also a strong committee of 25 members. Altogether, a successful future ought to be in store for the society.

IN the City and Guilds Examination, the results of which have just been published, Mr. G. Smith, City Fitting Department, has secured first-class honours in telephony, and Mr. T. M. Inman, Exchange Electrician, Battersea, first-class honours in telegraphy. In the second-class honours list there are fourteen passes amongst the Metropolitan staff, as against nine last year.

AT the London Division Territorial sports, Mr. G. Roden, Divisional Fitter, Gerrard, won third prize in the cycle race. Mr. Roden is in the Electrical Engineers.

THE call office collectors had their second annual outing on July 9. The morning was spent at Brighton, the sea front proving the strongest attraction. After lunch at the "St. James' Hotel," a drive was enjoyed to Portslade, *via* Shoreham and Southwick. On returning to Brighton in the evening, tea was partaken of, the day's enjoyment ending most happily with songs and music. There was an absence of sun, but as the rain also kept away, the weather conditions might have been worse.

NEWS OF THE STAFF.

Miss E. G. NETTLETON, Wakefield Exchange, has been promoted from operator to be Clerk-in-Charge at this exchange, replacing Miss Moore, resigned.

Mr. W. D. SCOTT, Leeds, has been promoted from Chief Inspector to be Electrician.

Mr. T. PARKER, of Leeds, has been promoted from Inspector to be Chief Inspector.

Miss EDITH WATSON, Leeds Central, has been promoted from Senior Operator to be Supervisor.

Miss JULIAN MARY HUGHES, Senior Operator, Royal Exchange, Liverpool, resigned on April 13 to take up another appointment. She was presented by her colleagues on leaving with a wrist watch and handbag.

Mr. JOHN RODGERSON BLACK, who resigned from the Company's service at Edinburgh recently, was presented with a silver cigarette case by his friends in the Edinburgh staff.

Miss ELIZABETH S. PRATT, Operator at Edinburgh Central, has resigned from the service.

Mr. F. JOHNSON, Local Office Clerk, Southport, resigned the service on April 21 to take up an appointment in Montreal, Canada, under the Bell Telephone Company. He was presented on his resigning with a dressing case and travelling rug by Mr. Chambers, the District Manager, who expressed his regret that Johnson was leaving, and voiced the best wishes of the staff for his future welfare and prosperity. A dinner was given him in the evening, which 45 members of the staff attended.

Miss H. MORRICE, Operator at Aberdeen Central Exchange, has been promoted to be Supervisor.

Mr. J. RILEY, Sub-Engineer, Swansea, has been promoted to be Local Manager, Neath.

Miss ELIZABETH ANN THOMPSON, Chief Operator, Neath, has been promoted to be Supervisor, Swansea.

Miss ELSIE BURTON, Operator, Cardiff, has been transferred to Newcastle-under-Lyne Exchange in the Hanley district. Prior to her leaving Cardiff, she was presented by her colleagues with a gold signet ring as a mark of their esteem and with best wishes for her future welfare.

Miss M. E. EVANS, recently transferred from Cardiff to Penarth as Clerk-in-Charge, was presented by her colleagues with a salad bowl, jam spoon, and butter knife, with best wishes for her success in the new position.

Mr. HERBERT S. BROWN, Stores Clerk, Birmingham district office, has been transferred, in a similar capacity, to Nottingham district office, to take the place of Mr. GEORGE H. CARRIER transferred to the Birmingham district office in the position of Stores Clerk.

Miss FLORENCE AGNES MANNING has been promoted from Senior Operator to Supervisor at Bristol Exchange.

Miss M. SKIPWORTH, Senior Typist, Nottingham district office, on resigning from the Company's service, was presented with a gold brooch.

Miss ETHEL MINNIE SEDGWICK, Assistant Typist, Nottingham district office, has resigned the Company's service.

Miss FLORENCE MARY BARKER, Monitor, Nottingham Central Exchange, has resigned the Company's service.

Miss MABEL HOOLEY, Supervisor, Nottingham Central Exchange, has been transferred to the position of Monitor.

Miss ADA DRAKE, Operator, Nottingham Central Exchange, has been promoted to be Supervisor.

Contract Officer E. H. LAKE, Derby, was presented with a Swan fountain pen on the occasion of his transfer to Lincoln. The Local Manager, on behalf of the Derby staff, wished him success in his new sphere of work.

Miss EDITH BARKER, Journal Clerk, Fees Department, Manchester, on resigning her position with the Company on July 23 to join her relatives in Canada, was presented by the members of the district office staff with a silver-backed hair brush and comb.

Miss F. M. HAVELOCK, of Bank Exchange, Liverpool, on her transfer to a London Exchange in consequence of the removal of her parents from Liverpool, was presented by her colleagues at Liverpool with a brush and comb as a mark of their esteem and good wishes.

METROPOLITAN STAFF CHANGES.

Mr. W. M. CLARKE, Storekeeper, Battersea, to be Call Office Collector, Salisbury House.

Miss M. G. RISE, Operator, London Wall, transferred to the Rentals Department as Clerk.

Miss W. M. DOERR, Operator, Kensington, transferred to the Rentals Department as Clerk.

Miss MINNIE F. BUTLER, Clerk-in-Charge, North, promoted to be Clerk-in-Charge, Kensington.

Miss ADA KNAPMAN, Clerk-in-Charge, Brixton, promoted to be Clerk-in-Charge, North.

Miss CELIA HOOPER, Senior Supervisor-in-Charge, Hammersmith, promoted to be Clerk-in-Charge, Brixton.

Miss EMMA STEVENS, Supervisor, Hop, transferred as Supervisor to Gerrard.

Miss CATHERINE MCKENZIE, Operator, Bank, promoted to be Supervisor-in-Charge, Romford.

Miss ANNIE GIBBONS, Operator, Hop, promoted to be Supervisor-in-Charge, Richmond.

Miss EDITH KING, Operator, Avenue, promoted to be Supervisor, Hop.

Miss MABEL ROBINSON, Operator, Gerrard, promoted to be Supervisor, Paddington.

Miss ROSINA GIFFORD, Operator, Dalston, promoted to be Supervisor, North.

MARRIAGES.

Miss EVA BARTLETT, Supervisor, Southampton Exchange, was the recipient of a dinner service and other gifts from the operating, local, contract and district office staffs on her resignation to be married, the presentation being made by the District Manager.

Mr. A. W. G. HEWITT, Rentals Department, Manchester, was presented with a fumed oak hallstand by the members of the clerical staff on the occasion of his marriage with Miss EDITH GERTRUDE EVANS, late Senior Operator, Royal Exchange, Liverpool, whose wedding present from her colleagues took the form of cutlery.

Miss ELIZABETH R. TURNER and Miss MABEL G. WESTON, Senior Operators at Stoke Bishop and Kingswood Exchanges respectively, who recently left to be married, were each presented by their colleagues with a case of silver spoons as a mark of esteem.

Fitter E. LEAVESLEY, Nottingham, was presented by his colleagues with a clock on the occasion of his marriage.

Miss EDITH GERTRUDE EVANS, Senior Operator, Royal Exchange, Liverpool, resigned on June 9 to get married, her wedding present from the staff taking the form of cutlery.

Mr. J. BELL, Exchange Electrician, Liverpool, was on the occasion of his marriage presented by his colleagues with a very handsome mahogany clock. The presentation was made by Mr. Hill, D.M.E.

Mr. W. BALL, Test Clerk, Central Exchange, Liverpool, was presented on the occasion of his marriage with a clock subscribed for by his colleagues on the electrical staff, as a token of the esteem in which he was held by them.

Miss KATE E. MOORE, Chief Operator at Wakefield Exchange, left the Company's service on June 16 to be married. She has been in the Company's

service since 1900, commencing at Dewsbury Exchange. She was presented with a dinner and tea service as a mark of esteem from the staff at Dewsbury and Wakefield.

Miss NELLIE BEAUMONT, Operator, Dewsbury, was presented with a set of silver salt cellars by the staff at Dewsbury on the occasion of her leaving the Company's service to be married.

Miss MARY BROWNHILL, Leeds Central, was, on the occasion of her leaving to get married, presented by the operating staff with a silver lamp and sugar tongs. She entered the Company's service in April, 1896, was made Teaching Supervisor in August, 1906, and Supervisor on June 14, 1907.

Miss E. L. HUTLEY, General Superintendent's office (Correspondence Department), left the Company's service on June 30 in view of her approaching marriage. Her colleagues in the Typewriting Department presented her with dinner and tea service. She was also presented with a breakfast service by Mr. Kolt of Southern Provincial Superintendent's office.

Miss HILDA SHARP, Operator, Leeds, was presented with a silver flower stand on the occasion of her leaving to get married.

Miss LUCY J. PEACOCK, Operator, Roundhay Exchange, Leeds, left the service on June 9 to be married, and was presented by the staff with a clock.

Miss F. PRITCHARD, Operator, Central Exchange, Swansea, who recently resigned to be married, was, on leaving, presented by the Swansea operating staff with an handsome *epave* as a mark of esteem.

Miss PRUDENCE MILES, Night Operator, Central Exchange, Birmingham, resigned the service to be married on June 2 after three and a half years' service. The day staff at the Central Exchange presented her with a dinner service, and the night staff with a cruet.

Miss CECILE ELIZABETH DEANS JOHNSTONE, Clerk-in-Charge at Folkestone, left the Company's service on June 30 in view of her approaching marriage. She was presented on behalf of the staff with an oak salad bowl and salt cellars as a mark of esteem and with best wishes for her future welfare.

Miss M. WILSON, Supervisor, Aberdeen Central Exchange, was on the occasion of her leaving the service to be married, presented by the Clerk-in-Charge, on behalf of the operating staff, with a china tea set as a token of esteem and regard.

London Traffic Department.

Miss AMY KNAPP, Supervisor, North, on leaving to be married, was presented with a silver cake basket by the staff.

Miss BEATRICE IZATT, Operator at Croydon, on resigning to be married, was given a pair of handsome Karanchi vases by the exchange staff.

Miss AMY WATTS, Supervisor, Gerrard, on leaving the service, was presented by the supervising staff with a silver-backed brush and comb, and by the operators in her division with a gold brooch.

Miss ANNIE ALTON and Miss DAISY WEATHERLEY, on leaving Gerrard Exchange to be married, were each presented with a tea service, and Miss DAISY AGLEY, resigning for the same reason, with a dinner service.

Miss BESSIE CHARLTON, Supervisor, Battersea, on being transferred in a similar capacity to Kensington, was presented by the operating staff at the former exchange with a gold bangle.

Miss DOROTHY PITT, on leaving Brixton Exchange to be married, was presented with a Wedgewood biscuit box.

Miss HILDA PEACOCK, of Richmond Exchange, on leaving to be married, was given a handsome eider down quilt by her friends at that exchange.

Miss MARGARET BANKS, on leaving East Exchange to be married, was presented with a glass trinket set from the operating staff, and several personal gifts from colleagues.

OBITUARY.

We regret to record the death of Foreman C. E. BYRNE, Manchester district, who met with a fatal accident on June 21. Foreman Byrne had gone up a 50-foot pole to speak to one of his wiremen, when by some means he slipped and fell on to a wooden fence, sustaining a compound fracture of the thigh and severe internal injuries. Previous to the interment, which took place at Macclesfield Cemetery on June 25, a funeral service was held at King Edward's Chapel, Macclesfield, of which he had been a member for a number of years. Floral tributes were sent from the various departments in Manchester, and also from the Stockport and Macclesfield staffs, the staffs mentioned also being represented at the funeral.

We regret to report the death of Mr. HARRY DICKSON, Inspector, Southport, which occurred on March 19, and express our deep sympathy with his widow. Mr. Dickson had been in the service both in Dublin and Southport a good many years.

It is with regret that we have to record the death of E. STANTON, Linesman, Leeds, who died on June 30. A wreath was sent as a token of respect by the staff. The deceased was a member of the Territorial Forces, and had served in the South African war. He held the following:—One South African medal with four clasps, including Transvaal, Cape Colony, Orange Free State and Ladysmith. He was buried with military honours.

We also regret to record the death of J. SMITH, Wireman, Norwich, at the age of 63. He was an old and valued servant of the Company.

STAFF GATHERINGS AND SPORTS.

Swansea.—The annual outing of the engineering and line staff took place on July 9, when a party numbering over 50 spent an enjoyable day at Ilfracombe. The trip was made by steamer across the Bristol Channel, the weather being excellently fine and, with one exception, the terrors of *mal-de-mer* were absent. Shortly after arrival the party sat down to an excellent lunch, after which the majority drove to Woolacombe, where sports were held. A number of well-contested events resulted in prizes being won by Messrs. G. Thomas, S. Anderson, M. Evans, J. Washer, E. W. Thomas, F. Stevens, W. Williams, G. Chick and C. Price. Tea was taken after arrival back in Ilfracombe, and after the

prizes had been distributed, the party embarked at 8 p.m. for home. The success of the outing is due in a large measure to the efforts of Mr. W. King, who acted as secretary.

Leeds.—On July 2 a very enjoyable outing to Knaresbro' was arranged under the auspices of the Leeds Telephone Society. A party of 50 left Leeds Station at 1.55 p.m., arriving at Knaresbro' about 3 p.m. Tea was ordered for five o'clock at Ellerkers' Café, and the intervening period was spent by the majority of the party on the river. After tea the various historical spots were visited, and more boating indulged in. After an exceedingly pleasant afternoon, the tired but happy party returned to Leeds, arriving at 10.30 p.m. Miss Fotherby, Messrs. Niemann and Corlett were responsible for the arrangements, and carried them out in an admirable manner.

Weybridge.—This centre had its annual summer outing on July 2. The party included the Local Manager (Mr. A. A. Farrow) and the Chief Clerk (Mr. C. S. Weston) and other members of the Guildford and Aldershot staffs. They embarked at Shepperton Ferry in the steam launch *The Princess*, with the idea of getting to Windsor, but the captain refused to pass the dangerous spot known as the "Bells of Ousley," and it was subsequently attacked on foot in skirmishing order. Tea was taken on board, and a piano, songs, and the presence of the ladies contributed to an enjoyable trip, in spite of the tearful attitude of Jupiter Pluvius.

Coventry.—The staff of this centre held their annual outing on July 9, when a drive was taken by four-in-hand to Hampton-in-Arden. A most enjoyable time was spent. After being photographed, the party, which consisted of about 50 members, partook of a meat tea at the "Engine Hotel." Sports were indulged in, and a novel cricket match played. The return to Coventry was made about 9.45 p.m. The guests included amongst others, Mr. and Mrs. J. Scott (Asst. Prov. Supt.), Mr. and Mrs. Jno. Mewburn (District Manager), and Mr. and Mrs. R. S. Grosvenor (Local Manager).

Head Office.—A walking match in ordinary attire took place on July 9 between Messrs. Hardstone and Payne of the Test and Buildings Department, Head Office, respectively. The distance was ten and a half miles (Westminster to South Croydon). Mr. Payne covered this distance in 1 hour 53 minutes, Mr. Hardstone following on in 1 hour 59 minutes 30 seconds, Mr. Payne covering six and a half miles in the first hour. It is possible that another match may be arranged.

Edinburgh.—A number of the staff at Edinburgh enjoyed a ramble on the evening of June 22. Starting from the Braid Hills, the route taken was by Fairmilehead, Kaimes, Greenend, and Liberton.

The staff at Edinburgh held another ramble on July 9. Train was taken to Colinton, whence the party of 70 walked to the reservoirs at Glencorse. Here tea was taken picnic fashion, and games engaged in before continuing the walk to the Braid Hills.

Wolverhampton.—On June 18 the switchroom staff journeyed by charabanc to the old town of Bridgnorth. An enjoyable tea was taken, and after visiting the various historical spots the return journey completed a glorious afternoon. The arrangements were in the hands of Miss Wylde, the Clerk-in-Charge, to whom thanks are due for the successful outing.

Brighton.—On July 2 a party of the Sussex staff journeyed from Brighton to Arundel for a half-day's outing, where they were met by another party from the Chichester centre. The combined parties, numbering 52, sat down to an excellent tea at the "Bridge Hotel." In the absence of the District Manager, Mr. H. Hatton (Electrician) presided, other officials present being Messrs. F. Frost (Traffic Manager), H. Drury (District Office), A. C. Tucker (Chief Contract Officer) and Miss Trott (Clerk-in-Charge of the Brighton Exchange). Mr. C. F. Moorhouse (District Manager) together with Mr. F. W. Roberts (Brighton Manager) and Mr. A. W. Faro (Chichester Manager) arrived later in the afternoon and accompanied the party home by the last train. After tea most of the party indulged in boating, and the park and other attractions of the place were patronised, everybody thoroughly enjoying themselves. The arrangements for the outing were very efficiently carried out by Mr. H. Drury.

Gloucester.—The district annual picnic took place on June 18, when a large number of the staff and friends journeyed by brake from their various centres to Framilode, a village picturesquely situated on the Severn. After an early tea various games and amusements were indulged in, including cricket, boating and dancing. Altogether a most enjoyable time was spent. Ideal weather added to the pleasure of everyone. Mr. Harry Thompson (hon. secretary) and his committee are to be congratulated on the result of their efforts. Mr. Elliott (District Manager) and Mrs. Elliott were present, and took a prominent part in the day's proceedings. During the afternoon, after numerous attempts to induce the gathering to assume an unnatural gravity for so festive an occasion, the group was successfully photographed by the Company's "official photographer."

Leeds.—On June 18 a match took place under the auspices of the Staff Cricket Club, between the married men and the single. The match was very keenly contested, but the married men with the calm confidence, due to maturer years, easily defeated the single men, the result being as follows:—Married, 47; Single, 41. There was a large attendance of the staff.

Dewsbury.—On July 2 about 30 members of the staff at Dewsbury had a very enjoyable outing. The drive to Cawthorne in charabancs, a distance of fourteen miles, was very enjoyable, and upon arrival there tea was taken at the "Spencer Arms." Afterwards the whole party went into the park, in which there are numerous attractions. A visit was also paid to the Museum. The Assistant Engineer, Mr. Halmshaw, who includes photography amongst his hobbies, took several photographs of the party, which turned out very effective.

Southampton.—A very pleasant afternoon was spent by the Instrument and Line Departments on July 9 on the occasion of their annual outing. The party journeyed by brake to Hamble, where they partook of a crab tea. In a cricket match which followed the Instrument Department were victors over the Line staff by 68 runs, the brothers Naylor and H. Newman, for the winners, being conspicuous for their batting and bowling respectively.