

THE National Telephone Journal

VOL. VI.

DECEMBER, 1911.

No. 69.

TELEPHONE MEN.

LXVII.—GEORGE FREDERICK GREENHAM.

GEORGE FREDERICK GREENHAM was born in London on May 10, 1874, and, after receiving his education at Emmanuel School, Wandsworth Common, he spent the year 1890 in a private school in Bad Neuenahr, near Bonn.

On returning from Germany he studied for the Civil Service, but, not taking kindly to the work, was advised to go in for electrical engineering, a profession which at that time was not so overcrowded as at present. His leaning towards things mechanical was very probably inherited from his father, who in his early business career was employed in the designing department of a firm of marine engineers. After a course of preparatory studies in physics, mechanics and mathematics at King's College, Mr. Greenham entered the Siemen's Electrical Laboratory (associated with the same college) and studied under the late Dr. John Hopkinson and Mr. (now Prof.) Ernest Wilson. Here he gained a scholarship which entitled him to a further period of one year in the laboratory free on the understanding that he assisted in the conduct of the evening classes and in any research work that Dr. Hopkinson might have in hand.

After leaving King's College he spent a year as improver in the Charing Cross and Strand Electricity Supply Station. His principal work during this period was repairing the combined sets, consisting of Williams' high-speed engines, coupled direct to Mather & Platt dynamos.

In the beginning of 1895 Mr. Greenham, following up a suggestion made to him that the telephone would offer better prospects than the electricity supply business, interviewed Mr. A. Calder, who at that time presided over the destinies of the Metropolitan staff. He was offered and accepted a post as switch-

room fitter at a very small commencing salary. He was sent to Queen Victoria Exchange in Mansion House Chambers, where the flat board which is still in existence to-day was in course of construction to replace the single line board. Mr. Greenham still remembers

the hopeless feeling he experienced (after being accustomed to the comparatively simple conditions existing at the Electricity Supply Station) on seeing the apparent complication of the circuits. After the exchange was opened he was appointed Test Clerk, and later Exchange Inspector.

In 1897 Mr. Greenham was sent to Gerrard Exchange to control the maintenance staff during the time that the Engineer-in-Chief's staff were overhauling the exchange by night. He remained at Gerrard as Exchange Inspector, and took part in the installation of the Christiania board that eventually gave place to the present C.B. board.

In June, 1899, he was appointed Switchroom Manager. At that time the switchroom manager controlled the electrical work, both construction and maintenance, as well as the traffic. In 1901 Mr. Greenham received further promotion to the position of Assistant to the Western District Electrician (Mr. B. F. Howard), and was engaged upon the opening of the first C.B. exchange in London—viz., Kensington—which was opened in the December of that year. On Aug. 14, 1903, he was appointed Electrician of the Western district under Mr. Dalzell, and, on the re-organisation of London in January, 1905, on functional lines, he took the position

of Metropolitan Maintenance Electrician. On the retirement of Mr. Cole, who had held the post of Metropolitan Construction Electrician, in August, 1907, Mr. Greenham was made Metropolitan Electrician, with control of the whole of the Electrical Department.



In March, 1908, he took control of the Electrophone Department in addition to the others.

During Mr. Greenham's period of service with the Company he has taken an active part in some of the big events in the Company, such as the restoration after the London Wall and Bank fires, and has assisted in introducing uniformity of method throughout the Metropolitan area. He has been associated with the Correspondence Classes since their introduction. He has also taken an active part in connection with the telephone societies (of which there are five) in London, and is president of the London Telephone Society for the current session.

As regards recreation, he was for some years an enthusiastic yachtsman and has had some exciting experiences on the east coast, but increased responsibilities have necessitated his giving up this pastime. He now amuses himself with reading, swimming, photography and gardening in their respective seasons.

INSTITUTION OF POST OFFICE ELECTRICAL ENGINEERS.

At the first meeting of the present session of the Metropolitan centre, Major W. A. J. O'Meara, the Engineer-in-Chief of the Post Office, delivered the following inaugural address:—

I do not desire to-night to disappoint you by claiming your attention to a lengthy address. You will have read—possibly with some satisfaction—that my remarks are to be brief. Personally, I think that there is much to be said on both sides in favour of a short address on this particular occasion. At the outset, I should like to say that the Metropolitan centre is to be congratulated on the fact that the average attendance at the local meetings is well maintained. Moreover, the fact that we have such a full programme for the session which opens to-night happily encourages the belief that the interest in the work of this institution is by no means on the wane, and that we can still expect to reap many advantages from the readiness of our colleagues to place the value of their experiences before us. Further, looming ahead is the transfer of the National Telephone Company's business to Post Office control, and this fact suggests the possibility of a substantial increase in the membership of this institution, probably before the end of the present session. While referring to this matter, I feel that I would like to extend on behalf of the institution a very cordial welcome to those members of the engineering division of the Company's staff who desire to join the institution in due course. It goes without saying that a no less cordial reception will be accorded to any offers which may be made by members of the transferred staff to read papers before the institution.

As you know, considerable attention has been devoted recently by influential bodies and by the Press and public generally to the matter of the education or training of engineers as well as to the subject of the value of degrees. The first-named subject is one which is very familiar to members of this institution—having been dealt with specially on one or two occasions—and I have no doubt that most, if not all, of you have read with great interest that portion of the address delivered some weeks ago by Sir William Ramsay before the British Association which relates to this subject. Possibly you may remember Sir William's apt remark:

"In England we have made technical education a local, not an Imperial, question. Instead of half a dozen first rate institutions of university rank, we have a hundred . . . and the training given is not that for captains of industry, but for workmen and oremen."

That the fallacious idea prevails, sad to say, far too widely in this country that the functions of an engineer correspond to those of a foreman is, I think, beyond doubt, and it is in the interests of, and it should be the aim of engineers to remove this wrong and sometimes mischievous impression. There are, it is true, "quack" engineers in this world, as there are "quack" doctors, but with this distinction, that while the medical profession has secured legal protection against "quackery," such protection has not, unfortunately, been secured by the engineering profession. I believe that a great amount of injury has been done, and is still being done, by "quack" engineers and I consider that some system of registration should obtain, and that before a young man is admitted to practice as an engineer, he should be required to submit some suitable proof of his qualifications for the profession. This raises the question of the value to be placed upon the possession of scientific degrees. Those who have followed the discussion which took place at the Institution of Civil Engineers during the past summer on the important question of the training and education of engineers will not have failed to have discovered that there was a marked division of opinion on the subject of the value of degrees. Naturally, one has been anxious to discover the reason for this difference. It seems to me that what the commercial world is looking for is something in the nature of a hall mark indicating the quality of the probable practical efficiency of the embryo engineers. The employer really desires that the student turned out from our educational establishments shall bear some mark which will not only indicate the amount of his theoretical and practical knowledge, but also his real power to apply this knowledge to the work which the young engineer may be called upon to undertake rather than a degree indicating examination room performances. The requirements for the degrees conferred under the present system are largely based on considerations more limited than those in the contemplation of the manufacturer or other employer, and it is not surprising therefore that so much disappointment is felt in commercial circles

with the degrees which are being so liberally bestowed, and which, necessarily, are almost wholly granted in respect of academic attainments of a certain order. I recognise that the situation is a very difficult and far-reaching one. It may be that too many young men entering the engineering profession commence to specialise too early in life, to the neglect of their general education. Further, it may be that the fascination of science, and the details of the application of its principles to particular engineering problems, tend to absorb completely the attention of the majority of the students to the exclusion of matters a knowledge of which is essential if the engineer is to be something more than a mere tool to do the bidding of those not having the same intimate knowledge of his craft. The solution of the difficulty can be effected if for the present requirements for a degree there can be substituted some means for marking down a man's qualifications in such a way as to include not only his theoretical knowledge, but also his ability to apply it readily and effectively in a mundane organisation, in which it must be recognised that human beings, and not the materials used, constitute the factor of prime importance. In condemning the system under which degrees are granted, it is necessary to guard against the danger of a wholesale condemnation not only of the system itself, but also of all those on whom these degrees are conferred. Until the present system is modified it seems to me that the degree must be accepted as an indication mainly of certain scholastic attainments, and that the employer must himself be content to undertake the task of assessing the value of the personal and practical qualities of each aspirant engineer. It is little wonder that such great interest has been aroused recently in the matter of the training and recruiting of engineers. The reason is not far to seek. Everyone who has any knowledge of the practical side of engineering fully recognises that owing to the advances which have been made in recent times, and to the large sums of money involved in engineering schemes, it is more and more necessary that the proper class of young men should be drawn into the profession; I am persuaded no surer way to do this exists than that of properly appreciating the status and the value of the work of engineers. Sir James Inglis doubtless had this matter in mind when, some three years ago in his presidential address before the Institution of Civil Engineers, he pointed out how important it was that the engineering work in Government Departments should be entrusted only to highly trained engineers. In view of Sir James's personal experiences, not only as an engineer but as an administrator, his opinion in this connection is very valuable, and it is hoped that at no distant date his views on this subject will be very widely shared by all those in the highest authority.

In closing, I would remark that if a full recognition of the status of engineers is to be secured, not only must each individual engineer display adequate professional and general knowledge, but the whole body of engineers must also actively co-operate to obtain the creation of a governing body to effect an efficient control over their profession, and thus to protect adequately their own interests and those of the public generally.

NEW PATENTS.

THIS list is specially compiled for THE NATIONAL TELEPHONE JOURNAL by Messrs. Rayner & Co., registered patent agents, of 37, Chancery Lane, London, from whom all information relating to patents, designs, trade marks, etc., can be obtained gratuitously.

LATEST PATENT APPLICATIONS.

- | | | | | |
|--------|---|--|---------------------------------------|---------|
| 22,803 | Siemens Bros. & Co., Ltd. | Calling-circuits for automatic telephone systems. | Oct. 16. | |
| 22,805 | Siemens Bros. & Co., Ltd. | Subscriber's instrument set for automatic telephone exchange. | Oct. 16. | |
| 22,983 | British Insulated and Helsby Cables, Ltd. | William Aitken, Harry Cooper, and Charles Remington. | Intercommunication telephone systems. | Oct. 18 |
| 23,080 | Max Pledath. | Coin-freed mechanism for telephones. | Oct. 19. | |
| 23,118 | George Howard Nash and Western Electric Co., Ltd. | Telephone transmitters. | Oct. 19. | |
| 23,122 | Percy William Wall. | Calling apparatus for telephones and the like. | Oct. 19. | |
| 23,314 | Joseph Trenner. | Holders for telephone receivers. | Oct. 23. | |
| 23,393 | Wallace Fairweather. | Telephone coin collector. | Oct. 23. | |
| 23,500 | Edward Hill Bridge. | Means of and apparatus for recording calls made by telephone. | Oct. 24. | |
| 23,508 | Frank Robert McBerty. | Semi-automatic telephone exchange systems. | Oct. 24. | |
| 23,823 | Aktiebolaget L. M. Ericsson & Co. | Common battery telephone systems. | Oct. 27. | |
| 23,910 | Siemens Bros. & Co., Ltd., and William Herbert Grinstead. | Three contact plugs for telephone switchboards or the like. | Oct. 28. | |
| 23,937 | Hugh Spencer Bryant and Third Hand Patents. | New or improved machine or device for use in connection with telephones. | Oct. 28. | |
| 24,441 | Siemens Bros. & Co., Ltd. | Impulse-transmitter for semi-automatic telephone systems. | Nov. 3. | |
| 24,807 | Siemens Bros. & Co., Ltd. | Circuit connection for private telephone installations connected to telephone exchanges. | Nov. 7. | |

SPECIFICATIONS PUBLISHED THIS MONTH.

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|--------|--|--|
| 14,144 | Siemens Bros. & Co., Ltd. | Calling circuit arrangements for automatic and semi-automatic telephone exchanges. |
| 11,132 | Crowe & British L. M. Ericsson Manufacturing Co. | Telephone transmitters, receivers, or like devices. |
| 24,583 | Willis. | Telephone receivers. |
| 3,452 | McBerty. | Automatic telephone system selectors. |
| 20,440 | Bowman. | Party line telephone system. |

Printed copies of the published specifications can be obtained from Messrs. Rayner and Co. at the nett cost price of 8d.

THE HISTORY OF THE NATIONAL TELEPHONE COMPANY.

THE TRIALS, TRIBULATIONS AND TRIUMPHS
OF THIRTY-THREE YEARS.

BY ALBERT ANNS.

(Continued from page 163.)

PART II.

SYNOPSIS.

Amalgamation of Telephone Companies completed—Evolution of the Switchboard—The Theatrophone—The Mutual Telephone Company at Manchester—General Manager appointed—Position of Company at end of 1891—Sheffield and the Measured Rate—The New Telephone Company and competition—Metallic circuiting of system—Agreement with the Manchester Corporation—The Glasgow enquiry—Pension Fund started—London County Council refuses Wayleaves—Action by Postmaster-General—Company decides to erect its own buildings—Negotiations for Sale of Trunk Lines—Telegraphs Bill of 1892—Select Committee of 1895—Settlement of Local Areas—Trunk Lines transferred to the State—Inadequate Provision of Trunk Facilities by Post Office—Company gives Guarantees in respect of Trunk Lines.

In continuation of the policy of welding into one undertaking the various telephone interests, the Northern District Telephone Company was absorbed on April 30, 1890. At that date the Northern District Company had expended on works of construction £78,236, and had established and was working 1,551 exchange and private lines. On Oct. 31, 1890, the South of England Telephone Company, with a capital expenditure of £84,916, and 3,235 lines, was incorporated with the National Telephone Company.

In 1884 an Earth Circuit Double-Cord Multiple Switchboard was installed in the Liverpool Central Exchange. It was the first Western Electric Multiple Board fitted in this Country.

A novel use was made of the telephone when street fire alarms were installed to enable members of the public to communicate

with the fire brigade station by means of telephone instruments fitted in boxes in the streets. One of the first local bodies to take advantage of this great public convenience was the Nottingham Corporation, who had the necessary work carried out by the National Telephone Company in 1887.

In 1888 an earth circuit double-cord multiple switchboard was fitted at Manchester. The calling and clearing signals on this board were operated by battery current, and battery bells were used on the subscribers' instruments. The circuits were so arranged as to permit ringing through without giving the clearing signal to the



THE ENTRANCE TO THE MUSIC ROOM AT THE CRYSTAL PALACE, SYDENHAM.

operator. This board was an advance on the Liverpool multiple switchboard installed in 1884, inasmuch as it was fitted with answering jacks, a feature not possessed by the earlier Liverpool board.

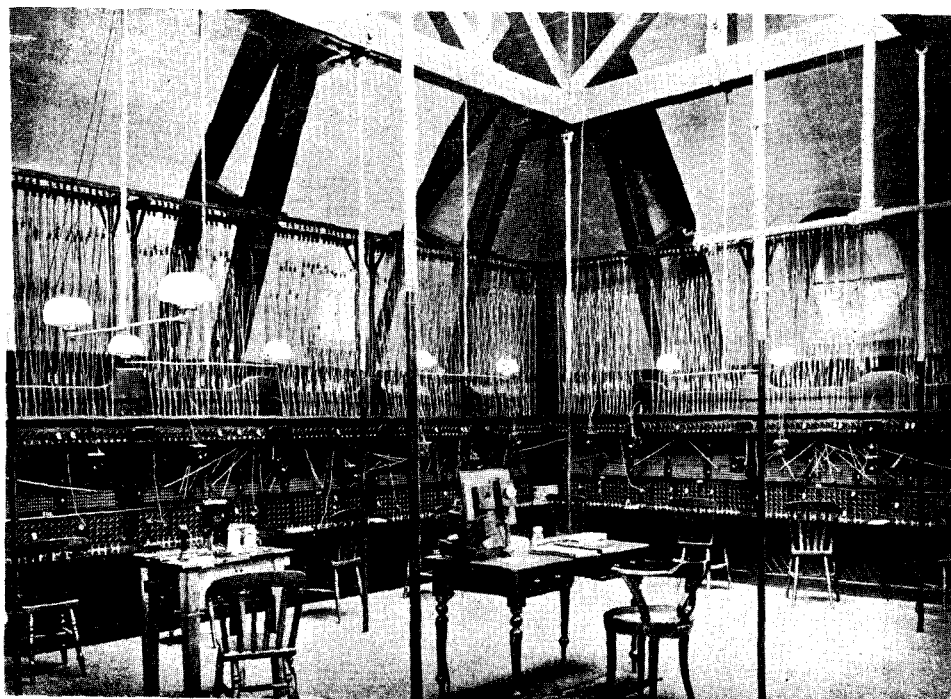
In 1889 the first telephone society was formed, and the great educational advantages to the staff of meeting and discussing the various problems arising in connection with telephone work was so quickly apparent that similar societies were from time to time started. In the last few years they have become almost universal throughout the United Kingdom, and it is impossible to estimate how greatly the Company has benefited by the knowledge that has thereby been disseminated through every grade of the Company's service.

In 1889 the Company's first metallic circuit multiple switchboard was installed at Newcastle-on-Tyne. On this board the multiple jacks were wired in pairs, the "A" wire on one jack and the "B" on the other, and twin plugs were used.

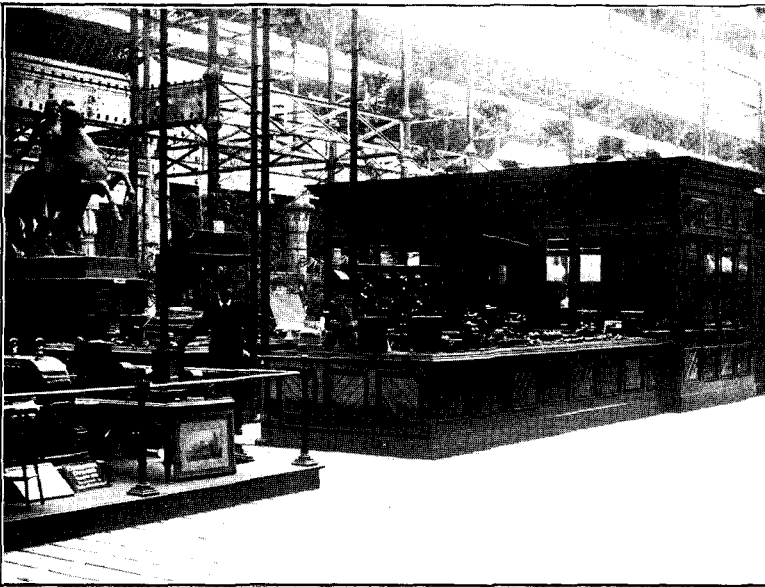
In 1890 a Scribner single-cord earth circuit multiple switchboard was fitted at Blackburn. It was fitted with socket contacts which connected the operator's instrument in circuit with the line when a plug was lifted, and individual ringing keys were fitted in connection with each cord.

In January, 1891, the trunk wire between Birmingham and London was completed, thus putting the Metropolitan telephone subscribers in connection with the network of trunk lines which had been erected in the Midland and Northern counties.

The Liverpool district was the first to use the dry core paper cable. In 1891 two cables, each containing 41 pairs of wires manufactured by the Western Electric Company, were run



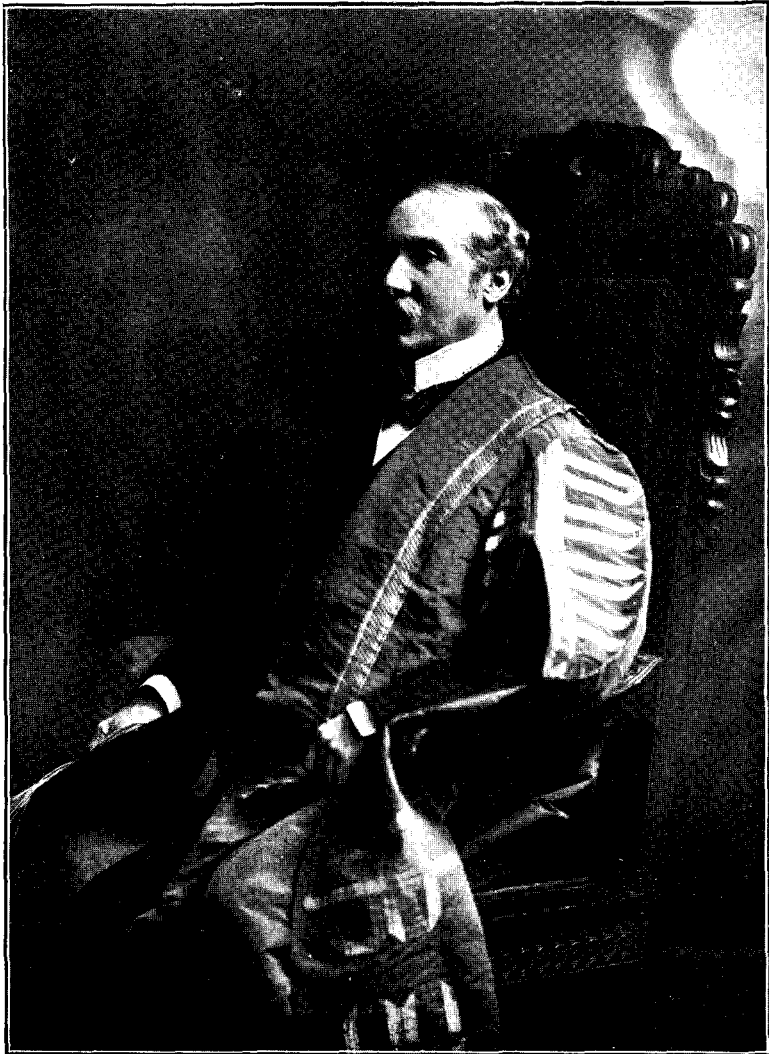
MULTIPLE SWITCHBOARD FITTED IN THE LIVERPOOL EXCHANGE IN 1884.



ANOTHER VIEW IN THE CRYSTAL PALACE, SYDENHAM.

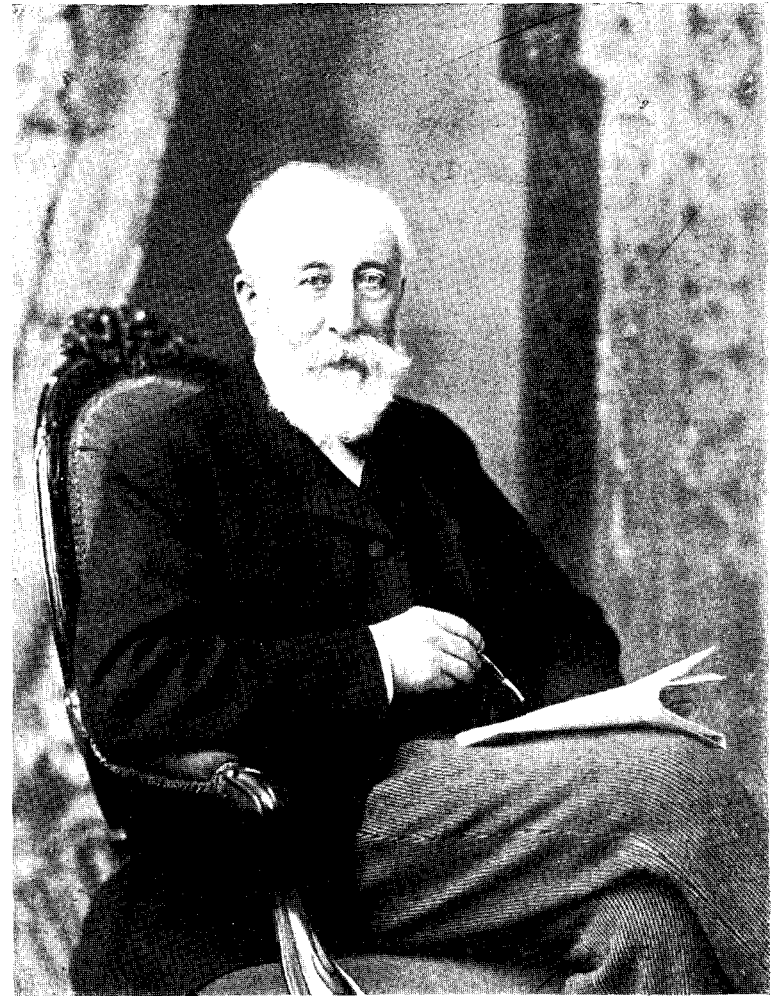
through the Mersey Tunnel by the National Telephone Company to connect Liverpool with Birkenhead.

In January, 1892, the attention of the Directors was called to the theatrophone, which had been successfully established in Paris



DR. GEORGE FRANKLIN, D.LITT.

for transmitting, by the aid of the telephone, musical performances from theatres to hotels, clubs and other places. As an experiment, a concert room at the Crystal Palace, Sydenham, was fitted up by the Company and connected with the Lyric Theatre, in London,



COLONEL ROBERT RAYNSFORD JACKSON.

where the comic opera, *The Mountebanks*, was being performed, and with certain theatres in Birmingham, Manchester and Liverpool.

The novelty was much appreciated, and during the six months that the entertainment was open—viz., from January to June, 1892, 57,992 people passed through the turnstiles, and £997 13s. was collected from those paying for admission.

On Jan. 1, 1892, the Western Counties and South Wales Telephone Company was acquired by the National Company, which increased the latter company's number of lines by 4,027, and its capital expenditure by £185,366.

The next to be absorbed, in March, 1892, was the telephonic business of the Sheffield Telephone Exchange and Electric Light Company, with an outlay of £38,697 expended on the construction of an exchange in Sheffield, and 1,415 lines.

A notable event happened in connection with the latter acquisition, when Mr. Alderman George Franklin, a Director of the Sheffield Company and Lord Mayor of that important city, 1897-8, who was eventually to play a great part in the closing scenes of the National Telephone Company's existence, joined the Board of that Company on June 2, 1892. At a later date Mr. Franklin became Pro-Chancellor of the University of Sheffield and had conferred upon him the degree of Doctor of Literature.

In the early part of the year 1892 the Company suffered a severe blow by the sudden death on Jan. 4 of its President, Mr. F. R. Leyland. A man singularly gifted, of great determination and many attainments, his loss was keenly felt by his colleagues, and it is remarkable how frequently throughout the

history of the Company its varying fortunes have been affected by the death of prominent Directors and officials.

The Company was, however, fortunate in being able to elect as his successor Mr. J. S. Forbes, one of the two Vice-Presidents



MR. WILLIAM EDWARD LOUIS GAINE.

who had been associated with the telephone business from the very earliest days of the enterprise. The vacancy thus created in the position of Vice-President was not filled up, Colonel R. R. Jackson remaining the sole representative of that office.

The Mutual Telephone Company, Limited, incorporated on Feb. 4, 1890, was granted a license by the Postmaster-General on May 9, 1890. It started business in Manchester with a tariff of £5 per annum for shareholders and £6 per annum for non-shareholders, and its telephone exchange was opened in February, 1891. As there was no intercommunication between the National and Mutual subscribers, many of the important firms in Manchester had to subscribe to the two systems and pay £16 per annum instead of £10, which was the general rate of the National Company in that city.

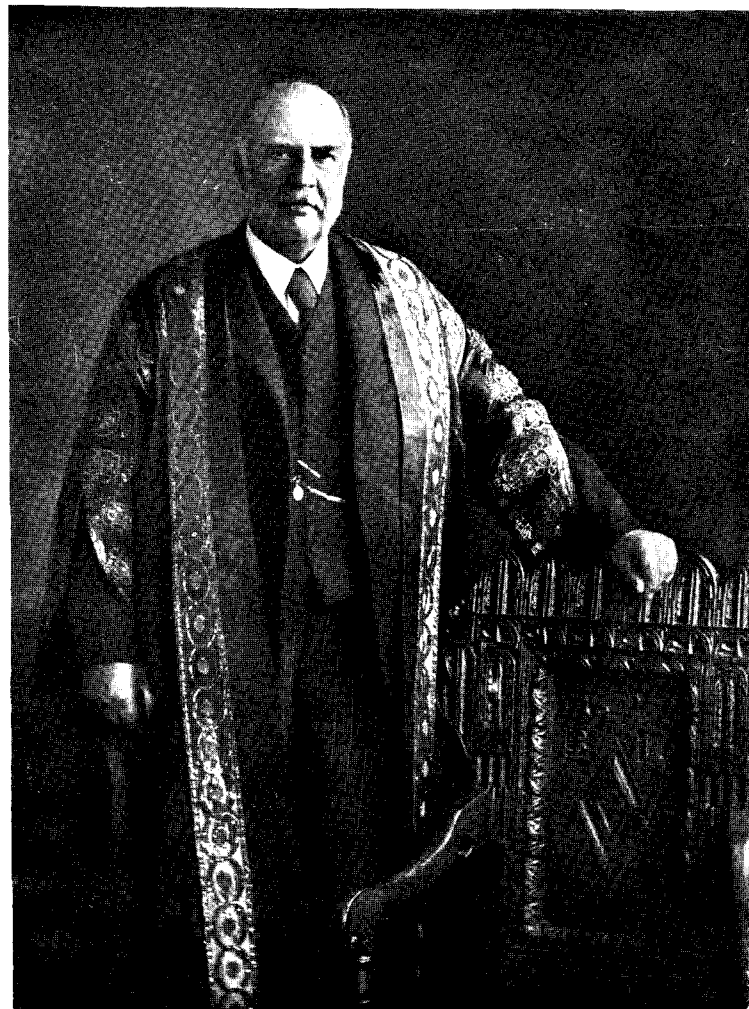
On Jan. 1, 1892, the Mutual Company sold its business and property, including the Post Office license, to the Electric and General Investment Company, Limited, which that company re-sold on Feb. 26, 1892, to the Pioneer Telephone Company, Limited, and the New Telephone Company then acquired the whole of the assets by an agreement dated July 27, 1892, under which it covenanted to pay the Pioneer Telephone Company £90,000.

It may be opportune here to record the remarks made by the Commissioner who was appointed by the Treasury to conduct the enquiry held in Glasgow in 1897. He said: "With regard to "the Mutual Telephone Company of Manchester, I think that the "evidence taken, along with that of the engineer who inspected the

"plant and that of the liquidator of the Mutual Company, shows "that that company was being financed in such a way as to have "inevitably led to bankruptcy upon the £5 rate, and was never really "in the position to pay a dividend. Specimens of the plant, chiefly "plugs, wires and jacks, used by the Mutual Telephone Company "were produced at the enquiry, and were of the cheapest and most "flimsy description possible."

The Mutual Telephone Company in 1890 also attempted to start a competing system in Liverpool, and it was largely owing to the indefatigable efforts of Mr. George Hunter Robertson, one of the Directors of the National Company and a prominent citizen of Liverpool, with the able assistance of Mr. R. H. Claxton, the District Manager, that the Mutual Company abandoned its efforts in that city.

In March, 1892, an appointment was made by the Board of the National Telephone Company which was destined to have a marked effect on the development of the telephone business in the United Kingdom. Mr. William Edward Louis Gaine, the Town Clerk of Blackburn, was offered and accepted the position of General Manager of the Company, and, from that time until his much-lamented death in the year 1907, he was unceasing in his efforts to improve and extend the telephone service of the country. His great abilities, courage and perseverance added to his unique knowledge of municipal and Parliamentary procedure were of inestimable value in the many conflicts which were forced upon the Company, and his name will ever be associated with the wonderful



THE RT. HON. THE LORD BALFOUR OF BURLEIGH, K.T., G.C.M.G.

progress made by the National Telephone Company in spite of the difficulties and obstacles created by imperial and local authorities.

His first efforts were directed to organising the staff which, at that time, was being constantly added to by the amalgamation of other companies, and ultimately the whole of the United Kingdom

was divided into provinces with Superintendents located in various parts of the country, but meeting for consultation and discussion every month at headquarters.

In April and May, 1892, the Caledonian Telephone Company and the Universal Telephone Company, each of which had established a small private wire business, were purchased, and in October of the same year the Isle of Man Telephone Company, which had obtained a Post Office license, was also absorbed. The last of the subsidiary companies formed by the United Telephone Company—viz., the Telephone Company of Ireland, which had expended £61,342 and was working 1,550 exchange and private lines, was taken over in January, 1893. In February, 1893, the Thanet Telephone Company was acquired, and finally the Home Telephone Company, with a small private line business in London, was bought in April, 1894.

By the end of the year 1894 the consolidation of the various telephone companies, leaving out the New Telephone Company, had been effected.

The total capital expenditure, excluding land and buildings, at Dec. 31, 1894, was £4,565,027, and the revenue accounts showed the following results for the year 1894:—

Gross income	£738,681
Post Office royalties	£67,223
Net income	£671,458
Working expenses	£392,282
Profit for the year	£279,176

The number of exchange and private lines at Dec. 31, 1894, was 73,353.

A little later statistics were prepared showing the development of the National Telephone Company to April 30, 1895, as under:—

Number of towns and places supplied	537
Number of exchanges open	593
Number of subscribers' lines	75,216
Number of telephones in use	86,032
Estimated effective calls per annum	139,639,032
Equivalent to (at the least) messages	279,278,064
Average annual payment per line	£9 2s. 2d.
Average per week	3s. 6d.
Average per day (Sundays included)	6d.
Average cost to subscribers per message	58 of 1d.
Estimated minimum average number of words per message	100

Every subscriber had, therefore, the daily use of the telephone for the price of a sixpenny telegram, and whereas 100 words by telegraph cost 4s. 2d., the average cost per message (minimum 100 words) by telephone was 58 of a penny.

On April 2, 1892, there appeared a somewhat prophetic cartoon in *Punch*, a journal whose pages have so faithfully portrayed the history of the country during the past 60 years. This clever drawing by Sir John Tenniel depicts very happily the relation of the Telephone Cinderella to her Imperial stepsisters.

On May 9, 1892, Mr. W. E. L. Gaine, the General Manager, addressed a meeting of the Sheffield telephone subscribers with regard to a suggestion that had been made by the National Telephone Company that the inclusive charge, covering an unlimited number of

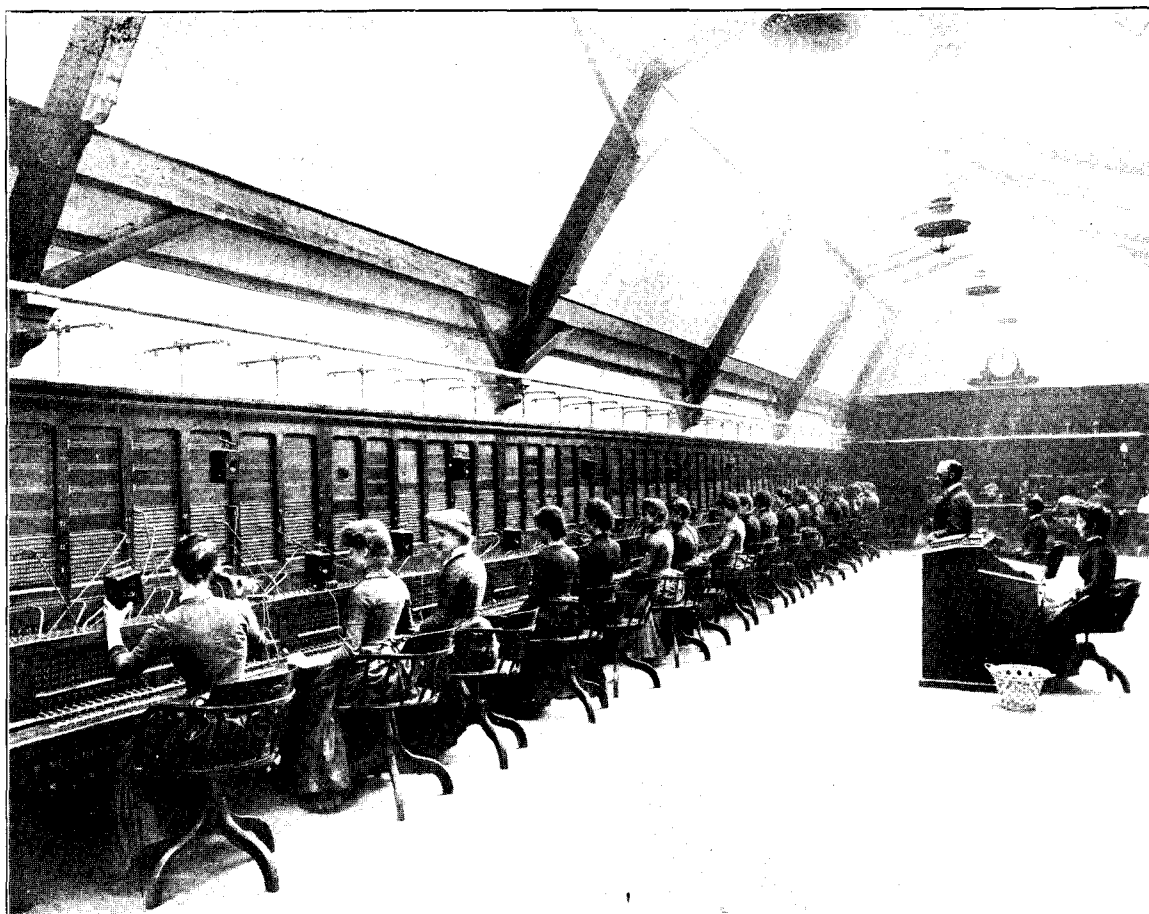
messages, should be abolished and a measured rate system introduced, but the idea of subscribers paying in accordance with the use made of the telephone service by individual persons or firms was received with so much hostility that the matter was not further proceeded with.

This principle of payment, the only sound basis for a telephonic tariff, was subsequently to become prominent in telephone economics. An inquiry into the telephone service and rates in New York, held by the Merchants' Association of that city in 1905, resulted in a report which found that "a system which exacts "an average uniform charge for widely varying degrees of service is "obviously inequitable to the public," and unreservedly condemned the "flat" or inclusive rate as a suitable tariff for large cities. The result of the adoption of the message rate in New York was astounding. The number of stations rose from 176,000 in 1905 to nearly 222,000 in 1906, and was, in fact, more than doubled by the end of 1909.

A new position was created in June, 1892, when the Board of Directors appointed Mr. Dane Sinclair the Engineer-in-Chief of the Company. Mr. Sinclair in 1875 joined the telegraph department



(Reproduced by the special permission of the Proprietors of PUNCH)



EARTH CIRCUIT MULTIPLE SWITCHBOARD—MANCHESTER EXCHANGE, 1888.

of the Japanese Government, and in recognition of his services received from the Mikado the order of the Rising Sun. He was appointed Engineer for the Glasgow district of the National Telephone Company in 1882, and invented the first automatic switchboard used in Great Britain. On the amalgamation in 1889 he was selected to fill the important position of London Manager.

During the early years in the construction of underground work, iron tubes or earthenware pipes were laid through which the cables were drawn, but in 1893 cement blocks, which had proved successful in Sweden, were tried in this country. They were first made by the Company in Liverpool, and afterwards at Edinburgh, and, proving very satisfactory and economical, a factory was started at Nuneaton, where for many years an enormous quantity of blocks of varying capacity were manufactured and used in the numerous centres where underground work was subsequently carried out.

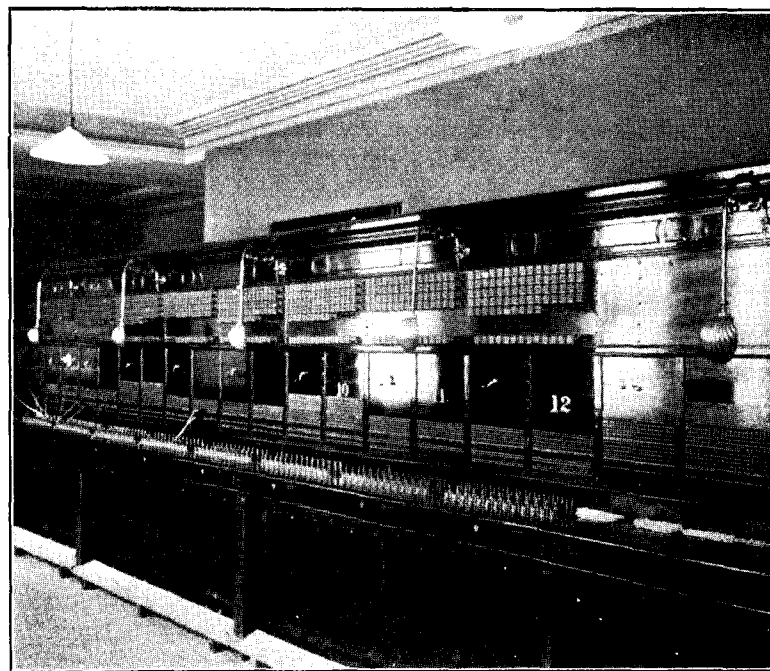
The Bell patent expired on Dec. 9, 1890, and the Edison patent on July 30, 1891, and in the following year the New Telephone Company, of which the Duke of Marlborough was chairman, intimated its intention of starting a telephone service in London, in opposition to the National Telephone Company, with a tariff of £12 12s. per annum for an unlimited number of calls for the first 5,000 subscribers and £14 per annum for subsequent entrants. The Duke of Marlborough afterwards admitted that the engineers' estimates, both as regards construction and revenue, which had been placed before him were unreliable, and the promoters of the New Telephone Company soon began to appreciate the serious difficulties which confronted them, and as a result of conferring with the Directors of the National Company, came to the conclusion that if the shareholders were to be secured a reasonable return upon their capital it would be better in the public interest to work in harmony with the National Company. This resulted in an agreement on July 14, 1892, under which the National Telephone Company subscribed one-third of the capital of the New Company and was represented on the board of that company. Subsequently

it became apparent that the policy of the Government in assuming possession of the trunk wires, forming the inter-town communication of the country, would greatly complicate the position of the licensed companies, and make unity of administration and interest essential to efficiency and success; therefore, upon the death of the Duke of Marlborough on Nov. 9, 1892, who was the enthusiastic and moving spirit of the New Company, those who were associated with him recognised the necessity of a still closer union with the National Company, and matters ended in the National Company acquiring, partly by purchase and partly by exchange of shares, the entire interest in the New Company.

Resolutions for winding up the New Telephone Company were passed on Jan. 3, 1895, but it was not until August, 1898, that the company was finally dissolved, as the liquidator had to continue the business in Manchester and Bolton which had been acquired from the Mutual Company until the expiration of the agreements made by that company with its telephone subscribers.

On April 6, 1893, it was the Company's good fortune to secure as a Director, The Lord Balfour of Burleigh, and upon the retirement of Colonel R. R. Jackson from the position of Vice-President of the Company, Lord Balfour of Burleigh was elected to that important office.

It is impossible in this short history to record in detail Lord Balfour of Burleigh's many and varied great services to the State.

METALLIC CIRCUIT MULTIPLE SWITCHBOARD—HULL EXCHANGE, 1893
(With Self-restoring Indicators.)

He has been chairman of many Parliamentary Committees, Lord Rector of Edinburgh University and Chancellor of St. Andrew's University, and has had conferred upon him the degree of LL.D. by the Universities of St. Andrew's, Aberdeen, Glasgow and Edinburgh, and the Welsh University.



FLAT MULTIPLE SWITCHBOARD—GLASGOW EXCHANGE, 1893.

About two months later, on June 8, 1893, the Board was again further strengthened by the appointment of Sir Albert Kaye Rollit, a Member of Parliament, who had been a director of the New Telephone Company. Sir Albert Rollit, at one time President of the Incorporated Law Society, a solicitor and steamship owner and Elder Brother of Trinity House, is the proud possessor of orders conferred upon him by nearly every nation in the world.

In 1893 metallic circuit double cord multiple switchboards were fitted at Liverpool and Sheffield. These boards were the first metallic circuit multiple switchboards installed by the Company which had both wires of the metallic circuit connected on the same jack, and which used single metallic circuit plugs. The Liverpool board is also noteworthy as being the first board on which secondary cells were used for operators, transmitters, etc.

In 1893 also, a metallic circuit multiple switchboard with self-restoring indicators was fitted in the Hull Exchange, and was the first board of this type installed in the United Kingdom. A similar board was afterwards fitted at the Avenue Exchange, London, in 1894.

In this same year (1893) a flat multiple board worked on the call wire system was installed in the Royal Exchange, Glasgow. As mentioned in the earlier part of this history a flat board had previously been working in Chancery Lane Exchange, London, and there was also one at Paisley, but the Glasgow board was the largest flat board of the multiple type then fitted.

The failure of the Company to obtain permission to place some of its main routes underground, particularly in London and Glasgow, forced it to carry out the metallic circuiting of its system in those and other places by means of overhead wires. The Company knew at the time that much of the plant thus erected at enormous

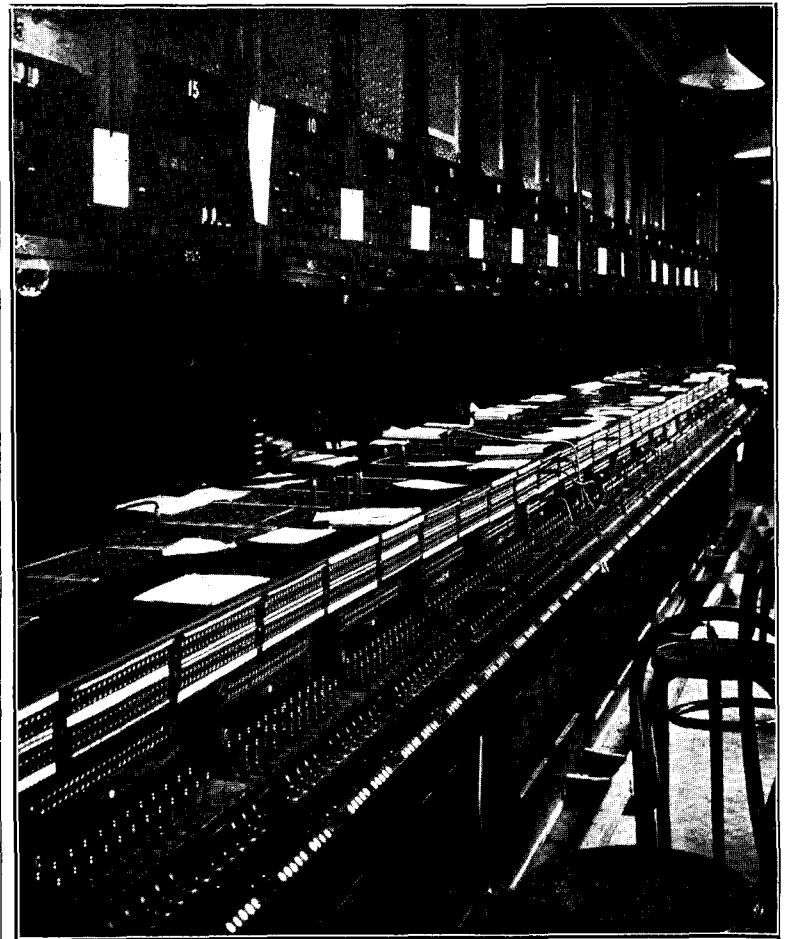
cost would, sooner or later, have to be taken down and thrown on the scrap heap, but there was no other way of making its service efficient. In London the work was commenced in October, 1892, and was not completed until May, 1898, while in Glasgow it took from 1896 to 1903 to duplicate the wires. The first of the provincial cities to give the Company underground wayleaves was Manchester, and an agreement was made with that Corporation on May 24, 1894, which included the following provisions:—

3. The Company will in consideration of the premises pay to the Corporation during the continuance of this agreement a rental or annual payment made up and payable as follows—namely:

(a) A charge of five shillings per annum for each subscriber to the Manchester Central Telephonic Exchange of the Company, the minimum number of subscribers to be charged for to be three thousand, equal to a minimum rental of seven hundred and fifty pounds per annum. When the subscribers exceed this number a similar charge of five shillings per annum will be made for each subscriber exceeding this minimum.

(b) A sum of ten shillings per annum for and in respect of each large junction box, and a further sum of five shillings per annum in respect of each small junction box.

(c) A charge of five shillings per annum in respect of each trunk wire placed in the said tubes, such charge to include the twin or return wire. This charge, however, is not to apply to junction wires used in connection with the suburban exchanges, and is to cease if the trunk wires are transferred to the Government.



FLAT MULTIPLE SWITCHBOARD—HOLBORN EXCHANGE, LONDON, 1894.

4. The annual subscription of the Manchester subscribers to the Manchester Central Telephonic Exchange of the Company shall not be increased beyond the present amount without the consent of the Corporation, and if

increased without such consent the Corporation may thereupon determine this agreement.

7. Every citizen of Manchester prepared to pay the fixed charge of the Company to Manchester subscribers to the Company's Manchester Central Telephonic Exchange, and to sign the Company's usual form of agreement for an exchange line, shall have the right to demand the telephonic service to his premises in Manchester, and the service to be provided in pursuance of such demand shall be constant and continuous.

14. If the Council of the City of Manchester adopt a special resolution that this agreement ought to be determined, the Corporation may determine the same on giving six months' notice in writing of the adoption of the said special resolution. Upon the expiration of the said notice the Company shall, and will, by means of the said manholes and junction boxes, withdraw and remove the said wires. When twenty-eight days shall have elapsed from the expiring

reconstruction in taking down overhead plant and substituting underground conduits and cables nearly £2,700,000, the revenue accounts having to bear the heavy loss arising from the destruction of the overhead plant.

In 1894 flat switchboards were installed in London. Holborn was the first exchange dealt with, and Bank, Hop and Gerrard Street Exchanges followed. These London boards differed from the Glasgow board in that the outgoing junction jacks, which carried the greater part of the originating traffic and the answering jacks, were mounted in vertical panels and only the subscribers' multiple jacks were fitted horizontally.

The resignation, in June, 1895, of Colonel R. R. Jackson, who was one of the promoters and the first Chairman of the National Telephone Company, removed a great personality from the councils of the Company. The prosperity which eventually came to the National Telephone Company was due in a remarkable degree to the wisdom and energy displayed by Colonel Jackson in meeting and overcoming the many and serious difficulties with which from its earliest days the new enterprise had been confronted. When, from reasons of health, Colonel Jackson severed himself from a business with which he had been so intimately connected for many years, it must have been a great satisfaction to him to know that as a result of his efforts he left the National Telephone Company in an assured and successful position.

As the Corporation of Glasgow continued to press the Government to grant it a municipal license, the Treasury in 1897 appointed Sheriff Andrew Jameson (afterwards Lord Ardwall) a Special Commissioner to hold an enquiry in Glasgow.

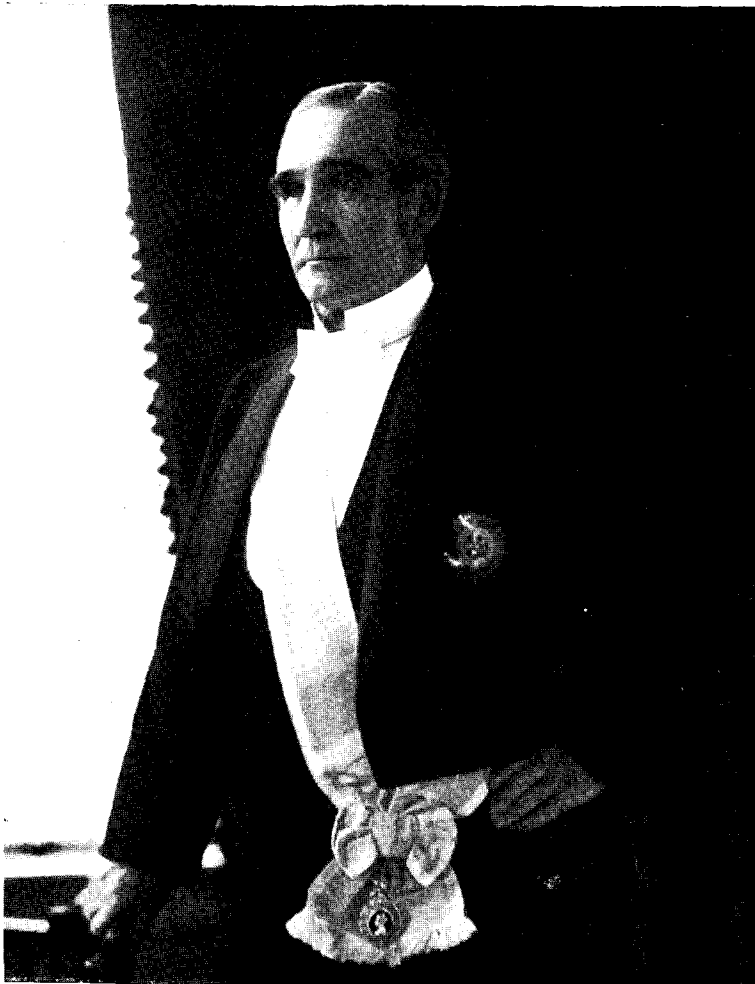
The enquiry extended over two weeks and the Commissioner's report was issued on Nov. 29, 1897.

The questions submitted to the Commissioner and his answers may be shortly stated as follows:—

- (1) Is the service so far as it goes efficient? The answer was: No, but that the inefficiency was mainly due to the fact that the system in Glasgow was an overhead, single-wire system, and that for this the Corporation of Glasgow was largely responsible, inasmuch as it had persistently refused to give the Company facilities for placing its wires underground, as it was empowered to do by the Telegraph Act of 1892.
- (2) Is the service adequate, that is to say, are all the inhabitants afforded facilities for joining without undue conditions? The answer to that was in the affirmative.
- (3) Is the price charged for the service reasonable? Again the answer was in the affirmative.
- (4) If there is either inefficiency or inadequacy, is it due to the refusal of facilities on the part of the municipal authorities and others, and how far is such refusal reasonable or justifiable? The answer to this question was entirely in favour of the Company. The Commissioner pointed out that the Company had made repeated application to the Corporation for wayleave facilities to place its wires underground and had been refused. The Commissioner also strongly condemned the action of the Corporation as being both unreasonable and unjustifiable.
- (5) Is it expedient to grant the Corporation a license to carry on a telephone service? The answer to this question was in the negative, and was again strongly against the views put forward by the Corporation.

The report was overwhelmingly in favour of the Company, but nothing more was heard of it.

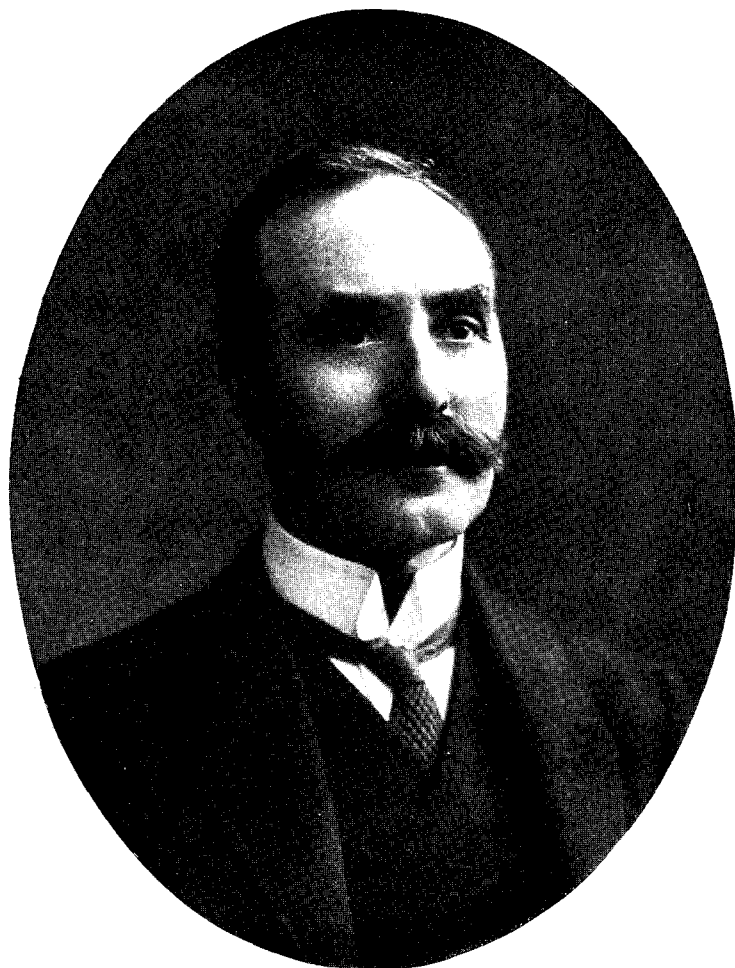
The Corporation of Glasgow had consistently refused to grant the Company permission to place its wires underground, although the Company was willing to accept any reasonable terms that would have enabled it to improve the telephone service in Glasgow. There were apparently two reasons for the attitude of the Corporation. Firstly, its desire that the telephone service should remain inefficient and so encourage the agitation for another system; and secondly, the feeling that without proper facilities for carrying out its public duties the Company's business in Glasgow would be easily destroyed when the Corporation, as it hoped to do, had established its competing system.



THE RT. HON. SIR HENRY HARTLEY FOWLER, G.C.S.I., M.P.
(Created Viscount Wolverhampton 1907.)

of the said notice, and whether or not the Company shall have removed the said wires as aforesaid the Corporation may remove the said tubes and junction boxes and the wires (if any) therein from underneath the streets.

The negotiations in connection with this agreement caused the Board much anxiety, inasmuch as it gave the Corporation the right to order the removal of the Company's underground plant by six months' notice at any time. It was finally determined that it was the duty of the Company, in the interests of the telephone service in Manchester, to take this great risk. In after years a number of somewhat similar agreements were made with other municipalities, resulting in the Company eventually spending on these works of



MR. DANE SINCLAIR, M.I.E.E.

In 1895 Lord Balfour of Burleigh became Secretary of State for Scotland, and the following paragraph appeared in the Directors' report to the shareholders, dated July 16, 1895:—

"The Board, to their great regret, have to announce the resignation of his seat by Lord Balfour of Burleigh, who has taken office as a Cabinet Minister in the recently formed Administration. During the period Lord Balfour of Burleigh has been a Director his experience, counsel and constant devotion to the interests of the Company have been invaluable. His withdrawal is a serious loss to the shareholders, and especially so to his colleagues, who will always retain the highest opinion of his ability, and the warmest feeling of personal regard towards himself."

The vacancy thus created in the position of Vice-President of the Company was filled by the election of Lord Harris, G.C.S.I., G.C.I.E., who, during a distinguished career, had been Under-Secretary for India 1885-6, Under-Secretary for War 1886-9, and Governor of Bombay 1890-5.

In 1896 a fund was inaugurated for providing pensions for a certain portion of the staff on arriving at the age of 65. Officials in receipt of £100 per annum and upwards were required to contribute annually $2\frac{1}{2}$ per cent. of their salaries, the Company making a like payment to the trustees.

The original members of the fund were guaranteed a minimum retiring pension equal to two-thirds of their remuneration as at Jan. 1, 1896, and the balance of the amount required for these guarantees was provided by the Company. The fund served as a savings bank for members who afterwards left the Company's service, and it gave old and faithful servants in the evening of their lives immunity from some of the cares and anxieties which would otherwise have fallen upon them on the sudden cessation of their income. It also materially helped all those who remained in the fund to make fair terms with the Government when the Company's

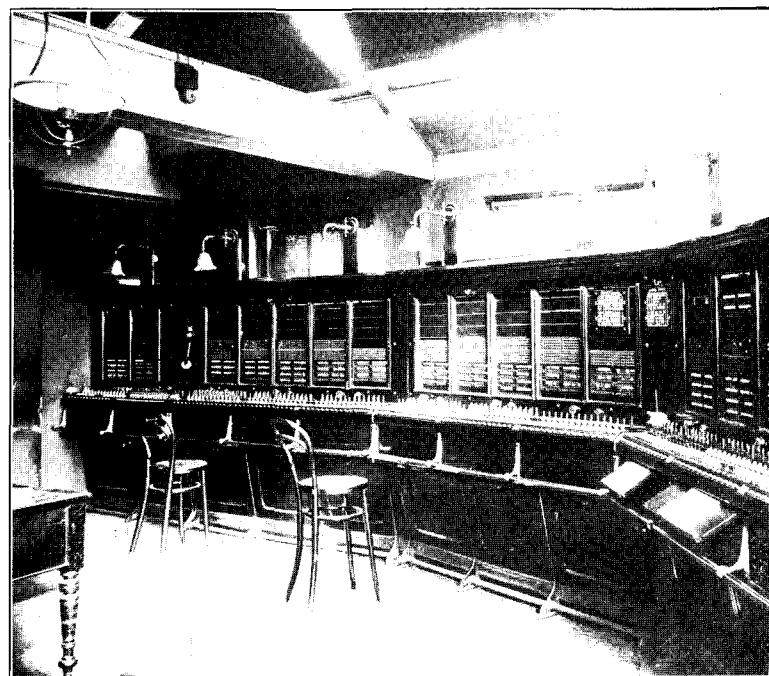
business passed into the hands of the Post Office. Owing to the liberal manner in which the Company started the fund, it has from the beginning been in a very satisfactory and solvent condition.

In July, 1896, Sir James Fergusson, Bart., G.C.S.I., M.P., who had been Governor and Commander-in-Chief South Australia, 1868, New Zealand, 1873, and Governor of Bombay, 1880-1885, and amongst other ministerial appointments had filled the office of Postmaster-General, 1891-1892, became a director of the National Telephone Company.

In April, 1896, the Company applied to the Commissioners of Sewers, who are the road authorities in the City of London, for permission to lay conduits under the streets, but the Commissioners refused to consider the application unless they were permitted (without having the requisite knowledge to guide them) to fix the rates to be thereafter charged by the National Company.

On June 17, 1896, an agreement was made with the Corporation of Liverpool for laying telephone wires underground in that city. The payments to be made by the Company for the wayleaves were practically the same as those set out in the Manchester agreement before referred to, but the following clause was added:—

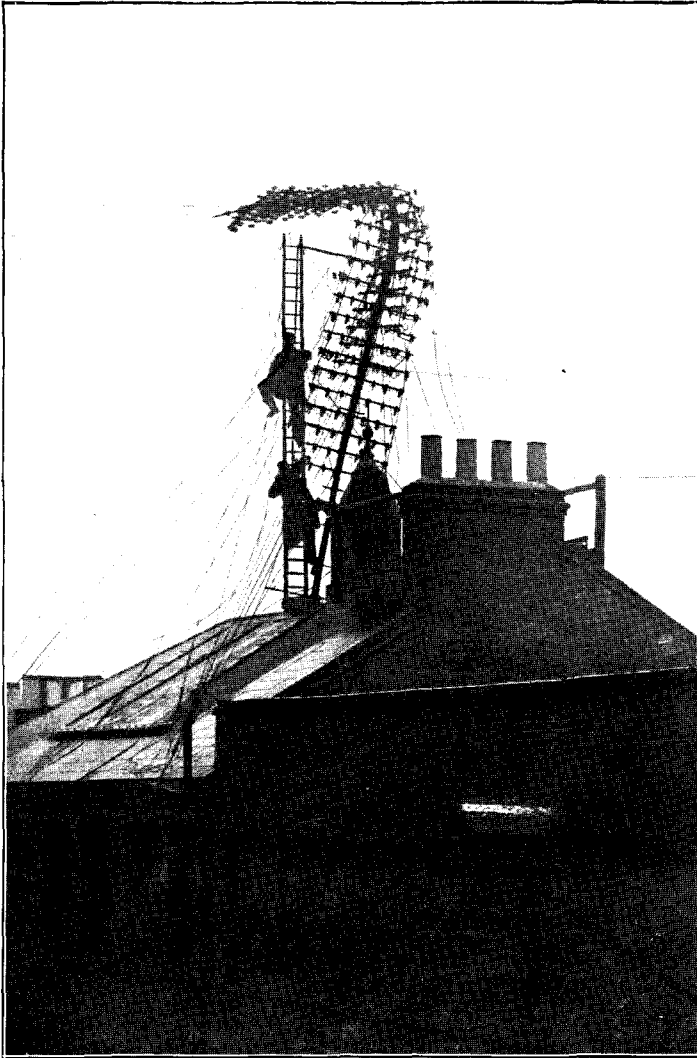
22. If at any time the Company shall make an agreement with the council of some other city or borough to pay higher rentals for the wires carried underground than those

RELAY CALL KEY SWITCHBOARD, WITH LAMP SIGNALLING.
NORWICH EXCHANGE, 1900.

hereby reserved, then they shall, if required by the Corporation, pay the like rentals instead of those hereby reserved, and in the event of the Company reducing the present charges to subscribers in any city or borough (other than those within the Metropolitan area) with an estimated population of 200,000 and upwards below those at present in operation in Liverpool, then they shall, if required by the Corporation, reduce the charges to subscribers within the city of Liverpool to similar amounts.

Soon after the passing of the Telegraph Act of 1892 the Company approached the London County Council for its consent to place some of the telephone wires underground. The application was renewed time after time, but it was not until 1897 that an agreement was reached. On June 1, 1897, the London County Council passed a series of resolutions setting out the terms attached to its consent, and nothing more remained but to execute the formal document. It took the London County Council twelve months to prepare the draft agreement, and in the meantime, consents being given by the council, the Company carried out a considerable amount of the necessary underground work. But when the draft was

received it was discovered that, instead of adhering to the terms of the bargain, the London County Council sought to impose two entirely new conditions which had never even been discussed. One was a demand that the National Telephone Company should make the London County Council a large annual payment for which the Company would have received no consideration as it had still to arrange terms with the road authorities before the work could be carried out, and the other was arbitrarily fixing the rates which the Company was to charge its subscribers in London.



RESULT OF A SNOWSTORM.

The Company was most anxious to come to an agreement, and made counter proposals, but further demands were then formulated by the London County Council, and the Company was finally compelled to abandon any hope of making a reasonable arrangement.

But another trouble now arose through the Post Office, at that time contemplating the starting of a competing system in the Metropolis, inviting the London County Council to assist the Department in stopping the further operations of the Company in its underground work.

Two actions were commenced by the Attorney-General on behalf of the Postmaster-General and the London County Council against the National Telephone Company, and on July 24, 1900, a perpetual injunction was granted against the Company restraining it from carrying out any further underground work in London without the sanction of the Postmaster-General and the London County Council.

In 1897 Mr. William Cuthbert Quilter, one of the founders of the original Telephone Company, a Member of Parliament and a Director of the National Telephone Company, was created a baronet of the United Kingdom.

In December, 1897, on the retirement of Mr. Alderman Joseph Thompson, of Manchester, Sir Henry Hartley Fowler, one of the leaders of the Liberal party in the House of Commons, who had filled many important offices under various Liberal Administrations, including that of Secretary of State for India, 1894-5, was elected a Director of the Company. Sir Henry Fowler afterwards became President and held that position during several momentous years of the Company's existence.

The growth of the telephone business, and the increasing size and cost of multiple switchboards, made it difficult for the Company to find suitable premises, and in 1897 the Board decided, so far as large exchanges were concerned, to erect its own buildings and to make them as far as possible fireproof. From that time sites were acquired and built upon, until nearly £1,000,000 was invested by the Company in long leasehold and freehold properties.

Photographs will be given of typical buildings erected by the Company for switchroom and office accommodation. The one appearing on page 191 shows the handsome building in Newhall Street, Birmingham, completed in 1898.

On the evening of June 16, 1898, a fire occurred at Burlington Buildings, Heddon Street, London, on which the Company had erected a derrick carrying a number of wires and cables, and the collapse of the roof carried with it the whole telephone structure. The photograph reproduced on the next page shows the extraordinary position of the derrick on the following day.

In 1900 a self-restoring indicator board was brought into use at Belfast. This board was similar to the Hull and Avenue boards, but was equipped for single signal automatic clearing and automatic ringing controls.

The year 1900 also saw the introduction of central battery working into this country where the equipment was brought into operation in the month of June at Bristol.

About this same time (1900) lamp signalling boards worked on the call key system were opened in certain districts, the Norwich Exchange being one of the earliest to be so fitted.

In the year 1890 the Post Office, who had acquired, in connection with the purchase of the telegraph companies, exclusive rights of wayleave over nearly all the railway and canal companies, insisted upon the telephone companies obtaining the Department's permission, and paying a rental for any wires they desired to run under, along or across any of the railways or canals referred to, although the telephone companies were already paying way-



BRISTOL EXCHANGE - BALDWIN STREET.
(Faced with red bricks and dressings of Bath Stone.)

leave rentals to the railway and canal companies. The telephone companies were powerless to resist this additional burden, and had to agree to the annual charge made by the Department of £1 per mile of wire, and this afterwards became a powerful weapon in the hands of the Government in the negotiations for the acquisition of



THE MORNING AFTER THE FIRE IN HEDDON STREET, LONDON.

the National Company's trunk lines in 1892. It was in the autumn of 1891 that the Post Office first approached the National Company on the subject of the transfer of its trunk lines to the State, and the Company was startled and alarmed at the suggestion of parting with that part of its property which made it invulnerable against competition.

The National Company, as the result of its efforts and enterprise, had connected up most of the large towns and cities, and this gave it an immense advantage over any rivals desiring to establish competing systems, as trading firms naturally preferred the wider and greater facilities given by the National Company to any proposed system where they could only be connected with a small number of people. The Postmaster-General's proposal involved the absolute surrender of all these advantages for the benefit of the National Company's rivals, and offered intending competitors prosperity at the expense of the National Company.

At that time it was inconceivable that the Government intended to inflict so great an injury on the Company which had taken all the risks of starting and developing the trunk business, but certain remarks made in the House of Commons were significant. The Chancellor of the Exchequer, Mr. G. J. Goschen, on March 29, 1892, said, "It was absolutely necessary that the Government should take the trunk lines into their hands. If that were not done, they could not have that competition which it was desired they should secure. While

"the National Company had a monopoly, "it was impossible for the other lines "to compete. A telephone circuit was only "half useful unless it was put into tele- "phonic communication with the rest of the "country, and unless that were done the people "of a locality not in communication with the "whole of the country would be only half served, "and therefore, it was why in one sense the "Government would have to take the trunk lines "into their own hands as a means by which to "secure free trade."

In 1892 The National Telephone Company and the New Telephone Company promoted Bills in Parliament asking for statutory powers to enable the telephone service to be more efficiently performed. On the second reading of the New Telephone Company's Bill on March 22, 1892, Sir James Fergusson, the Postmaster-General, in moving the rejection of the Bill, which also settled the fate of the Bill lodged by the National Telephone Company, said . . . "that, "owing to the failure of the intentions of the "Government, the telephone system has made less "progress in this country than perhaps in any other "country in Europe . . . the form of license issued "by the Post Office has something to do with the "hindrance to the development of the system . . . "They (the companies) cannot make their lines along "railways, roads and canals where the Post Office "have the entire concession without paying a "very heavy wayleave . . . wherever the tele- "phone system has been effectually developed, "there the growth of the telegraph revenue has "been checked. . . . The trunk wires should be "in the hands of the Government in order that "the public may have their portion of the sum "paid for the message."

At the same time Sir James Fergusson stated that it was the intention of Government to bring in a Bill to confer additional powers on the Post Office in regard to telegraphs and telephones.

On May 23, 1892, a Treasury minute was issued regarding the proposals for the development of the telephone system in the United Kingdom, and stated *inter alia* :

It is the object of these proposals, while preserving the property in the telegraphs, which has been paid for by the nation, to secure that expansion of the telephone system which is called for by public opinion and the necessities of commerce. It is impossible to continue the present system under which the telegraph revenue is seriously suffering, while, on the other hand, the extension of telephones is checked in a manner which cannot be permanently maintained.

The proposals of the Postmaster-General will enable the telephone companies and the Post Office to co operate in services to the public.

Unless trunk wires are in the hands of the State, a monopoly injurious to the public interest would inevitably ensue, to the advantage of the company which first laid down such trunk wires.

United action on the part of the companies and the Post Office is necessary to the success of the scheme.

It also proposed to reduce the Post Office charge for wires on railways, canals or other property over which the Department had acquired exclusive rights of way for telegraphs from 20s. to 1s. per mile of wire.

A Bill to make further provision respecting telegraphs was introduced into the House of Commons by Sir James Fergusson on May 26, 1892, and referred to a Select Committee, which issued

its report on June 16, 1892, and the Bill as amended subsequently received the Royal Assent.

As one consideration for parting with its trunk lines the Company was promised adequate wayleave powers for running wires overhead and underground, which previously had always been denied it, but the Bill, as finally passed, contained the following clause:—

Where the Postmaster-General has, either before or after the passing of this Act, licensed any company or person to transmit any telegrams within the meaning of the Telegraph Acts 1863 to 1889, he may by the same or any other license, authorise such company or person (in this Act referred to as the licensee) during the time and within the area specified in the license, to exercise the powers, so far as applicable to telegraphic lines above ground, which are conferred on the Postmaster-General by the Telegraph Acts, 1863 and 1878, and by the provisions of this Act relating to Provisional Orders or such of those powers as are specified in the license, and thereupon the enactments conferring those powers or relating to the exercise thereof, including any penal provisions, shall apply accordingly.

Provided as follows:—

(a) A licensee shall not exercise any powers under the said enactments except in an urban sanitary district, or such area adjoining an urban sanitary district as is described in the license.

(b) Notwithstanding anything in the Telegraph Act, 1878, a licensee shall not exercise any powers under the said enactments without the consent, in London of the county council, and in any urban sanitary district outside London of the urban sanitary authority, and elsewhere of the county council, and shall comply with any regulations of such council or authority in force in relation to telegraphic lines.

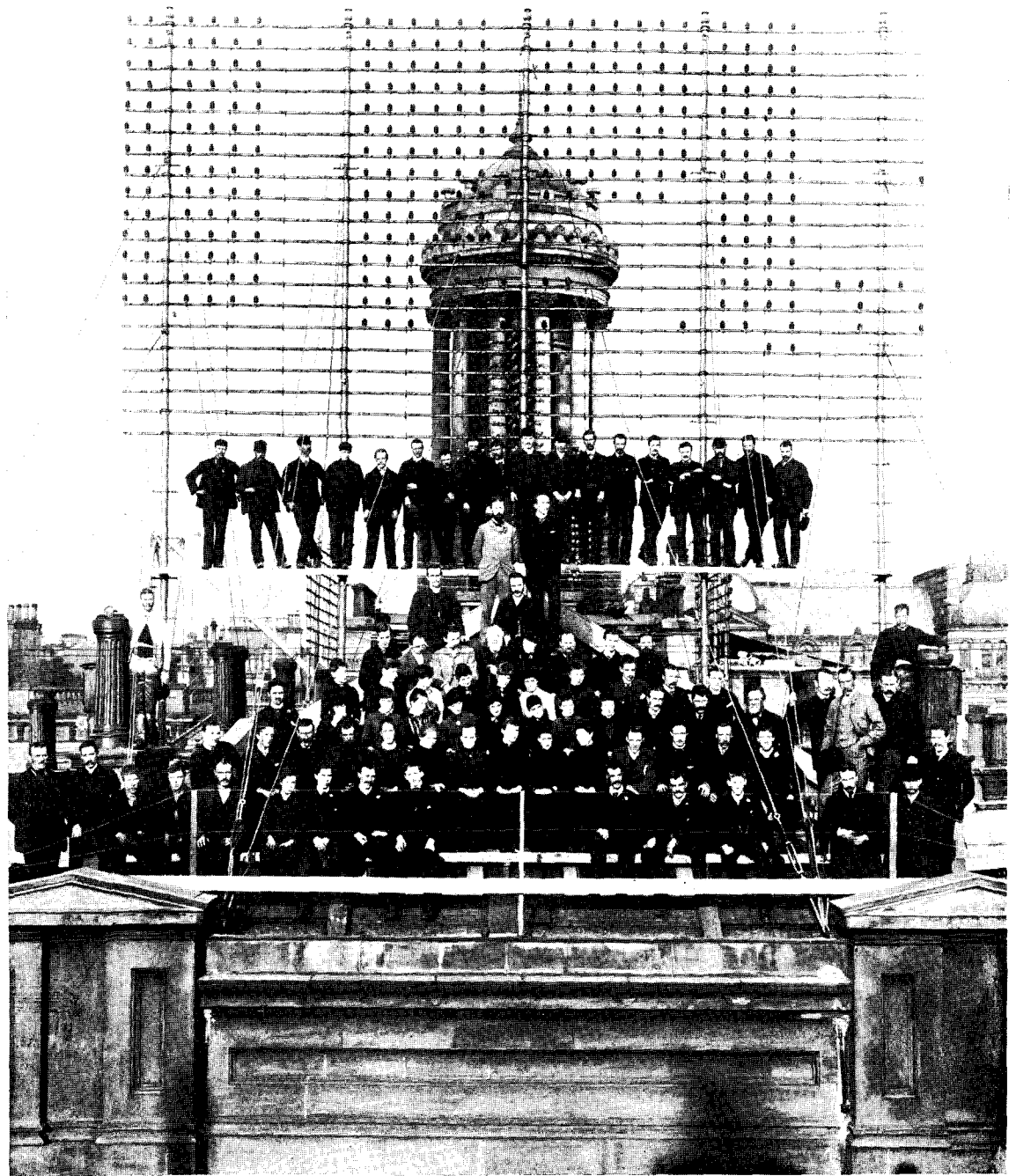
The action of the Government in giving local authorities an absolute veto as regards wayleaves was a bitter disappointment to the National Telephone Company, and the result was that the Company was only able to make agreements for putting its wires underground with some of the municipalities, as others continued to deny the Company the desired and necessary facilities.

The considerations that had most weight with the Board of the National Telephone Company when contemplating the sale of its trunk wires were:

(1) The fear that without railway wayleaves, which could be withdrawn by the Postmaster-General at any time on his giving six months' notice, the National Telephone Company would not have been able to continue its trunk line service.

(2) The fact that the New Telephone Company which had practically no trunk lines to surrender was willing and eager to co-operate with the Government in its new telephone policy.

(3) The desire of the Directors of the National Telephone Company as licensees of the Postmaster-General to loyally assist him in giving effect to a policy having for



ON THE ROOF OF THE ROYAL EXCHANGE, GLASGOW, 1887.

its express object the expansion and improvement of the telephone service of the kingdom.

Explanations were given to the Company by Ministers and officials of the Post Office, and the Directors were assured that, as stated in the Treasury minute, it was the intention of the Government to assist and co-operate with the Company in developing the telephone business of the United Kingdom.

Relying on these verbal assurances, the heads of an arrangement for the sale of the trunk wires were initialled on Aug. 11, 1892, by Sir James Fergusson, the Postmaster General, and by

Mr. J. S. Forbes on behalf of the National Telephone Company.

The basis of the purchase of the Company's trunk lines was the cost price, together with a further sum of 10 per cent. in respect of cost of administration.

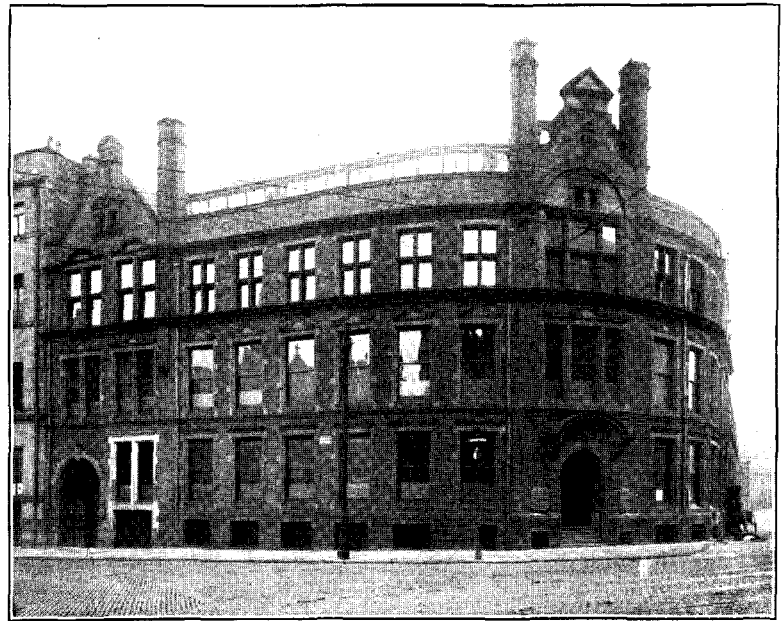
To give effect to the arrangements made for the purchase by the State of the trunk lines owned by the National Telephone Company, Mr. Arnold Morley, the then Postmaster-General, submitted a draft agreement to the House of Commons in August, 1894. Strong efforts were made by some Members of Parliament to prevent the agreement being carried through, although it was pointed out by Mr. Arnold Morley that it was only putting into legal terms the bargain which had been made in 1892.

Persistent attacks were made to upset the arrangement with the National Telephone Company, and an agitation in favour of municipal competition with the Company was commenced.

On March 1, 1895, the House of Commons resolved "That a Select Committee be appointed to consider and report whether the provisions now made for the telephone service in local areas is adequate, and whether it is expedient to supplement or improve this provision either by the granting of licenses to local authorities or otherwise." Mr. Arnold Morley presided, and the proceedings went on intermittently from March 22 to May 28, 1895. The Committee took voluminous evidence from the Post Office, the Company, the Glasgow Corporation and others, but no report was made to Parliament.

It is a matter of common knowledge, however, that the chairman submitted a draft report to the Committee, condemning the granting of any municipal licenses; but as Parliament was then on the eve of a dissolution and the Committee were not unanimous the report was withdrawn.

The National Company had never anticipated having to part with only a portion of its property, and had constructed its trunk wires on the same poles and in common cables with its exchange



BRADFORD EXCHANGE—NELSON STREET.
(Built of stock bricks with stone dressings.)

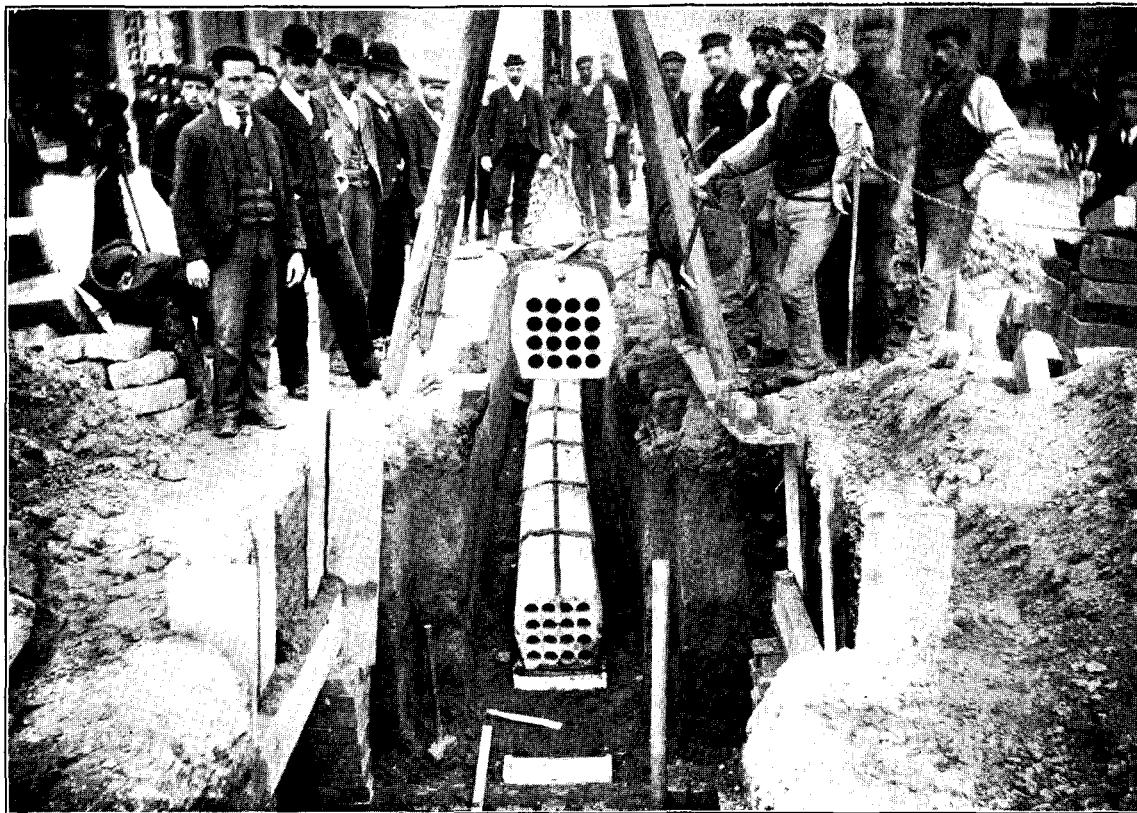
survey of nearly 30,000 miles of wires, and, in March, 1895, two experts were appointed to carry out this work. The Government selected Mr. John Gavey, the Chief Technical Officer to the Post Office, who afterwards became Engineer-in-Chief, and received the honour of knighthood, one of the many able men who have made the Civil Service representative of all that is best in the nation's history. The Directors appointed their Engineer-in-Chief, Mr. Dane Sinclair, to look after the interests of the National Telephone Company.

The work necessitated the inspection of a great part of the outside plant of the Company, and it was not until the early part of 1896 that the total value of the property to be transferred was ascertained. The agreement for the sale of the Company's trunk lines to the State was signed on March 25, 1896, and the amount—viz., £459,114 3s. 7d.—was paid to the Company on April 4, 1896.

The Post Office at that time, however, was not in a position to take over the working of the whole of the trunk lines and appealed to the Company for assistance, and in this, as in many other instances, the Company rendered immediate and loyal help to the Department. The Company agreed to continue working the trunk lines which the Post Office was unable to deal with, and to permit the Department to have the lines transferred gradually. It also provided the Post Office with

skilled operators, and allowed the Department to train its own officials in the Company's switchrooms.

The settling of the various areas was a task of great magnitude, and was undertaken by Mr. (now Sir) John Cameron



UNDERGROUND TELEPHONE CONSTRUCTION.—LAYING CEMENT BLOCKS.

and private line business, and the three were so completely interwoven that it was impossible to ascertain the cost of the trunk lines by reference to the Company's accounts and records. It therefore became necessary to have a valuation made by actual

because of the inadequacy of the provision by the State of trunk facilities. Complaints began to arrive at headquarters from all parts of the kingdom pointing out the crying need of additional trunk lines. The Treasury, however, refused to sanction the construction of the required lines unless a certain income was forthcoming, and it eventuated in the National Company in 1898 and subsequent years having to guarantee the necessary revenue in respect of a number of trunk lines, so that the development of the telephone business should not be retarded. The result was that the Company had to include in its accounts for some considerable time the losses incurred in respect of such guarantees which ought properly to have been borne by the Post Office.

(To be concluded.)



BIRMINGHAM CENTRAL EXCHANGE—NEWHALL STREET.
(Faced with Ruabon red bricks and terra-cotta dressings.)

Lamb, C.B., C.M.G., one of the Assistant Secretaries to the Post Office, another of those great public servants of whom the country is so justly proud, and by Mr. W. E. L. Gaine, the General Manager of the National Company. The maps with every area initialled by both parties formed two immense volumes, and will always remain a convincing evidence of the great ability and patience shown by both sides. In after years, when municipalities sought to set up competing systems, the demarcation of the areas was the basis of a most unfair attack on the officials of the Department on the grounds that the areas were so large that each included a number of local authorities who could not agree amongst themselves as to the policy of establishing telephone systems. These critics entirely overlooked the fact that, when the trunk lines were taken from the National Company, that Company had the right of telephoning the whole of the United Kingdom without any restriction whatever.

Under the heads of arrangements initialled in 1892 for surrendering its trunk lines, the Company agreed to confine its future efforts to the development of the telephone business within areas to be defined, and it also accepted the obligation of procuring the surrender of certain outstanding universal licenses which had been granted to other people by the Post Office. In giving effect to this understanding, the National Telephone Company had to pay the Thanet Telephone Company £20,100 for its license and business, although its only plant consisted of a single line connecting a firm in Margate with another firm in Ramsgate.

It has always been the policy of the National Company, by an intelligent anticipation of the public requirements, to provide telephone plant in advance to meet the wants of future subscribers, and it was the firm belief of the Directors that this would also be the policy of the Government when it took over the trunk lines. But the Company had a rude awakening, for it soon became apparent that the whole telephonic service of the country was to suffer



OVERHOUSE TELEPHONE CONSTRUCTION.

The National Telephone Journal.

"BY THE STAFF FOR THE STAFF."

Published Monthly at

TELEPHONE HOUSE, VICTORIA EMBANKMENT, LONDON, E.C.

NOTICES.

All communications to be addressed—*The Editing Committee, "NATIONAL TELEPHONE JOURNAL," 41, Telephone House, Victoria Embankment, London, E.C.*

The Editor will not undertake to be responsible for any rejected MS. All photographs will be returned if the sender desires.

Subscription: To the general public, 4s. per annum, including postage to Great Britain or abroad.

To the Staff, 2s. 6d. per annum, with free delivery to the Offices of the Company. Single copies may be obtained, 3d. each, or 4½d. post free.

For rates for the insertion of Advertisements apply to H. SELL, 167-168, Fleet Street, E.C.

Vol. VI.]

DECEMBER, 1911.

[No. 69.]

COMING CHANGES.

THE *Daily Mail*, with a laudable view to hearing both sides of a case, recently published two special articles dealing with the "Business Man and his Telephone." The first, which echoed many of the forebodings of the supporters of a Telephone Authority (with which we have already dealt in this JOURNAL), we may pass over, except that we shall return later to the connection made, somewhat unnecessarily, between reducing charges at the expense of efficiency and accommodating the small user. The second article is entitled, "Up-to-date Telephones." Here again we may pass over the fact that one of the writer's illusions was shattered because he encountered a businesslike Government official. The shattering of illusions, especially those of journalists, is an everyday occurrence, and is well expressed by the saying: It is the unexpected which happens. It is that which follows that interests us.

The writer is, of course, fully entitled to his very proper enthusiasm for the Department's projected improvements and to his faith in the limitless nature of Post Office enterprise, but some of his implied disparagement of the Company calls for criticism. The first point made (furnished by the said Government official) is that the telephones in future will not be worked by a "new Department," but by one which has been in existence for several years and which even now works a service of 80,000 telephones *in London alone*. The italics are ours, for the phrase certainly conveys a suggestion that London is a mere drop in the ocean of Departmental telephony, whereas it constitutes about three-quarters of that pacific sea. Moreover, the total number of Post Office telephones (110,000) is, as nearly as possible, one-sixth of the total number in the British Isles. It is much as though the District Railway should base a claim to guide the fortunes of the London and South-Western by saying "We have 40 miles of line in London alone." It might indeed be competent to undertake the task, especially with the assistance of the experience of the South-Western staff, but the argument would not appear entirely helpful.

This, however, is but a small point. The suggestion that most of the Company's exchanges in large provincial towns are behind the times is more serious. Telephony is a progressive art, and the problem of scrapping costly and extensive plant which was quite recently the latest word on the subject is one which has frequently to be faced. Since its adoption of the common battery principle the Company has resolutely set about the conversion of its more important exchanges in London and the provinces, and large numbers of them have been so converted at a cost of many hundred thousands of pounds. Naturally the more efficient of the magneto exchanges—those fitted with up-to-date signalling apparatus and giving entirely satisfactory service—are left to the last. What is it that the Post Office are doing? They are transferring the subscribers from some exchanges such as Avenue and Westminster, which they have decided to close. In this they are merely doing what the Company would have done had it been a continuing concern, and moreover it must be remembered that under the recent decision of the Courts, they have not to bear as the Company would, the full cost of scrapping the existing exchanges, but are doing so partly at the expense of the Company. But after all, the public will care little for the central battery or the magneto system in themselves; it is concerned chiefly in obtaining a good service. We are favoured with the extraordinary information that the "newer system . . . is 50 per cent. quicker." Quicker, we must suppose, than that employed by the Company. We can only say that when in the Courts lately the Company maintained that the service at its Avenue Exchange was better than that at the Department's Central Exchange, the contention passed unchallenged.

Furthermore, in those small provincial towns where, for economic reasons, two sets of premises are obviously not requisite and the Company's exchanges will be transferred to the Post Offices, the switchboards taken from the former will not be thrown away but used elsewhere. But as regards the medium-sized and large provincial exchanges working efficiently on the magneto principle, the wholesale scrapping and reconstruction of these simultaneously and at once is almost a financial impossibility, and it is open to the strongest doubt whether the Post Office will proceed with their conversion at any greater rate than the Company have done. The example of Glasgow, the unsatisfactory system of which was purchased from the Corporation in 1907 and is yet unconverted does not furnish evidence that they will.

As regards the fears of the writer of the first article ("A Business Man"), that the small user may be considered at the expense of efficiency, we see no relation between that desirable quality and the widest possible extension of the service, for wide extension is indissolubly connected with the provision for the small user. The danger to efficiency, as we have always maintained, proceeds rather from that class of large user who clings tenaciously to the remarkably good bargain he gets in the unlimited rate and abuses the carrying power of his line not only to the detriment of his own but the whole service. The policy of the Government, as of all administrations which have investigated this important question, happily consists rather in the maintenance and extension of the message rate principle.

THE OVERDUE CLASSIFICATION SCHEME.

WE hear from every side reports of the great anxiety which is pervading all sections of the staff on the question of their classification in the Post Office service. It is understood that a Joint Committee of the Post Office and Treasury has had the matter in hand for a very considerable time, and, making every allowance for the difficult problems involved, it is hard to believe that the matter should not be sufficiently advanced for a definite scheme of classification to be published.

It is to everyone's interest that the classification should be expedited, for if, after the transfer, the two staffs are to work together smoothly, the relative positions of the employees must be clearly defined. The joint Board of the Staff Associations have, we are informed, presented to the Postmaster-General within the last few days a memorial asking that the classification be published before the end of the year. This memorial is signed by over 15,800 members of the staff, a number which is eloquent of the widespread anxiety which is felt in the matter. Indeed, "anxiety" is, we fear, too faint an expression to describe the unrest which prevails in some districts. It requires no great effort of imagination to foresee the anomalous and difficult position in which men of both staffs all over the country will find themselves when the time comes for them to co-operate in the great task, not only of carrying on smoothly the national telephone service but in dealing with its arrested expansion whilst they are in uncertain and vexatious ignorance of their relations one to another.

THE AUTOMATIC AGAIN.

THE Press is again busy with speculations on the coming of the automatic, and the subject is naturally enough a fascinating one even to the lay student of the telephone question. The speculations in question, however, do not fail to drag in the Postmaster-General and his "opportunity" when he assumes control over the whole service of the country. Their authors scent in the proposed improvement blessings and benefits unheard of, and it is here, we think, that they are on dangerous ground. We made reference in August to the automatic trials of the Post Office at Epsom and Caterham and gave our reasons why we considered that these should not have been contemplated until the Department had concluded its experiments. This view is strengthened by the report in the electrical press from which it would appear that the sponsors for the automatic were unable to give any definite comparative figures regarding the installation and running costs of the system. Now we hear rumours of the introduction of the automatic in such large towns as Portsmouth and Leeds, and it looks as though the "experiment" were in danger of getting out of control. We notice that much is made of the 300,000 subscribers who are said to be successfully using the system in America. It has to be borne in mind that half of these are made up of an aggregation of quite small systems, and that the proportion of their total to the eight million or so telephones in use in America is only about 4 per cent. Moreover, the progressive engineering authorities of the American Telephone and Telegraph Company are by no means convert to the full automatic principle. A claim is made that the system will give us

a cheaper service, and the *Westminster Gazette* goes on to prognosticate "a uniform annual charge for its use instead of the present vexatious system of 'measurement' rates at so much per call." We cannot imagine that the *Gazette* obtained from the Post Office any warrant for the prognostication of this retrograde movement. To sow such hopes is to reap a whirlwind of trouble.

ALTHOUGH the JOURNAL has been increased this month by eight pages, the Editing Committee have been compelled to hold over several interesting articles until next month.

THE TELEPHONES OF THE WORLD AT THE BEGINNING OF 1911.

By W. H. GUNSTON.

(Continued from page 168.)

II.—EUROPE.

Great Britain.—There were in Great Britain and Ireland at the beginning of the present year 647,165 telephones and 2,790 exchanges. At the census of April, 1911, the population of the United Kingdom was 45,216,665, and as the number of telephones at that date was 657,125 (made up as follows:—

National Telephone Company	...	541,569
Post Office	... ..	109,955
Municipal	... ..	5,601

657,125)

the number of inhabitants per station works out at 69.

The principal towns and their development are:—

	National Telephone Company.	Post Office or Municipal.	Total.
London	131,803	71,323	203,126
Glasgow	31,096	11,605	42,701*
Liverpool-Birkenhead	29,119	—	29,119
Manchester-Salford	25,627	—	25,627
Birmingham	15,314	—	15,314
Edinburgh-Leith	12,505	—	12,505
Hull	8,886	3,082	11,968*
Bradford	9,944	—	9,944
Sheffield	9,640	—	9,640
Leeds	9,634	—	9,634
Newcastle-Gateshead	8,445	1,402	9,847

* Corrected figures.

The proportion of inhabitants to telephones has already been set out in the first part of this paper.

The mileage of wire in the British Isles was (March 31) 1,927,766, of which 1,267,622 belonged to the Company and 660,144 to the Post Office. This, in kilometres, is roughly 3,070,000 km.

Germany possessed 1,025,956 telephones and 6,798 exchanges on Jan. 1. According to the census of 1905 the empire had a population of 60,641,270, or 59 inhabitants per telephone. The total length of local telephone lines was 4,570,549 km. The development of large cities is as follows:—

Berlin (without suburbs)	...	122,558
Hamburg-Altona	...	57,554
Munich	...	27,036
Frankfort-on-Main	...	22,838
Leipzig	...	22,913
Dresden	...	19,892
Cologne	...	19,062
Stuttgart	...	16,245
Breslau	...	15,208
Düsseldorf	...	13,551
Nuremberg	...	12,258
Hanover	...	12,231
Bremen	...	9,921
Chemnitz	...	8,193
Magdeburg	...	8,085

France.—The total number of telephones at the beginning of the year was 232,743 and the number of exchanges 8,559. The total mileage of local lines in kilometres was 858,132. The population of France in 1906 was 39,252,245, so that there are 168 inhabitants to every telephone. There were 75,493 stations in Paris and 5,726 in Lyons.

Sweden.—There were 182,283 telephones in Sweden on Jan. 1, of which 123,813 belonged to the State and 58,470 to the Stockholm Telephone Company. The number of exchanges was 2,108 and the length of wire (excluding trunk) 268,228 km. The proportion of the population to telephones is 30. The following are the principal urban systems:—

Stockholm ...	(State 24,250)	72,089
	(Company 47,839)	
Gothenburg ...	...	12,468
Malmö ...	...	6,731

Austria-Hungary.—The total number of telephones in Austria is 108,860 and in Hungary 58,324, or together 167,184. The number of exchanges is 1,121 and 1,564 respectively. There are 261 inhabitants per telephone in Austria and 332 in Hungary. The development of the principal towns is as follows:—

Vienna ...	...	46,028*
Buda-Pest ...	...	18,674
Prague ...	...	7,115

* Corrected figure.

Russia had 132,185 telephones on Jan. 1, 1910, and the present number may safely be put at 150,000. The number of exchanges at the former date was 189. The population of Russia in Europe and the Caucassian provinces is 142,585,400 and the relation of telephones to inhabitants is therefore as 1 to 950. The principal cities have the following number of stations:—

	1910.	1911 (estimated).
St. Petersburg ...	26,794	30,500
Moscow ...	26,360	29,300
Warsaw ...	18,992	22,000
Riga ...	6,282	7,300

Denmark.—The latest figures I have for Denmark are those for January, 1910, when there were 87,436 stations in that country. The total number of telephones in Zealand at the beginning of this year was 56,746, and the total for the whole of Denmark was not far short of 96,000. This gives an average of about 27 inhabitants per telephone. On Jan. 1 last there were 33,702 telephones in Copenhagen and approximately 45,000 in that city with its suburbs included.

In *Switzerland* there were 78,736 telephones at the beginning of the year, or 1 to every 44 inhabitants. The following were the figures for the principal cities:—

Zürich ...	...	11,166
Geneva ...	...	7,149
Basle ...	...	6,402
Berne ...	...	4,325

In *Italy* there were 74,717 State-owned telephones on Jan. 1 last. If to these be added about 18,000 company's stations we get a total of 67,000 or 1 per 506 of population. The best developed cities were:—

Milan ...	...	10,538
Rome ...	...	9,533
Genoa ...	...	5,519

Norway.—The number of stations in Norway at Jan. 1 (based on the average of previous years) was 56,000, of which 25,500 were State and 30,500 private. The actual number of State telephones at June 30 was 27,418, of which 16,164 were in Christiania. The average number of inhabitants per telephone in Norway was 42.

The Netherlands.—Holland possessed 58,252 stations on Jan. 1, of which 34,219 belonged to Municipalities, 17,634 to the State and 6,399 to private companies. The relation of telephones to population is as 1 to 98.

Principal towns:—

Amsterdam ...	...	13,011 stations.
The Hague ...	...	8,041 "
Rotterdam ...	...	7,279 "

Belgium.—The number of subscribers at Jan. 1 was 38,649 and of stations approximately 46,500 or 1 for every 160 head of population. There were 16,966 stations in Brussels and 6,300 in Antwerp.

The following table shows the statistics of stations for the whole of Europe:—

Country.	Number of telephones.		Population (thousands).	Inhabitants per telephone.
	January, 1910.	January, 1911.		
Denmark ...	85,688	96,000	2,588	27
Sweden ...	174,125	182,283	5,476	30
Norway ...	52,853	56,000	2,370	42
Switzerland ...	72,515	78,736	3,463	44
Germany ...	926,644	1,025,956	60,641	59
Great Britain ...	601,269	647,105	45,216	69
Luxemburg ...	2,862	3,000	251	84
Netherlands ...	52,635	58,252	5,672	98
Iceland ...	671	700	76	109
Belgium ...	41,621	46,500	7,451	160
France ...	198,626	232,743	39,252	169
Austria ...	94,569	108,860	28,264	261
Hungary ...	47,924	58,324	19,254	332
Italy ...	57,941	67,000	33,910	506
Roumania ...	11,170	12,150	6,700	558
Portugal ...	5,468	6,000	5,016	836
Spain ...	20,855	22,500	19,712	876
Russia ...	132,185	150,000	142,585	950
Greece ...	1,499	1,700	2,631	1,548
Servia ...	1,522	1,550	2,700	1,800
Bulgaria ...	2,015	2,200	4,035	1,834

This gives a total of, roundly, 2,848,000 telephones in Europe. The figures for Luxemburg, Iceland, Roumania, Portugal, Spain, Greece, Servia and Bulgaria are estimates based on the last two years' progress. Some of the figures for January, 1910, will be found to differ slightly from those given in my article of last December. This is accounted for by the fact that there is some doubt whether call office stations in some countries are included in the total of subscribers' stations or not. I have assumed in the above figures that they are; the effect on the total of their inclusion or omission is, however, trifling.

(To be continued.)

HIC ET UBIQUE.

Two especial kinds of demand on our space are prevalent in these last months of the Company's life. They take the form firstly, of large portrait groups which would each occupy three-quarters of a page of the JOURNAL, and secondly, of topical verses and songs sung at various "final" and other gatherings of the staff. The impossibility of including such portrait groups in bulk will be obvious, and as regards the topical songs they are so numerous and of such length that not one column but several would be required to accommodate them. Moreover, although they contain many excellent hits and happy lines, we imagine that though they proved highly effective with the accompanying music and in the congenial atmosphere in which they were sung, they would, in some cases at least, lose much of their *verve* in cold print.

THOSE members of the staff who have it in contemplation to join the Institution of Electrical Engineers we would recommend to lose no time in doing so. We understand that new articles of association have been submitted, according to which not only will the subscription be raised as from the new year, but some sort of qualifying examination will have to be passed to secure admission to the society.

It has been pointed out that, although the substitution of women operators for boy operators in the London telephone exchanges (referred to in Mr. Anns' History of the Company) was completed under the *régime* of Mr. Joseph Bond Morgan, the idea was initiated and first put into practice in London by Mr. and Mrs. R. Heywood Claxton, of Liverpool.

WITH reference to the mention made in last month's issue of the doubt existing as to the future of the Correspondence Classes,

we are glad to be able to state that the Postmaster-General has now decided that the classes shall be continued—at all events for the current session.

Telephony, an American weekly, has the following comments on a recent article in the *Post Office Electrical Engineers' Journal* :—

That keen British critic, T. F. Purves, found that, in spite of our admitted ascendancy in nearly all branches of telephone practice, we were losing more circuit time on our toll lines than good practice allows in Great Britain. True enough, part of this waste can be traced to the habit of meeting the needs of the American business man by providing ample facilities for quickly carrying off all business originating in the so-called busy hours. In England they seem to be content to let the Government smooth off the peak of the load by simply letting the calls wait. This truly is a restraint of trade which none but a Government monopoly would dare practise, and certainly no American commercial company would expect long to survive such abuse of its patrons.

THE CONSTANTINOPLE TELEPHONE COMPANY.

THIS company has been formed with a capital of £300,000, to take over the concession granted by the Imperial Ottoman Government for the construction and operation of a general telephone system in Constantinople and its suburbs to a syndicate represented by Mr. Herbert Laws Webb. The period of the concession is 30 years, and if the system is not by then bought over by the Government, the period is to be extended by ten years. The tariff is to be exclusively measured rate, with the exception that there is to be a flat rate for private residences. The Government is to receive a royalty of 15 per cent. on the gross telephone revenue. A plant of 10,000 lines will be installed, capable of extension to a much larger figure. The directors, many of whom are well-known to our readers, are Mr. Stanley J. Goddard (chairman), General Superintendent of the National Telephone Co., Ltd.; M. Leon Pissard, Constantinople; Mr. D. Sinclair, General Manager B.I. and Helsby Cables, Ltd.; Mr. D. Smith, United River Plate Telephone Co., Ltd.; Mr. E. Thurnauer, French Thomson-Houston Co., Paris; Mr. H. Laws Webb; and Mr. F. R. Welles, Vice-President of the Western Electric Co., Paris. The consulting engineers are Messrs. Frank Gill and W. W. Cook, Engineer-in-Chief and Assistant Engineer-in-Chief respectively of the National Telephone Co., Ltd., and the solicitor is Mr. W. E. Hart, Solicitor to the same Company. The head office is Adalet Han, Galata, Constantinople.

DEATH OF SIR CUTHBERT QUILTER.

It is with much regret that we have to record the death of Sir Cuthbert Quilter, Bart., one of the Directors of the National Telephone Company, which occurred on Nov. 18. His death was quite unexpected, as he travelled from London on the previous day to Bawdsey Manor, his estate near Felixstowe.

Sir Cuthbert was one of the founders of the Telephone Company registered in 1878, and has ever since been closely identified with the telephone business. Sir Cuthbert for many years represented the Sudbury Division of Suffolk in the House of Commons, was an enthusiastic yachtsman, and took a keen interest in agricultural matters.

His loss will be keenly felt by his colleagues, some of whom had been associated with Sir Cuthbert for more than a quarter of a century.

The funeral took place on Nov. 21 at Bawdsey Parish Church, the National Telephone Company being represented by Mr. George Franklin, the President, and Mr. Albert Anns, the Secretary.

CORRESPONDENCE CLASS BOOKS WANTED.

Will any member of the staff possessing clean copies of the following books for session 1910-11, and willing to dispose of same at standard rates, kindly communicate with Mr. L. J. Farries, of the Engineer-in-Chief's Office :—

"A" Course Books,	3, 4 and 5,	and Answers to Book 1.
"B" " "	1, 2, 4 and 5.	
"C" " "	7.	

THE COMMERCIAL MIND.

BY EUSTACE HARE.

AMONG the paintings which decorate the walls of the Royal Exchange in London is one by the late Sir Frederic Leighton, which stands out from the rest of the series in that, instead of picturing some historical fact as most of the others do, the artistic imagination introduces us to an imaginary group of persons engaged in a commonplace matter of business, and yet, with consummate skill, has invested each individual with a personal interest. The picture represents some Phœnicians trading with the early Britons. On the ground lies a casket, temptingly open, containing specimens of the goldsmith's craft; one of the Phœnicians has unrolled a yard or two of dyed material for the special behoof of three British girls who are busy with admiration and criticism, while the chief trader, bent, with Semitic instinct, on driving a profitable bargain, is raising his hands in scorn of the raw hide which an aborigine is offering him in exchange for his manufactured articles. But in the background of the picture stands a young Phœnician who, if I read him aright, is attracted more by the personality of one of the fair Britons than the prospect of a successful deal, and would willingly forego the balance of barter for a more romantic issue of the interview.

The whole conception is intensely human, a combination of astuteness, greed, ignorance and indifference, with a strong seasoning of self. It is also intensely human because it is purely commercial, and it is purely commercial because each one in the group wants something and wants it at the least cost. There is little doubt as to who will come off best from the business point of view; clearly the old Phœnician, the spokesman of the party of traders; not that, necessarily, he has the hardest head or the hardest heart—there are many young men bountifully endowed in these respects—nor from mere powers of persuasion, but from the knowledge he has acquired by long training and matured experience of the art of observation in appreciating his environment, in gauging the extent to which he may go before meeting with a definite refusal, and in knowing when to yield and when to withhold. By long practice he will have become habituated to divesting himself of any appearance of anxiety as to the result of his bargaining and of any interest in anything outside its scope. If he succeeds he will not exult, and if he is bested his chagrin will not be apparent.

The younger Phœnician is presumably there for the same purpose as his elder colleague, or he would not be there at all, but he is not wholly engrossed with the immediate business in hand. He is of the same race; he has probably the same love of gain, the same instinctive qualities which go to make up the successful man of business, but he has not yet fully trained himself to concentrate his mind undividedly on his duties, nor to throw off all other considerations when the pursuit of profit is claiming his attention; his state is still embryonic.

I have chosen this picture of an imaginary ancient incident for my text because it strikes the keynote of much that I have to say. In short, it shows us that commerce denotes the beginning of all civilisation; it is the precursor of and attendant upon every art and science designed for the advancement and convenience of man, and it is mixed up with every phase of his wants, luxuries, tastes and passions. The age represented by Leighton's picture was not the age of science or of art. It was the age of the conqueror and the conquered, of mere solidity and clumsy strategy, when man depended for the means of subsistence chiefly on the strength of his arm and the sheer cunning of his brain, and when, as is unusual in these days, brute force was the common arbiter of his destiny. But when I say "the cunning of his brain," I use the phrase more in the sense of the instinct for self-preservation and self-interest than in that of the alert mind of to-day, trained by theories and practice to acquire the habit of quick and accurate reasoning which enables it to meet emergencies and pronounce decisions on the spur of the moment. For it is characteristic of the commercial mind that it adapts itself to the times in which its lot is cast.

But for all that I hold a strong opinion that the true commercial instinct never has been and never can be acquired by any course of training, any more than a great writer or a great

artist can be manufactured through the instrumentality of the most perfect technique. That training may do much, that indeed no measure of success can be attained without it goes without saying; but that a man can achieve real commercial distinction without natural aptitude is as much to be expected as that every engineer can become a Brunel or every poet a Milton. I believe that of all callings and professions the commercial is the least susceptible to, and the least influenced by rule, theory, fortune and outside circumstances, artificial or otherwise, and that the commercial man to court real success must rely solely on his own personality, his self-confidence, foresight and experience, and above all, his powers of observation in regard to men and things generally. I am speaking, of course, of the honest, straightforward man of business, and not of the needy adventurer or unscrupulous trader, nor even of those colossal minds which have set themselves deliberately to amass wealth and secure ease by crushing weaker competitors out of existence. I am referring only to those men who combine energy and a level head with honesty of purpose and punctilious rectitude, who do not ally gain with greed, and to whom thrift is not incompatible with a judicious and discriminating generosity. Such qualities may be deemed old-fashioned, but they are characteristic of stability, and they inspire (involuntarily perhaps) respect and confidence even in those who affect what we may call lighter and more up-to-date methods.

I do not, however, wish to be misunderstood here. I am no advocate for the stupid and obstinate conservatism which refuses to change immemorial custom and to march with the times, thereby courting inevitable, though perhaps gradual, failure. Many a once flourishing house of business has gone under from a sheer refusal to adopt modern commercial machinery; pinning its faith to a long-established reputation, laboriously built up, and disregarding the early warning of a break in what, from long-continued prosperity, seemed an unassailable security.

Such fatuous and ostrich-like obsessions are to be deplored but cannot be altogether condemned lightly; the results are too melancholy to invite contempt and yet too well-deserved to enlist our sympathy. The starchy pride of Paul Dombey in Dickens' celebrated book is matter for laughter, but such an action as his splendid refusal to secure anything for himself out of the wreck of his fortune commands our admiration. Though purely fictional, Leighton's delineation of the old Phœnician, and Dickens' creation of Dombey, afford us examples of extreme and opposite types of the commercial mind. Both models are to be avoided. The one, possibly, will not scruple to gain his end by descending to any depth of cunning that may occur to him; the other, by long prosperity, has a distorted view of the stability of his business, and is bubbling over with a ridiculous sense of self-importance. The one secures wealth by doubtful dealing, the other loses it by a lofty indifference to current events. Between the two lies a broad course, but by no means a smooth or easy one, and our difficulty is that though we aim at finding and keeping the centre of it, those whom we desire to meet on even ground continually baffle us by choosing more tortuous ways with persistent evasion.

Following the two types I have suggested, if you substitute astuteness for cunning, and integrity for lofty pride, you will, by blending the two, lay an ideal foundation for a sound commercial superstructure. But neither of these qualities can be acquired, or perhaps a better word is "originated"; they must be pre-existent, natural gifts to be cultivated and developed, and no more to be manufactured than an acorn is. I can as easily imagine a mole changing his habits as a man accustomed to pursue underhand and crooked ways, altering a course which he has consistently followed since he began to think. Failure to him merely means that he has been foolishly lax in his methods, and that it behoves him on the next occasion to be more heedful of the tenets of his commercial faith. And a curious feature of such minds is that they never seem to realise the difficulties they create for themselves. Those of you who are chess players know that you may mystify, and even defeat an expert opponent *once* by springing upon him an unusual attack, but you will not do it twice. So the man of business who sets out to best a client or a rival by doubtful means finds it necessary to be continually seeking new fields for his ingenuity and fresh ground for the throw of the net.

The true commercial mind rises superior to the narrow scheming of the pettifogger. Behind his acuteness is a natural antipathy to mere "slimness," and while he has no intention of

laying his cards on the table, he is content to follow the rules of the game, and finds no satisfaction in gaining points according to the methods of the cheat.

But although integrity and astuteness form a good foundation to start with, their possessor is not, on the strength of them alone, entitled to rush into the market place and proclaim himself fully equipped for the public confidence. His place in the business world can only be acquired by a long and laborious apprenticeship, culminating in a more or less intimate knowledge of men and things gained by observation and experience, and by a close application to a study of the ramifications of the commercial life and needs of his day. How such an education is to be gained, how to set about it, and how to apply it when gained are problems of extreme complexity, and it is with all diffidence that I submit my own conclusions, keeping in view the particular sphere of commercial usefulness in which we are all engaged.

Now, it seems to me that the great difference between a commercial career and all others is that the training must be *general* and not *particular*: and it is this that makes the training so hard and accounts for the difficulty in defining a specific course. Every thinker, for example, knows how much more difficult it is to argue or develop an argument when no common basis of agreement can be arrived at, than when the opinion on the original subject forms an agreed starting point. Thus, it would be impossible to decide how every man's income should be divided into various classes of expenditure, while no two persons are agreed as to what the total income should be; but assuming that amount to be £1,000 a year, it would not be difficult to say how much he should allow himself for rent. Therefore, as commerce in some form or other pervades every profession and calling under the sun, it is not to be wondered at that to track out a path that leads to success is no easy task.

Among the ignorant, and I use the term with no offensive intent, the way of commerce is synonymous with the pursuit of wealth; that is to say, that the man who leads what is commonly recognised as a commercial life, unlike such disinterested persons as doctors, lawyers, poets and other philanthropists, has one object only in view—namely, the making of money. Nothing is farther from the truth: money is not, in itself, a subject of commerce at all. So far from being its be-all and end-all, it is merely the oil which works the machinery, and is therefore incidental to it and not part of it. Take our own business: take the few thousand staff who give their time and energy to it in exchange for their livelihood and the fewer thousand proprietors who have lent their money to create and extend it, in expectation of a reasonable return, and then compare this expenditure with what has been wrought thereby for the advancement of science and the convenience of hundreds of thousands, and you will see there is no parallel. The match which lights a general's cigar may burn an enemy's town, but the price of the match remains the same; so, likewise, though the telephone may last year have saved a thousand lives or made a thousand fortunes neither you nor I have greatly profited thereby, nor has the cost of the medium increased to the beneficiaries.

The object of commerce is to provide men and women with the necessaries, conveniences and luxuries of life. Commerce is only another word for labour, and the mission of the commercial mind therefore is to control and distribute labour to the best advantage. Nothing has ever become of real use to man until labour, mental and physical, has been expended upon it. Facts have always existed, but they may remain dormant, unexplored and valueless according to their degree of obtrusiveness until, to meet a want or perhaps to discover a new medium which can be exchanged for the necessaries of life or perhaps merely to achieve renown, some enterprising mind has sought them out and made use of them by labour, and as soon as labour is expended upon them they become subject to commerce.

The great aim of the commercial mind and the secret of its success therefore is the management of labour; the labour of the merchant or employer himself as well as of the men he employs. It is needless for me to say that matters of finance enter largely into every business, because without it no business can continue; but this again hangs upon the question of labour. The cost of an article to the consumer is governed by the rarity or otherwise of the raw material and by the labour expended upon it, mental, manual or mechanical. The price of the raw material is settled by the markets, but the added cost of production of the finished article

is in the hands of the employer or manager of labour. The financial success of the manufacturer is a by-product, and bears no comparison whatsoever with the importance of the output by which the consumer benefits. The primary, ever-present and ever-pressing thought of the manufacturer is not how much money can he make, but how can he produce a useful and efficient article at an attractive cost. And the question of the cost of production concerns the buyer more than the seller. In order to make his business self-supporting, the seller looks to make a profit on each article he sells, but having decided the amount of profit it is necessary for him to make as a return on his capital, it is a matter of personal indifference to him how much he must spend to produce it, except that the less labour each article requires the greater is the number of articles he can put on the market, and the greater therefore his profit in the aggregate.

To those who care for these things the history of commerce is one of absorbing interest; it is one continuous march of progress and evolution, ever repeating itself as each primitive country or State steps into the arena of civilisation. So long as the savage finds his food by looking for it or hunting it he cares for nothing else and wants nothing else, except the scalps of his enemies, or perhaps of his friends. But as soon as these easy enjoyments fail by reason of scarcity or the growth of his tribe he must perforce betake himself to cultivation. This is the first step towards commerce. Later, and particularly if no war supervene to dispose of superfluous natives, the supply afforded by his husbandry exceeds the demand, and he has to look for a market to clear the excess of his stock. This is the second stage; and the third stage is reached when he begins to barter what were bare necessities for luxuries and superfluities, which leads to the high-water mark of civilisation.

This has been the commercial history of our own country. At one time the people of these islands were practically divided into two classes, husbandmen and soldiers, both from necessity, there being no other means of subsistence. But later on, by intercourse with other nations, various arts and crafts were introduced, so that the position slowly changed into agriculture and manufacture with a modicum of soldiery to protect both. That is to say, the inevitable happened. The land began to yield more than enough to satisfy the bare necessities of life, and there arose a superfluity of hands above those required for agriculture and the levies of the sovereign or barons for offensive and defensive purposes. Thus also it came to pass that the produce of the land in addition to providing food began to furnish material for purposes of manufacture, tending to the refinement of the people and to commercial stimulus. I may here remark, parenthetically, that in those days there was a constant war, possibly unrecognised, in progress between the ambition of the sovereign and the happiness and wealth of the subject; because it is obvious that so long as labour was depleted to find armies for the extension of the king's dominions, the growth of arts and manufactures was retarded. And the growth of manufacture, in turn, means the production of superfluous articles which must be disposed of in return for other commodities; all adding to the wealth and well-being of the nation. But with the circumstantial march of progress it became evident that some more economical means must be adopted for fighting wasteful and unnecessary battles, and this was found in the employment of mercenaries, which though anti-patriotic possessed the advantage of leaving the labourer at his plough and the weaver at his loom.

I have already said that money is not in itself a subject of commerce: it is only a convenient medium for commercial transactions. Clearly, therefore, commerce may exist without money. So long as the wants of the people are limited to bare necessities, and localities are more or less circumscribed, the case is met by exchange and barter. The landlord may be paid in kind, and sheep and barley tendered for huts and clothes. But this is still commerce, and I only mention it to emphasise the fact that the commercial mind is pre-historic, and that commercial enterprise does not necessarily nor primarily mean the acquisition of so much gold and silver. It comprehends something far higher: its end and aim is the welfare and improvement of all nations—civilised and uncivilised.

One could say much more on this subject, but I must now leave generalities and pass on to the immediate matter in hand as it concerns us.

(To be concluded.)

DAILY ORIGINATING TRAFFIC, BRISTOL EXCHANGE; ITS VALUE, OPERATING DUTIES AND THEIR ARRANGEMENT.*

By A. E. COOMBS, *Traffic Manager, Bristol.*

ONE of the chief difficulties confronting the writer of an essay or lecture on a subject with which the essayist or lecturer is more or less of an expert, is to approach the matter from the point of view of the audience. It is so easy for the lecturer to expound at length and quote figures by the yard on various interesting and intricate problems, that he is very apt to overlook the important fact that a portion at any rate of his audience are not so well versed in the matter as himself. Therefore, while all his figures and facts may be exceedingly interesting, unless his listeners grasp the principle of the *application* of these statistics the lecture will be so much good time wasted.

It has occurred to me more than once during the past that our lecturers have surfeited us with too good, and, if I may say so, too "many-sided" lectures. Let me explain. When dealing with the more comprehensive branches of the Company's business they have—innocently enough and with the best of intentions—given us so much information and gone so rapidly from one important point to another that those of us not particularly well versed in the subject-matter were unable to grasp thoroughly the fundamental principles of the lecture. In my opinion it is far better to grasp fully *one point* than to skim or lightly touch on a dozen. I therefore propose dealing in this lecture with one phase only of our "traffic organisation," and that is as applied to the organisation necessary for coping with the daily load of originating calls at the Bristol Exchange. Questions of speed, accuracy and organisation of the Traffic Department generally may well form the subject-matter of other papers: each of these matters being sufficiently interesting in itself to form the text of separate papers.

The particular phases of this paper are as below—

- (1) Daily originating traffic, Bristol Exchange.
- (2) Valuation of this traffic.
- (3) Operators' loads at various times of the day and varying stages of the traffic.
- (4) Operators' duties and how arranged.

What is Telephone Traffic?

Before we discuss the detail of the Bristol traffic it will be as well if we generalise a little on "traffic." What is it? What are we to understand by "telephone traffic"? To rob it of picturesque language and bring it down to what is the more generally accepted word, it is "operating." A telephone operator receives a call from the subscriber who wishes to converse with another subscriber, and, if the course be clear, she will at once, by means of apparatus under her control, put the caller into communication with the called. There is a great similarity between telephone traffic and street traffic. In the latter the cars, taxicabs and other vehicles convey one from point to point of a city as desired; in the former the operators cause to be put into touch one with the other two subscribers in various parts of a city.

Organisation.

The organisation of any matter demands minute attention to the details pertaining to such matter. Telephone traffic or operating consists of hundreds of thousands of daily telephone connections, each connection consisting of a certain number of operations, each operation involving a definite performance by apparatus and by a manipulator. The efficiency—and efficiency means accuracy combined with celerity—of the individual connection is the object to be attained, and the efficiency of a telephone connection requires efficiency in each step. Each one of these steps is unfinished in itself and a comparative trifle, but a combination of such trifles will make the perfect service, yet no one would say that a perfect service was a trifle. "Trifles make perfection, but perfection is no trifle."

The Uneven Flow of Telephone Traffic.

Telephone traffic generally—and Bristol is no exception to the rule—flows in uneven volumes at different times of the day. If the messages flowed at an even pace during all the working hours the

*Prize paper read before the Bristol District Telephone Society, Jan., 1909.

telephone service would be much easier to conduct; but in every day there are hours which are busy and hours which are comparatively slack. In the earlier hours of the morning the tide of calls rises gradually up to about 9.30 o'clock. Then, when people have opened their letters and telegrams, the whole city turns to the telephone; the tide of calls goes up with a rush and the exchange is kept working at full pressure for a couple of hours. After twelve midday—sometimes after 11.30 a.m.—there is a slackening; it is comparatively quiet during the lunch hour, 1 to 2 p.m.; then comes another rush—not quite so great as in the morning however—in the middle of the afternoon, as people are clearing up the day's business. After this the flow of traffic dies down until in the evening the exchanges are comparatively idle. Telephone traffic has very aptly been termed the "pulse" of a city's life.

The remarks in the preceding paragraph refer, of course, to a normal business day; we have to be prepared at all times for abnormal happenings. Take one example only. Suppose it has been a fine evening, with plenty of pedestrians about the streets, and about ten o'clock a sudden and heavy shower of rain comes on; this makes our traffic go up by leaps and bounds, for all people who can do so—and they seem to be very numerous—get to the nearest telephone and call for taxi-cabs, and subscribers who have the telephone at their private addresses order cabs for those of their household who may happen to be at the theatre but who are not prepared for the sudden change of weather, and so on. It is just at such times as these *we* get blamed for not sending these cabs; for everyone wants cabs, but everyone cannot have them, and innocently enough—but no doubt due to the perversity of human nature—the night operators come in for more than their share of the general abuse.

Therefore the unevenness of the day's work of a telephone system causes the service to be much more expensive to conduct than it would be if the traffic came at a definite rate. The essence of a telephone service is quickness; therefore not only the plant but the staff must be organised to deal with the traffic without delay at the busiest hour of the day. One hour after the busiest hour there will be plant idle and there will be staff idle. But the busiest hour sets the pace for the whole organisation, as there is no reserve or storage capacity in a telephone system. Each call is an individual transaction to be dealt with on the spot; and though the operators can work at high pressure for short periods, the plant cannot be pushed or stretched for the reason that a wire will carry only one message at a time. Therefore the busiest hour sets the mark for the number of operators and arrangement of the switchboards. At night the whole plant is practically idle, yet a night service must be maintained, because night messages, although few, are urgent, and the night service is a valuable public facility. The plant is there of course, and costs no more to maintain through the night than through the day, while its extent has already been fixed by the demands of the traffic during the busy hour. But to give a service throughout the night requires operators in far greater proportion than the actual work to be done.

To return now to the detailed consideration of this problem as it affects the Bristol Exchange. I may have in some cases to traverse ground which may be more or less known to some of my readers. If this is so I must crave their indulgence, for the reference to such matters is very necessary and will only be used as a means to an end.

Daily Originating Traffic, Bristol Exchange.

By originating traffic is meant the calls made by subscribers connected to the Bristol Exchange. The daily total of these (from 8 a.m. to 8 p.m.) is, as near as possible, 33,772 local calls—*i.e.*, calls from one Bristol number to another Bristol number—and 1,698 junction calls—*i.e.*, calls from Bristol numbers to numbers on other exchanges in the Bristol area, such as Fishponds, Clevedon, Portishead and others.

As has already been shown, if these calls flowed evenly throughout the day, it would be a comparatively easy matter, after having ascertained how many calls each operator could deal with, to decide just what staff would be required. The simple division of the total by twelve would give us the unit of work for each hour and we could then average the staff. But this is just what does not happen.

A curve of the daily flow of originating traffic at Bristol shows

just the number of times subscribers call, and does not take into account the quality of the call, whether local or junction, and so on. It represents the number of times per day the calling signals at Bristol are actuated. The highest point is touched between 10 and 11 a.m. This hour is therefore known to us as the "busy hour," and upon this we base our most important calculations, and, as we have to provide for and organise to meet the heaviest demand upon us, all other arrangements must be subsidiary to this.

Traffic Valuation of Subscribers' Calls.

It has just previously been shown how many calls per day are made by the subscribers on the Bristol Exchange, but it will be obvious to all that the mere statement of fact that there are 35,470 of these calls does not in any way decide the unit of work for which we are to make provision. In this figure have been included local and junction, flat rate and measured rate, call office and party line calls and so on. The calls reach us from the subscriber in a crude and unvalued state; it is therefore for us to place a value upon them and make our arrangements accordingly.

One comparison will I think be sufficient to emphasise this point.

Take the ordinary flat rate call and a call office money box call. In the case of the former the average user is more or less expert, gives his numbers in quickly, understands the various forms of operating, grasps the fact that the number he requires is engaged as quickly as the operator can tell him, and generally is a help rather than a hindrance; from the operator's point of view no calls have to be recorded and no pennies asked for. With the latter it is quite different; we get a mixture of expert and amateur callers. It is these latter cause most of the delay; they take the receiver off before they know the number they want; they do not grasp what the operator says when the number they require is engaged, and frequently take this as a request for the penny or pennies to be put in the money box (if they have not already put these in before even taking the receiver off, thinking they must do so before they can get the exchange); they ask for people by names, get the numbers they require twisted into unrecognisable figures, get the pennies half-way in the box, and cannot be got to understand that they should turn the handle right round, and generally prove a great stumbling block to the prompt despatch of a call. From the operator's point of view she has in *all* cases, whether user is expert or not, to ask for the pennies and to wait on the line until these are placed in the box; if a call is received for "trunks" or "telegraphs" the operator must see that such call is confirmed by the call office attendant, and must wait on the line until the said attendant speaks. (This precaution is very necessary for safeguarding our call office attendants from the passing of trunk calls by people who omit to pay for them.)

These two illustrations of calls will at once show the necessity for a valuation of the daily traffic, for it will be perfectly plain that an operator cannot deal with the same number of call office calls as flat rate calls; this being so, it will be our next step to discover the valuation that should be applied to the various services.

Main Classes of Service.

On the Bristol Exchange there are five main classes of service as below:—

- (1) Flat rate (direct and two-party line).
- (2) Measured, message and residential rates.
- (3) Ten-party line and two-party line measured rates.
- (4) Call offices.
- (5) Measured and message rates (with money boxes).

To ascertain, therefore, a valuation of the daily load it will be necessary to discover how many calls are received from each of these classes of lines.

Before, however, proceeding to this point we should decide upon the value of each class of call. If one operator deals with a flat rate call and another with a money box call, how much more labour in proportion is necessary for the latter? and to what extent is an operator's value depreciated by means of her being delayed in the collection of the pennies, etc.?

From a close study of this question at Bristol it is estimated that the following represent the values of the various services outlined above. The ordinary "flat rate" call, it will be noted, has been taken to represent unity:—

	Values.
(A) Flat rate and two-party line flat rate calls ...	1'0
(B) Measured, message and residential rates (calls on which special tickets have to be made out for all trunk calls, special junctions, and any call delayed through "number engaged," "junction engaged," "no reply," etc.) ...	1'1
(C) Ten-party line and two-party line measured rate subscribers (calls on which all calls must be recorded and delayed calls effected in the same way as (B)). Amateur subscribers on the ten-party lines and difficulty of calling back to these subscribers account for comparatively high valuation) ...	1'75
(D) Call offices with money boxes (fees collected by operators) ...	2'0
(E) Measured rates with money boxes (fees collected by operator and tickets made out in the same way as (B)) ...	2'25

It should be mentioned here that the Bristol Exchange is C.B., with registers fitted on all "A" operators' positions. On ordinary measured and message rate local calls therefore the operation (beyond the fact of the average user's not being so expert as the average flat rate subscriber, which, of course, is an intangible, yet important, factor) is the same as on the flat rate lines, as the register keys are depressed for all calls, irrespective of service.

These valuations therefore refer to C.B. exchanges with registers. At magneto and other non-register exchanges the valuation of a measured rate record call as compared with a flat rate would of course be greater than at register exchanges, for in the non-register exchanges every measured rate call would require to be recorded.

The proportions of the other services would, however, it is thought, be much about the same, as ten-party line and call office money box lines are not affected by registers in any way; the calls have to be recorded or money collected at each class of exchange. The measured rate money box lines calls valuation however would be different, as of course every call would have to be recorded as well as money collected.

(To be continued.)

THE EDUCATION AND TRAINING OF THE TELEPHONE ENGINEER.*

By G. F. GREENHAM, Chief Electrician, London.

(Concluded from page 165.)

A KNOWLEDGE of the principles of mechanics is as essential to the electrical as to the mechanical engineer, and the telephone engineer must apply them to as large an extent as any other engineer. The most expensive portion of the plant is dependent on the application of the laws of mechanics for its safe and efficient working. The problems connected with the erection of overhead telephone plant are very serious ones, and the numbers of papers published giving the results of investigations and studies indicate the importance of the subject. The study of physics is of great importance. A good understanding of physics is a fairly certain indication of imagination and power to analyse and reason. A mere mathematician cannot be an engineer, but a man can be an engineer with elementary mathematics if he has a working conception of the laws of physics. Take acoustics, for instance: the telephone pure and simple is an acoustical instrument. The laws of sound transmission play an important part in the investigations regarding efficient speech transmission over long distances. We are concerned with the laws in relation to light and heat in such questions as the proper lighting and heating of our buildings. Many examples, if time permitted, could be given of the application of physics to telephone engineering, such as the regulation of wires in routes to allow for the expansion of metals with increase in temperature, the alteration of the specific gravity of accumulators with variations of temperature, and so on.

There appeared in the *Electrician* recently an article on the determination of lengths of spans by an application of known laws

concerning the velocity of waves set up in a wire, and, I believe, some use of a method, dependent on known laws of physics, of determining lengths of spans has been employed by the Inventory staff. I could scarcely give a better example of theoretical knowledge proving useful in an unexpected manner.

As the Company's engineers are continually operating on buildings and might do serious damage without it, some knowledge of building construction and the theory of structures is obviously essential.

Chemistry, like physics, plays a large part in the art, one important application being in connection with the batteries and accumulators.

Economics is essentially an engineering subject and a clear understanding of the principles of annual charges and present values is of immense importance. When comparisons have to be made between the costs of various methods of performing work, all the governing factors must be duly allowed for and the effect of each on such problems must be understood. Some of the chief factors referred to are—life of plant, rate of employing capital on a scheme and wastage. The value of the use of curves in such problems cannot be over-estimated.

A true appreciation of what depreciation involves would have been helpful to some of the municipalities in their telephone enterprises.

Another important requirement that must be classed under the heading of theory is a knowledge of the principles of accountancy. Every engineer in a position of responsibility must have some knowledge of the principles of accountancy as, although he may not control the purse, it is his efforts largely that cause the purse to be filled. Apart from the purely financial side of accountancy, the engineer should be in a position to instruct the Clerical Department in regard to the collection and analysis of such information as would aid him in carrying out his operations in the most economical manner.

The scope of the knowledge required in some of the subjects mentioned may be gathered by a study of the syllabus of the examinations for sub-engineerships and staff engineerships in the Post Office. The subjects included in the examination for sub-engineerships are—English composition, mathematics, applied mechanics, electricity and magnetism, elementary sound, light and heat. In mathematics a knowledge of plane and solid geometry, algebra up to and including the binomial theorem, and expansion of simple functions, trigonometry, including the solution of triangles and the introduction and fundamental principles of the calculus, are required. Applied mechanics cover the elementary principles of statics, illustrated by their practical applications, including the qualification or graphical determination of stresses in the members of a simple frame.

As regards electricity and magnetism, the syllabus for stage 3, Board of Education Examination, is taken, which is fairly comprehensive. Most of the subjects mentioned in *Thompson's Elementary Book on Magnetism and Electricity* are included.

The ground covered in physics is practically the same as is dealt with in books such as those of Glazebrook and Stuart & Gee.

The youth whose preparatory training we have been discussing, assuming he has applied himself diligently to the subjects referred to, is now ripe to take his place in the telephone business, and, provided he is possessed of the necessary personal qualifications, should have no difficulty, where merit is taken into consideration in preference to long service, in pushing his way rapidly forward in the profession.

The innovation on the part of the Postmaster-General in filling some of the higher positions in the engineering branch with college-trained men has given rise to much criticism and some disgust on the part of those who consider their own chance of promotion has been limited by the policy. Dispassionately considered, the policy may have been forced upon the Post Office authorities. Men who are perfectly competent to carry out large engineering jobs may be quite unsuitable for carrying out theoretical investigation work, and it is imperative that the telephone authority should insist on having the best brains available engaged in investigation and allied work. It is incumbent on the authority at the same time, however, to recognise that very often—in fact, invariably—the practical engineer possesses qualifications which are entirely lacking in the

theorist, and which are indispensable to the successful conduct of the enterprise.

Having launched our more fortunate youth in the telephone business, we have to consider the case of those who cannot be given a proper technical training before entering the business. Experience has taught that such youths if carefully selected and trained can be converted into very useful members of the staff. Mr. Clay inaugurated in London some time ago a system of apprenticeship, and after some vicissitudes the system became a very successful one in the London organisation. Unfortunately, the advent of the transfer made it necessary to stop engaging youths three years ago, as the period of training was for three years, and it would not, in the interests of the apprentices, have been fair to have left unexpired portions of terms to be served with the Post Office. The London scheme of apprenticeship provided, as already stated, for a three years' training, during which course experience in the Metropolitan workshops, Chief Accountant's office, Electrical, Traffic and Engineering Departments was gained. The term could with advantage be extended to five years, as considerable difficulty has been experienced in covering sufficient ground in each department to justify a certificate of proficiency. I am a firm believer in the apprenticeship system, and would have strongly advocated its continuance had the Company been continuing its operations. My suggestion is that youths who have received preliminary technical training and those who are taken direct from school should both be apprenticed, but that the conditions of employment should differ in the two cases. Those with preliminary training should serve a shorter term, say three years, and receive a higher rate of pay, as they would naturally be older and better equipped than the others. I am not aware that the Department has anything approaching the system of apprenticeship I have outlined, but from what I can gather of their difficulties, there is room for modification in the methods of selecting and training staff. The Telephone Administration wishing to give the best possible service should not shrink from having a surplus of men on the books. The principle has been recognised in connection with the operators, where a 10 per cent. excess is allowed to cover sickness, etc. A serious difficulty in the Engineering Department has always been a want of reserve staff to fill vacancies as they occur. Every vacancy in the ranks creates a twofold difficulty; firstly, the work is retarded through the shortage of staff, and secondly, the employer's reputation is liable to suffer while the recruit is learning by experience—experience frequently dearly bought. The wastage due to resignations, retirements and promotions has always in my experience been a sore trouble, and a scheme of apprenticeship on a liberal scale would overcome the difficulty very largely. The other difficulty which I referred to previously—viz., the proper training of the existing staff to enable its members to keep abreast of the times—is one which, as far as I am aware, has never been tackled on bold lines. In a business such as ours, there is sure to be a large number of men, who through lack of the necessary qualifications, fail to rise beyond a certain grade, and who in many cases have no desire to do so. From some points of view, it is good that this is so, provided always that the men are efficient in their grade and contented. If every member of the staff were striving for a higher position the bulk of the staff would probably be in a continual state of discontent due to the slow rate of advancement. It is to the advantage of the Telephone Administration, however, to see that the men referred to are made thoroughly efficient. No one can dispute that the National Telephone Company has done a great deal in this direction. It has fostered technical education in many ways that are known to us all, and it has been most generous to the staff, who have been willing to profit by its generosity, and to acquire knowledge.

Some ten years ago I wrote a paper formulating a scheme of practical training for all entrants to the technical departments of the Company, somewhat on the lines of the operating school since introduced, which forms such a valuable feature of the Traffic Department's organisation. My suggestion was that the Company should start training schools in one or more towns in the kingdom, where men could be taught the practical part of the engineering branch of the business. The scheme is, I know, ambitious, and the difficulties to be overcome are many but not insuperable. The

schools should cater chiefly for the artisan class, such as wiremen, fitters and inspectors, but no doubt if they were started their scope could be extended. It may be urged that there is not the same necessity to train the rank and file of the engineering branches, as is the case with operators, because the effect on the service of lack of efficiency is not so immediately noticeable, and because in some cases, where men work in gangs, the juniors learn by helping others, and are not in a position to do much harm. My answer to such criticisms is that the men who learn their work by helping others are very seldom told *why* things should be done in any particular way, but merely that they *must be done* in that way, because, if they are not, punishment or censure will result. As regards the effect on the service, although the results of work being done by poorly trained men may not be so immediately noticeable, yet it may be more far-reaching and expensive than inefficiency on the part of a proportion of the operators. In my proposed school the practical instruction would be accompanied by a limited amount of theory, but no attempt would be made to give theoretical instruction on the lines of the technical institutes. Lectures might be given on the scope of the Company's work—the properties of materials used in the business—on simple mechanical laws applicable to the telephone business, such as those that govern the erection of pole routes, for example. In the practical classes the actual material would be handled and the men be taught to make joints in wires and cables—make off wires on insulators, fix and wire instruments, and other similar work. The chief difficulty that presents itself in connection with such a scheme is the question of the number and location of the schools. The fewer the schools the simpler the organisation of the scheme and, from this point of view, one central school would be the ideal arrangement, but as trained men are required to fill vacancies in all parts of the kingdom, entrants should preferably be drawn from all parts of the kingdom too. The expense involved by the men's stay at a central position during the training period would be too much to be borne by members of the artisan class, and if borne by the Telephone Administration unnecessary expenditure would be involved. The solution of the difficulty would be to open schools in a number of the principal towns, such as Liverpool, Glasgow, etc. The selection of suitable men to take the classes should not present great difficulty. The benefits that would accrue, due to the efficiency of the rank and file of the engineering staff would, I am sure, be as noticeable as was the case on the introduction of the operating school.

I said just now that if these schools were successful their scope might be extended. I have in mind the need for all technical men for keeping in touch with the work of other departments and the difficulty in doing so. The telephone societies which flourish so bountifully now are doing much to aid in the good work, and the Company has been wise to encourage them by liberal grants and prizes. The journals published by the Company and Post Office also assist in this direction, but still more can be done. Lectures given by qualified men selected from the technical staff would, I am sure, be much appreciated by large numbers of the staff. Lectures could be given at the schools in the ordinary working hours without disorganising the business. Staff working away from the towns where schools are situated would not, of course, be able to profit by this scheme, but that is no reason why *no one* should. Most of the items under the headings of construction and operation could be dealt with in these lectures, and for the rest probably only practical experience can serve.

We Britishers have long smarted under the grievance that most of the new ideas telephonic have come from America; in fact, I have heard the opinion expressed that a poor innovation of American origin is accepted more readily than a good idea of British origin. It would be splendid if the old country could take the lead in such an important question as I have been discussing.

It is interesting to note in this connection that in an editorial in Volume I. of the *Post Office Electrical Engineers' Journal* the following remarks occurred:—

“We hope the account of the French system will turn the attention of this country to the possibility of founding a special school to train telegraph and telephone engineers for the Empire, a school in which students recruited from the staff and from outside could obtain a thorough theoretical and practical training.”

These remarks had reference to an article from the pen of Major O'Meara descriptive of the excellent system of training telegraph and telephone engineers for the State service in France. The training referred to is for the benefit of those destined to fill the higher ranks of the profession, and is a far more ambitious scheme than is conceived in my proposal.

The fact that we are on the eve of becoming Civil servants is my excuse for introducing for my concluding remarks the vexed question of examination for promotion. Scarcely anyone is opposed to examinations designed to assist in the selection of candidates entering the profession, and little exception can be taken to a subsequent examination covering the general theoretical subjects bearing on the work of the department, providing that such examination is held well before the entrant has reached the stage when preparation for examinations becomes an exceedingly heavy strain when carried on in conjunction with a man's ordinary and generally very exacting duties. In a competitive examination the capable engineer of ripe experience stands little chance against the young man fresh from the arena of examinations. A system under which ripe experience and personal qualifications are negated by a few marks obtained at an examination is a pernicious system, and cannot result in efficiency. Character and other personal qualifications are of paramount importance in the engineer. Mr. Prout, a member of the Institute of American Civil Engineers, writing in 1906 on the relation of the engineer to society said that, from constant observation of four engineering works employing about 20,000 men, engineers reached the limit of their usefulness from defects of character rather than from want of technical attainments. The greatest difficulty is to find courage, candour, imagination, large vision and high ambition. The lack of courage and lack of candour is most noticeable, but the lack of imagination and broad outlook produces the most serious disasters. All of these things an engineer must have if he is to go far, and any scheme of education is defective if it does not provide for development of courage, candour, imagination, broad vision and high ambition. Non-success at examinations does not necessarily imply want of intelligence. Sir William Ramsey has gone so far as to condemn all examinations, and even contends that they should be abolished as the means of qualification for medical practice. Students should, in his opinion, serve under a surgeon of established reputation, whose certificate of proficiency should be sufficient to admit to the register of practitioners.

In connection with this subject, the following, culled from the philosopher Nietzsche's essay on "Education," is noteworthy:—

"The intelligent man in the course of his life nearly always acquires a vast store of learning because his mind is constantly active and receptive, but intelligence and learning are by no means synonymous despite the popular opinion that they are. It is evident that the man who in the struggle for self and power secures a million dollars for himself is appreciably more intelligent than the man who starves. This achievement, which is admittedly difficult, requires more intelligence than the achievement of mastering a Latin language, which presents so few difficulties that it is possible for any healthy human being with sufficient leisure and patience, is also evident. In a word, the illiterate contractor who says, "I seen" and "I done," and yet manages to build great bridges and to acquire a great fortune, is immeasurably more vigorous intellectually and immeasurably more respectable and efficient as a man than the college professor who laughs at him and presumes to look down upon him. A man's mental powers are to be judged not by his ability to accomplish things that are possible to any man foolish enough to attempt them, but by his capacity for doing things beyond the power of other men. Education, as we commonly observe it to-day, works towards the former rather than the latter end."

Within certain limits the man with superior ability and requisite common sense, who essays to earn his livelihood in one branch or other of the engineering industry, will do so, no matter how poor or how unorthodox his preliminary training may have been. Given sufficient incentive the world will always produce her Stephensons, Watts, or Kelvins. Granted that the man of transcendent genius is rare, it is not inconceivable that if some such had in their youth been the bond slaves of examination-mongers,

standardised training would perchance have killed the spirit of originality which makes progress possible.

Most of us, I believe, live in hopes that the Postmaster-General will seize the opportunity presented by the transfer to remodel the organisation somewhat on the Company's lines. I would offer a word of warning, however, in regard to promotion by merit. Let those whose onerous duty it is to make selections for posts give very serious thought to each case and make sure that the decision arrived at can stand close criticism, and let those who covet a post and do not get it spend some time in self-examination to find out their shortcomings, rather than in reviling the one responsible for the selection. Before sitting down let me anticipate criticism by pointing out that I do not for one moment claim a complete knowledge of the subjects I have referred to. I have merely enumerated *some* of the things it is necessary for the telephone engineer to know who wishes to stand well in his profession and some ways in which the Telephone Administration can further its own ends by helping its employees, in the hope that my remarks may be of assistance to some of my audience and so serve some more useful purpose than having given me pleasure in preparing them.

TELEPHONE WOMEN.

CVII.—GLADYS BORER.

THE ancient building which contains the Dorking Exchange is an example of an old merchant's house built a century or two back, a class of house to which the Company is very attached. This attachment is not so much due to the age and general antiquarian interest of such old buildings as to the fact that they are usually to



GLADYS BORER.

be found in the centre of the business quarter of the town. Thus Dorking Exchange is situated at the widest part of the High Street and opposite the principal hotel, the big bay window of the switch-room, with its many little panes, giving an extensive and commanding view of the main thoroughfare. It is in this room that Miss Borer has carried on her duties since she joined the Company in May, 1903.

It is not to a moderate-sized market town in an agricultural neighbourhood that one looks for rapid development in switchboard plant. However, the subscribers have increased in number since she took charge of the operating from between 20 and 30 in 1903 to

103 at the present time. The second 50-line board was added in April, 1908.

There must be few operators in the provinces who have a pleasanter room to work in than Miss Borer. The influence of a bright and cheerful switchroom on the temperament of an operator is not only beneficial to the operator herself, but through her to the service, and thus is a factor not to be overlooked.

Miss Borer is very much attached to her work and the scene of it, though the switchroom is not as quiet as it might be for operating purposes. Noise is most prevalent on market days, when cattle are often penned within a few feet of the window and mooing cows, bleating sheep and squealing pigs augment the usual noises of traffic and drown the auctioneer's bell.

The floor of the switchroom being some two feet above the pavement level, these proceedings are quite visible from the switchboard, and often their close proximity may be detected by other organs than the eyes. But these distractions, we are informed, never cause the operator to neglect her work. Her seven years' service have been without any particular incident.

Miss Borer was born in Dorking, where her father has resided for many years. She is very much interested in her native town, but her chief interest, and the one to which she gives the best part of her time is, of course, in helping to provide Dorking with a good telephone service.

CVIII.—THIRZA GODFREY.

MISS GODFREY was one of the first operators employed by the Company in Nottingham, having entered the service in June, 1882. There were only 50 subscribers on the Nottingham Exchange then existing in Bottle Lane, the switchboard being of the "Gilliland"



THIRZA GODFREY.

type, with small pegs, without cords. In 1887 the exchange was removed from Bottle Lane to Thurland Street, and again in June, 1901, from Thurland Street to George Street. It will be seen that Miss Godfrey has seen the Central Exchange in Nottingham removed twice. When the trunk lines were handed over to the Post Office in 1896 she was offered the position of Clerk-in-Charge at the Post Office in Nottingham, but she preferred to remain with the Company. During her 28 years' service Miss Godfrey has served under five district and six local managers. In September, 1908, Miss Godfrey was promoted to be Night Clerk-in-Charge. She prefers night duty to day duty, owing to the variations in the work,

and also she thinks it is less strain on the nerves. Although Miss Godfrey has given such a long service to the Company she has not been absent for one month through illness.

MIDLAND PROVINCE STAFF DINNER AND PRESENTATION TO MR. COLEMAN.

THE staff in the Midland Province did their chief honour and themselves credit at a great gathering in the Grand Hotel, Birmingham, on Saturday, Nov. 11. Over 400 sat down to dinner under the chairmanship of Mr. Scott, at the unusual hour of 4.15 p.m., after a reception by the chairman and Mr. and Mrs. Coleman, and, as was fitting in a staff the majority of whose members belong to the gentler sex, the proceedings were graced by a large attendance of ladies. Every district in the province, and all grades of the staff were represented, former members of the Midland staffs came in good numbers, and the presence of Messrs. Goddard, Gill, Hart, Clay, Douglas Watson, Shepherd, Cook, Cotterell, Prout, Harvey Lowe and other distinguished visitors gave evidence of their high regard for the guest of the evening. From the province itself members of the staff attended from Lincoln on the east to Carnarvon and Bettws-y-Coed on the west, and from Northampton and Kettering in the south to Sheffield and Chester in the north, and taking visitors into account, Mr. Watson came all the way from Glasgow, while no less a party than 37 travelled from London. The arrangements for the event were started in January, 1910, the district managers and assistant superintendent forming the general committee, while there was a local committee in each district. Several of the districts arranged saving clubs for the event, and so the expense of travelling long distances was not felt when the time came, and very enjoyable travelling parties were made up. A good band discoursed music while the guests were assembling and during the dinner, and some of the leading Birmingham artists contributed songs and sketches. Room was found for toasts proposed by the chairman and Messrs. Williamson, Ruddock, Sibley and Cotterell, and responded to by Messrs. Goddard, Gill, Hart and Scott. All the speakers did well and were given good receptions. Mr. Bennett, as the District Manager with longest service in the province, on behalf of the staff presented Mr. Coleman with a gold chronometer watch, and Mrs. Coleman with a gold necklet and brooch set with pearls. He recalled his long acquaintanceship with Mr. Coleman, the difficulties of the early days, and the help and inspiration he had received from Mr. Coleman as chief. He mentioned that nearly 1,000 past and present members of the staff of the province (to whom subscriptions were confined) had contributed, and read the inscription engraved on the watch:

National Telephone Company, Limited,
Midland Province.

With affection and esteem this watch is presented
to

ALFRED COLEMAN, Esq.,

on his retirement, by members
of his staff, past and present.
1885-1911.

On rising to respond Mr. Coleman was received with a warmth and enthusiasm that testified to the high place he holds in the affections of the staff, and, notwithstanding the trying circumstances, he delivered a magnificent speech of thanks. He was in splendid voice, and most heartily he returned thanks for Mrs. Coleman and himself for the gifts they had received. His review of his 30 years' service with the Company, 26 of them in the Midland Province, his testimony as to how much he owed to his wife's influence and help, his touch of humour about never having previously had a watch of his own, his gratitude and thanks to his staff, and his peroration with its simple acknowledgment of Divine guidance were all finely done, and the speech will live long in the memories of those who heard it. On the call of the chairman, a special cheer was given for Mrs. Coleman, who bowed her acknowledgments.

Immediately prior to the presentation a topical song, "Farewell N.T.C.," written by Mr. Rhodes and sung by Mr. Lewis, both of the Birmingham staff, was rendered, the whole company joining in the chorus, and after Mr. Coleman's reply a musical toast, written by Mr. Rendell of the Leicester staff, was joined in by all.

Mr. Franklin, who had intended to be present, was prevented, but sent a cordial letter of good wishes, which was read, as were similar letters from Messrs. Sands and Robertson, Directors, and Mr. Anns, the Secretary.

LONDON NOTES.

UNFORTUNATELY, owing to the necessary information not being to hand, no reference was possible in this column last month to the lamented death of Mr. F. Watt, Chief Inspector, Battersea. Mr. Watt entered the service as an Instrument Inspector at Inverness in 1895; in 1903 he was transferred to London from Reading. His death from tuberculosis at the early age of 31 deprives the Company of a valuable servant and the staff of a popular colleague.

THE programmes which have been prepared for this session by the Western and Southern Telephone Societies show that very valuable and praiseworthy work is being done. Branch societies in a city like London with its traffic difficulties can deal with detail matters affecting telephone work in a manner which is scarcely practicable at gatherings covering the whole of the Metropolitan area. On Oct. 26 the Western had a competition for ten-minute paper on "Maintenance from My Point of View." The diverse opinions expressed, the composition of the papers and the method of delivery were quite refreshing. The prize was won by Mr. F. Brake. Unfortunately, space will not permit an enumeration of the subjects for future meetings, but it can be confidently said that the programme is an attractive and varied one. The latter remarks also apply to the South, and as that society has also a splendid library of over 100 books with Mr. Baxter as librarian, there is every inducement for the staff in South London to join.

THE traffic staff at Dalston, encouraged by the success of their last venture, gave another "at home" to their friends on Oct. 21. Tea was provided in the dining and sitting-rooms. Members of the maintenance staff showed the visitors round the apparatus room, and the traffic staff did the honours in the switch-room. Many favourable comments were passed on the admirable arrangements for the comfort of the operators, and the guests all appeared delighted with their novel experience.

MR. SCOTT had a very large and sympathetic audience to listen to his paper on "Constantinople" at the London Telephone Society meeting on Nov. 8. A contingent of the Inventory staff was well to the front; several of the colleagues who accompanied Mr. Scott to Turkey were there, and there was also an excellent muster of Head Office men. There were a few points on which some words of criticism might be written, and there was also a good deal on which Mr. Scott should be congratulated, but his appeal that no descriptive matter should be mentioned in this column, in order that other telephone societies to whom the paper is to be read should get their information at first hand, is, of course, one which must be responded to. Unfortunately there was not much time for discussion, but some amusing experiences were related by Mr. Gill and Mr. Wheeler. Both Mr. Gill and Mr. Laws Webb, who also spoke, paid a very high tribute to the excellence of the work carried out in the Turkish capital. The slides used to illustrate the lecture were excellent.

THE opening meeting of the Operators' Telephone Society was very successful. The new meeting-place at River Plate House was quite full, 317 being present, and Mr. Edmonds delivered a very able presidential address, dealing with traffic developments in London, and indulging in a few forecasts of future progress. There was a very good discussion, many important points being raised by some of the speakers. A number of Post Office men were present, and several of them, including Mr. Preston, the General Manager of the London Post Office service, took part in the proceedings.

THE second meeting of the session was held on Nov. 15, when two papers—"Ineffective Calls," by Mr. J. E. Collins, Observation Officer, and "The Labour Crisis of 1911; its Effect on the Telephone Service," by Miss Russell, Exchange Clerk, North—were read. Mr. Collins's paper caused a most interesting discussion, several points of importance being dealt with in the speeches. Miss Russell's paper showed much painstaking care in preparation, and deserves warm commendation.

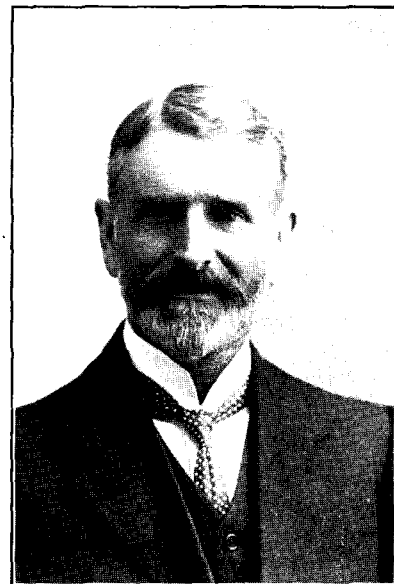
FAREWELL gatherings have been talked about for many months, but at last they are with us. A few members of the Metropolitan staff, who were formally connected with the Midland Province, journeyed to Birmingham on Nov. 11 to do honour to Mr. Coleman, the Provincial Superintendent, at a dinner of the staff. The journey, by excursion train, was very pleasantly and quickly performed. Going, the struggles of three of the Company's head officers with the contents of luncheon baskets in a compartment not any too commodious for its occupants, were extremely diverting. Returning, matters were quieter, thanks to the soothing tendencies of the capital dinner provided by the Midland staff. A word of praise must also be given to the organisers for the excellence of their arrangements. Everything seemed to go without a hitch, and this may have been largely due to the very complete instructions issued to the staff. The comprehensive nature of these caused some admiration and amusement amongst the visitors; the compiler was evidently an authority on etiquette and sartorial requirements, for not only did he explain when smoking might not be indulged in, but had the courage to give a definition of "morning dress." The success of the whole function was, however, his justification.

ON Nov. 16 one or two Metropolitan officers, not on the Inventory staff, were privileged to attend the closing gathering of that body as personal guests of friends amongst the divisional officers. A good dinner was provided by the authorities of the Holborn Restaurant, and all present seemed to enjoy the good things of the Metropolis after their long wanderings in the provincial deserts. Mr. Watts was an admirable chairman, his greatest hit of the evening being the taking of wine with the staff in each division, and calling upon them in turn by their nicknames, which are now pretty well known throughout the country. It would be unfair to particularise as to the one which created most merriment, but certainly the division headed by a very popular Metropolitan officer was not last. The Chairman and the Engineer-in-Chief made capital speeches on the work of the Inventory Department, and Mr. Waite was very happy in the remarks with which he prefaced an interesting presentation to Mr. Watts. Now that the Inventory in London is drawing to a close, it ought to be said that the work has been carried out with a minimum of inconvenience to the local staff and to the ordinary work; the relation between the Metropolitan officers and their Inventory colleagues has also been of a most amicable nature. There have been rumours of district messenger boys being hired to show enumerators the way about the City, but a sporting offer for a photograph had no takers.

BEFORE leaving the subject of dinners, a reminder of the "Final Muster"—to use the striking if somewhat funereal descriptive phrase of the dinner committee—in the King's Hall *suite* of the Holborn Restaurant on Saturday, Dec. 30, may not be out of place. It is anticipated that at least 1,000 will be present to say good-bye "to the old love" before "taking on with the new." The dinner is to start punctually at 6 p.m.; at 8 p.m. a Bohemian concert will commence, and dancing will take place in another portion of the *suite* from 8 p.m. to 12 p.m.

OTHER gatherings announced are the Bank Exchange whist party on Nov. 21 in aid of the Hospital Saturday Fund, the East traffic staff annual social on Dec. 1 at Limehouse Town Hall, and the Avenue Staff's social and dance on Dec. 9 at Bishopsgate Institute. The first of these will be over by the time the JOURNAL appears, but it can confidently be anticipated that the successes of previous years will be repeated this. The East social is called "the last under the old *regime*." Mr. Tattersall will be chairman, and a good evening's entertainment is sure to be provided. As for the Avenue, they always do things well, and this year there are special reasons why the staff should "socialise" together. Shall we call it a house-warming?

MR. F. A. HUNT, Local Engineer, Croydon, was recently the recipient of a cheque and an illuminated address from his colleagues on the completion of 26 years' service. Mr. Hunt is the oldest Local Engineer in the Metropolitan area; he entered the United Telephone Company's service in 1885, and had previously been in the Postal Telegraph Department for some years; he has filled many important positions in London, including District Manager, Croydon, and Divisional Engineer, City. From the latter position he had unfortunately to retire, owing to ill-health. Amongst the important works he has been engaged upon are the construction of the London to Birmingham trunk, the metallic circuiting of London and the reconstruction necessary after the disastrous London Wall fire. Mr. Hunt is highly esteemed by all who know him, and his improved health is welcomed by his friends almost as heartily as by himself.



MR. F. A. HUNT.

No sooner have the gentlemen of the plant Inventory got ready to pack up their traps than our exchanges have been laid under another visitation. Four busy and alert-looking individuals suddenly appear one morning, spread themselves over the premises, poke and peer into corners, unearth articles which the poor local officers had never seen before, rummage in drawers which not even a tool examiner had dared to open, summon a conclave of all the senior officers at the spot to determine whether "that door" was altered in 1885 or 1911, and so inspire everybody, except the operating staff, with a sense of the importance of themselves and their mission that if you should ask the office boy who they are he will tremblingly refer you to some superior officer, who informs you with bated breath "They are the furniture Inventory men." And so the shadow of Jan. 1, 1912, ever looms nearer.

CORRESPONDENCE.

(This is held over until next month.)

GLASGOW NOTES.

UNDER the auspices of the Argyle Exchange the members of the staff and friends held their annual "at home" in the Prince of Wales' Halls on Saturday, Nov. 18. There were some 80 couples present and a most enjoyable evening was spent. Messrs. J. R. Craig and J. Crawford filled the role of M.C.'s satisfactorily.

THE second meeting of the National Telephone Society, Glasgow and West of Scotland districts, was held on Nov. 8, Mr. J. F. Scott presiding over a large attendance, when Mr. Eustace Hare, Assistant General Superintendent, favoured the company with a lecture entitled "The Commercial Mind." Mr. Hare dealt with the subject in his usual masterly fashion, and his brief discourse was an appeal to the younger members of the staff for the cultivation of "the commercial mind." On the conclusion of the lecture several of the Company's officers spoke, and, on the motion of Mr. Thomas Rodger, a hearty vote of thanks was accorded Mr. Hare for having come, at considerable inconvenience to himself, to deliver his most interesting and instructive lecture.

In common with the surrounding country, Glasgow on Sunday, Nov. 5, experienced one of the most severe gales within recent memory, and that day will live long in the memory of the Company's Glasgow staff by reason of the enormous damage done to the telephone plant.

Some 3,000 subscribers' circuits were damaged, the majority of the trouble being in the suburban and country districts, where innumerable wires were broken owing to trees falling upon the routes. A large number of spans and individual wires were also blown down. It speaks volumes for the stability of the line plant when we are able to record that no poles were blown down. The Company in Glasgow have a large amount of overhouse plant, and naturally considerable damage resulted to the roofs upon which the Company have attachments. In the case of the Crosshill Exchange a chimney head was blown down which carried away two main stays, and for some time the pole on the roof was in great danger, but in the teeth of the gale several of the Company's men attached steel ropes and anchored the pole. The whole of the Company's construction and maintenance staffs were engaged in making good the damage, and it is gratifying to report that by the end of the week—*i. e.*, Nov. 11—with the exception of a few isolated cases here and there, practically all the damage was made good.

A gratifying feature in connection with the temporary severance of the many lines was the patience shown by the subscribers affected, although the average Glasgow subscriber is, as a rule, not slow to draw the Company's attention to any case of a line or instruments being out of order.

We cannot speak too highly of the manner in which the repair forces, in the most inclement weather and under exceptionally disagreeable conditions, doggedly stuck at the work of restoration. We are also pleased to record, in connection with the storm, the fact that all the operating staff whose lot it was to be on duty on the Sunday, without exception, turned out. In conjunction with the danger of being out in the height of the gale, with slates and broken chimney cans flying about, some of the operators had to walk several miles due to their period of duty being prior to the cars running.

THE second meeting of the session of the Operators' Society and Club was held in the Masonic Halls, West Regent Street, on Monday evening, Nov. 13. Mr. James Y. Hutcheson read a very interesting paper on "The Reproduction of Speech," illustrating the important parts of the receiver and transmitter with blackboard diagrams. At the close of the paper a short discussion on the subject took place, after which a hearty vote of thanks was accorded the essayist.

The second part of the programme, which consisted of music, games and dancing, was entered into in the operators' own enthusiastic manner. A special item in this part was a musical romance for which three prizes were given. These were won by the Misses M. Dick, J. Shand and A. Black. The punctuality prizes were gained by Miss Smith and M. Thomson.

NEWS OF THE STAFF.

Mr. R. CURLING, Local Manager, Eastbourne, has been appointed Local Manager at Brighton.

Mr. F. S. LETTY, Local Manager at Guildford, has been appointed Local Manager at Eastbourne.

Mr. H. W. LEETE, late Draughtsman and Wayleave Officer, Brighton, has been appointed Inspector-in-Charge at Worthing.

Mr. R. A. BROADHURST, Inspector-in-Charge at Worthing, has been transferred to Gravesend as Local Manager.

Mr. G. A. HUMPHREY, Inspector, Luton, was transferred to Lowestoft in a similar capacity on Oct. 6. The staff presented him with a portmanteau suitably inscribed.

Mr. PERCY STEVENSON, Inspector, on the occasion of his transfer from Folkestone to Winchester, was presented by the staff with a safety razor and accessories.

Mr. H. N. HIGGINSON, Junior Clerk, Birmingham district office, was transferred to Coventry as a Fee Clerk on Nov. 23. Before leaving the district he was presented by his colleagues in the district office with a kit bag.

Miss ADA MAY LEWIS, Clerk-in-Charge, Exeter, has been appointed Observation Clerk, Bristol.

Mr. ALFRED WALLACE ORCHARD CARTER, Night Operator, Exeter, has been appointed Draughtsman, Bristol.

Miss GWENDOLINE HILDA PAULL, Operator, Bristol, has been transferred to Exeter as Clerk-in-Charge. Prior to her leaving Bristol to take up her new duties she was presented by the Traffic Manager on behalf of her colleagues on the staff with a handsome gold locket suitably inscribed.

Miss ELIZABETH MALLOCH LAMB, after five years' service as Operator in the Leith Exchange, resigned on Oct. 19. She sailed for New Zealand a week later.

Miss F. MOULSON, Night Operator Sheffield, left the Company's service on Oct. 26. She was presented by the operating staff with an electro-plated cruet stand.

Miss FLORENCE RUSSELL, Operator, Sheffield, on leaving the Company's service on Nov. 9 to take up another situation in Scarborough was presented with an enamel wristlet watch.

METROPOLITAN STAFF CHANGES.

Mr. A. ARMOUR, Improver, Workshops, to be Inspector, London Wall.

Mr. T. HYATT, Wireman, Kensington, to be Faultfinder, Kensington.

Mr. L. B. ADAMS, Clerk, Local Engineer's Office, East, to be Clerk, Metropolitan Engineer's Department, Salisbury House.

Mr. S. FOSTER, Call Office Attendant, Westminster, to be Clerk, Metropolitan Engineer's Department, Salisbury House.

Mr. V. COOPER, Engineer's Clerk, Kensington, to be Engineer's Clerk, East.

Mr. V. JONES, Fault Clerk, Gerrard, to be Fitter, Gerrard.

Mr. G. KING, Clerk, Metropolitan Engineer's Department, to be Clerk, Local Engineer's Office, Kensington.

Mr. A. P. RUSSELL, Clerk, Local Engineer's Office, Streatham, to be Fault Clerk, Gerrard.

Mr. G. S. MITCHELL, Stores Clerk, City, to be Clerk, Local Engineer's Office, Streatham.

Mr. R. A. COLLETT, Clerk, Metropolitan Engineer's Department, to be Clerk, Engineer's Office, Battersea.

Mr. J. LEE, Clerk, Metropolitan Engineer's Department, Salisbury House, to be Assistant Engineer, Hop.

Mr. F. ELLIS, Assistant Engineer, South East, to be Assistant Engineer, Croydon.

Mr. A. ANFHOLZ, Draughtsman, South East, to be Draughtsman, Gerrard.

Mr. J. T. WILSON, Labourer, Tottenham, to be Faultfinder, Tottenham.

Mr. H. J. HAWLEY, Faultfinder, Kensington, to be Inspector, Kensington.

Traffic Department.

Miss KATE HAMMERTON, Operator, Gerrard, promoted to be Supervisor, North.

Miss ELSIE ELDFORD, Operator, Kensington, promoted to be Supervisor, Paddington.

Miss FLORENCE BARKER, Operator, Dalston, promoted to be Supervisor, Holborn.

Miss BLANCHE BEAUCHAMP, Operator, Gerrard, promoted to be Supervisor, London Wall.

Miss JANET WEECH, Operator, London Wall, promoted to be Supervisor, Holborn.

Miss ROSE CHARTER, Operator, Hop, promoted to be Supervisor, Bank.

Miss AMY CHANDLER, Operator, Avenue, promoted to be Supervisor, East.

Miss EMILY BULL, Supervisor, London, transferred to a similar position at Holborn.

Miss EDITH PENNETT, Supervisor, Holborn, transferred as Monitor to Palmers Green.

Miss ETHEL BISHOP, Supervisor, Bank, transferred to a similar position at Holborn.

MARRIAGES.

Miss E. M. BOURNE, Operator, Eastbourne, on leaving the Company's service on Sept. 28 to be married, was presented by the staff with a tea service, together with all good wishes for her future happiness. Miss Bourne entered the Company's service as operator at Hastings in March, 1904, and was transferred to Eastbourne in May, 1909.

Miss A. I. MOORE, Operator, Ramsey, Isle of Man, resigned on Oct. 21 to be married. She was presented by the staff with a silver teapot.

Miss JESSIE MARY CANN, Observation Clerk, Bristol, has resigned to be married. Prior to her leaving she was presented by the staff with a handsome silver cake stand, as a mark of esteem.

Mr. CHAMNEY, of Superintendent's Office, Dublin, was, on the occasion of his recent marriage, presented with a handsome case of cutlery by the staff of the Cork and Waterford centres, with good wishes for his future prosperity. The staff of Limerick centre also presented him with a set of china.

Mr. W. E. N. GAIRN, Contract Officer, Edinburgh, was, on the occasion of his marriage, presented with a silver teapot, the presentation being made by Mr. Magrath, Contract Manager.

Miss LILIAN LOVELL, Operator, Dalston, on resigning to be married, was presented by the staff with a case of fish knives, forks and servers, and a silver mounted sugar sifter. She also received a rose bowl from a few of her late colleagues at North Exchange.

Miss LILY GOODWAY, Travelling Supervisor for the City, on her resignation from the service on account of marriage, was presented by the staff with a set of table glass.

Miss ELLEN ASHTON, Operator, London Wall, on resigning to be married, was presented with a glass trinket set.

OBITUARY.

We regret to record the death of Miss ELSIE KITE, an Operator at the Avenue Exchange, which occurred from heart failure on Oct. 28, and followed a long illness of acute rheumatism. Her service with the Company only covered two years, but she was much esteemed by her comrades. The funeral took place at Sheerness, where Miss Kite died—the Avenue staff forwarding a handsome floral cross.

We regret also to record the death of Mr. ALEXANDER CHALMERS, at the age of 72, which took place on Wednesday, Nov. 1. Prior to his retirement

Mr. Chalmers acted as Cashier at the Sheffield district office, and previous to his appointment with the Company he was an employee of the *Sheffield Independent Press*. His death came as a surprise to those of the staff who had seen him shortly before his illness, as they were of the opinion that he would reach a ripe old age, and his death breaks one of the links with the past, as far as the present members of the Sheffield staff are concerned. He was interred at Norton Cemetery, the Chief Clerk representing the Company at the funeral.

It is with sincere regret that we have to record the death of Miss E. SHAW, Operator, at the Headingley Exchange, Leeds, which took place on Nov. 15, after a long illness. Miss Shaw joined the service in May, 1905, and resigned on account of ill-health in January this year. Her kind and sympathetic nature made her a general favourite amongst the staff, by whom her loss is deeply felt.

The funeral took place at St. Chad's Church, Headingley, Leeds, on Saturday, Nov. 18, and the Company was represented by Miss Wade, Clerk-in-Charge, Headingley, Miss Divine, Miss Tutty and Miss Thompson, Operators, Headingley Exchange. The operators at the Headingley Exchange sent a wreath as a token of respect.

We record with regret the death, from consumption, of Foreman J. HALES, who has been in the service since January, 1896. Mr. Hales, who was only 42 years old, was a well-known and well-liked foreman in all the London districts, and was, in the opinion of many local engineers, the best man they knew for pole work. The funeral took place at Manor Park Cemetery on Nov. 13, the Company being represented by Foreman James. Mr. Hales' fellow-workers sent a wreath. He leaves a widow and six children.

LOCAL TELEPHONE SOCIETIES.

[The Editor regrets that space will not allow of the inclusion of the syllabus of any telephone society, or of summaries of papers read at meetings.]

Bath.—The first meeting of this society was held in Institution Gardens, Bath, on Oct. 14, and the election of the committee confirmed. A comprehensive programme has been arranged, including four evenings for competitive papers, and £3 is offered in prizes. Twenty-five papers are already promised.

The second meeting of the society was held on Nov. 15, before a good attendance. A comprehensive paper was given by Mr. W. C. Owen on "Telephones: Past, Present and Future," sketching the history of the industry from its inception to the present day and its possibilities under Government management. This was followed by Mr. W. S. Griffiths's paper on "Engineering Records." A committee, consisting of Messrs. Parnell (electrical), Griffiths (engineering), Taylor (clerical), and Miss Weeks (traffic) was elected, with power to co-opt three members from the staffs concerned, to judge the competitive papers during the session.

Bolton.—The general meeting took place on Oct. 26, Mr. Entwistle, Chief Clerk, being in the chair. The balance sheet was submitted, the committee's arrangements for the forthcoming session were set forth, and the election of officers was proceeded with. The rest of the evening was devoted to "Questions and Answers" on various phases of telephone work.

Bradford.—At a meeting held on Nov. 8 a paper was given by Mr. W. Ramshaw, of Manningham, on "Wireless Telegraphy." Mr. Sutcliffe presided over an attendance of 97. The various systems of "wireless" were lucidly explained, and the progress made during recent years was shown step by step.

Brighton.—On Oct. 9 this society held its annual meeting, and the officers were elected.

On Nov. 6 the first lecture of the session was given by Mr. C. F. Moorhouse (District Manager), a very interesting paper on "Development Study," being attentively listened to. This was illustrated by a number of diagrams, and was followed by an animated discussion.

Bristol Operators.—The first meeting of the session was held at Bristol on Nov. 2, when Mr. R. A. Dalzell (Provincial Superintendent) delivered a lecture on "Development of Trunk Service." The lecture was most instructive, dealing as it did with much of the probable future duties of the traffic staff.

Cardiff.—The second meeting of the society was held in the New Exchange on Nov. 9. Mr. H. Davis was in the chair, and there was a good muster. A paper was read by Mr. T. H. Elleby on "Telegraphy." In the course of his paper the lecturer briefly outlined the history and theory of telegraphy, illustrating the latter with diagrams, and also gave a practical demonstration of the working of a Morse single current key with switch and sounder.

Cork.—The preliminary meeting was held at the district office on Nov. 14, for the purpose of electing officers for the session 1911-12.

Cornwall.—The opening meeting was held on Nov. 14. The president, Mr. G. Hooper (District Manager) was in the chair, and gave an opening address, bearing on the coming transfer of the staff and the progress of the work in the centre. This was followed by an interesting paper by Mr. E. Beare, Lineman Inspector, of Penzance, on "Overhead Construction."

Coventry.—The first general meeting was held on Oct. 19, when Mr. Pope gave a very interesting and lucid exposition of the "Slide Rule." After an interval for refreshments, Mr. Carpenter read a paper on "Stores." He gave a detailed description of the bookkeeping in connection with this subject prior and subsequent to the Inventory, and pointed out the absolute necessity of rigidly adhering to the Service Instructions in connection with this matter.

Douglas.—The second meeting was held on Nov. 2, Mr. J. T. Cowell, Local Director, and the District Manager were present. Mr. Prout, Assistant Superintendent, kindly braved a very stormy sea passage to the island, and gave a most interesting lantern lecture on "A Retrospect and Prospect of Telephony."

The third meeting was held on Nov. 17. Mr. W. Kelly, Chief Clerk, occupied the chair, and Mr. G. Gillmore, District Manager, read a paper on "Learning how to Learn and Work to System," which was listened to with

great interest by all present. He particularly pointed out the great necessity of carrying out all work in a systematic manner.

Edinburgh.—The session for 1911-12 opened most successfully on Oct. 24, when Dr. Innes, M.A., B.A., of the Heriot-Watt College, delivered a paper on "Wireless Telephony." Equipped with a large quantity of apparatus, including singing and speaking arcs, Dr. Innes described the progress of wireless telephony, and the lecture was made further interesting by means of lantern slides.

Exeter.—The first meeting was held on Oct. 24, when a paper was read by Mr. C. J. Williams, on "Engineering Records—Bristol," which was of a most interesting character. A point was made of the great assistance rendered to both the construction and clerical staffs by the particulars noted in some of the small "unofficial" books kept.

Torquay.—On Nov. 13 the second meeting of this society was held, when a paper was read by Mr. W. H. Robnett dealing with the "Transmitter." The subject was fully dealt with from its early stages to present day.

Gloucester.—The first meeting of the session was held on Oct. 19 and presided over by Mr. C. Elliott, District Manager, when Mr. G. R. Collings, of Cheltenham, gave a very instructive lecture on "Relays," with a number of lantern demonstrations, including two working slides.

Greenock.—The session opened with a splendid attendance on Nov. 7. Mr. A. Ramsay Lamb read a paper written by Mr. Eustace Hare, Assistant General Superintendent (who was unable to be present), the subject being "Our Dealings with the Public." The members regretted the absence of Mr. Hare, as they had been looking forward to hear him deliver his paper.

Leeds.—The second meeting of the session was held on Nov. 15. The president (Mr. W. V. Morten) was present, but the chairman (Mr. E. J. Gillett, Engineer) presided. A paper was given by Mr. G. Sargeant, Stores Clerk, district office, Leeds, on "Telephony as a Profession for Women." The paper was excellently rendered and extremely interesting, and the discussion which followed showed that it had been keenly appreciated by the large number of members who were present at the meeting.

Leicester.—A general meeting of this society was held on Nov. 3. Mr. F. Lucas (president) occupied the chair, and officers were elected for the coming session. It was unanimously decided at an early date to try and arrange with one of the Company's head officials to give a lecture and also to arrange an educational trip to another town.

Luton.—The annual meeting was held on Oct. 16. At the close of the business usually transacted at these meetings Mr. J. H. Wilson addressed the meeting. The subject of his remarks was "Some Further Points for Consideration."

Liverpool and Birkenhead.—The first meeting of the session 1911-12 was held on Oct. 26, Messrs. R. Shepherd, T. A. Prout, E. J. Hidden, E. S. Francis and O. G. Lee (past-presidents of the society) being present. Mr. J. O. Cooper delivered his presidential address, which consisted mainly of a *resumé* of the proceedings of the society since its foundation in September, 1887. The silver cups, awards and certificates obtained in connection with the Correspondence Classes in 1910-11 were then presented by Mr. Shepherd. The two silver cups, awarded annually for the most meritorious results, together with accompanying gold pendants, were awarded to Messrs. H. Eaton and G. Jarrett.

Manchester.—The first paper of the session was read on Oct. 20 by Mr. Bernard Standen, Assistant Manager of the Oriental Telephone Company, Rangoon, on "Telephony in the East," the president, Mr. G. F. Staite, presiding. Unfortunately Mr. Standen did not come prepared to give a paper, therefore brought no slides showing any of the construction in India and Burmah. Mr. Standen stated that the population of Rangoon was 300,000, and that at the present time 2,000 telephones were installed in the city. A number of slides showing various views in India and Burmah (which were kindly lent by the Victorian Manchester Geographical Society) were described by Mr. Standen, and the meeting, which was one of the most enjoyable and interesting, was followed by the usual discussion.

The second meeting of the session was held on Nov. 10, Mr. G. F. Staite presiding, papers being read by Miss L. Wilkinson on "Work of a Testing Operator," and Miss F. Bridge on "Operators and their Duties." The papers dealt with each subject fully and were much enjoyed.

Northampton.—The first meeting of the session was held on Sept. 25, when the officers of the society were elected. An excellent syllabus has been arranged, and a successful session is anticipated.

The second meeting of the present session was held on Oct. 30 at the Divan Café, when a most interesting and able paper on "Lightning Effects" was given by Mr. R. S. Grosvenor (Local Manager, Coventry). Mr. W. Dickinson (Local Manager, Northampton) presided over a good attendance. The paper was followed by discussion, in which a large proportion of the members present took part.

Nottingham.—The first meeting was held on Oct. 27, when Mr. W. S. Cox, Chief Inspector, gave a paper entitled "Some Notes on the Common Battery (40-volt) System of the Post Office," and an interesting discussion followed respecting the comparative merits of the 24-volt and 40-volt C.B. systems.

Nottingham Factory.—The first meeting of the session took place on Oct. 20, Mr. Fenton presiding over an attendance of 69, when Mr. H. R. Honick gave a very instructive paper on "Speech and its Transmission." The nature and properties of sound waves, the importance of harmonics, and the part they play in the formation of the different vowel sounds, also the vital necessity of leaving the various amplitudes and frequencies in the same relative proportions and positions during transmissions were dealt with.

Paisley.—The first meeting of this society was held on Oct. 25, Mr. A. W. Grant being in the chair. Mr. A. Ramsay Lamb, hon. vice-president, delivered the opening address, in a paper entitled "Look Ahead!" After the address tea was served at 9.30 p.m., and the remainder of the evening was devoted to whist. The ladies prizes were won by Mrs. Lamb and Miss J. Brodie, and the gentlemen's by Mr. Lamb and Mr. Whyte.

Plymouth.—A meeting was held on Nov. 1, when three papers were read, as follows:—"Capital and Revenue Accounts," Mr. G. A. G. Evans; "Magneto-Multiple Switchboard Working," Mr. R. Thorn; "The Value of Periodical Inspections," Mr. A. E. Harris. Fifteen minutes was allowed for reading papers, and fifteen minutes was devoted to discussion in each case.

Sheffield.—The second meeting of this society was held on Nov. 15, the Chief Inspector (Mr. H. G. Rowe) being in the chair. Four very interesting papers were read by members of the instrument staff.—"The Grand Hotel C.B. Switchboard," Inspector Clarke; "Wireless Telephony," Inspector R. Gillett; "History of the Telephone," Inspector P. R. Grieves; "The Induction Coil," Inspector W. Wilcock. The papers were greatly appreciated by the members present, and points raised in the papers were discussed.

Sheffield Operators.—The first meeting of the society took the form of a whist drive, and was held at Field's Café, on Oct. 26. There were 88 operators and friends present, and a very enjoyable evening was spent.

The second meeting of this society was held on Nov. 8, at the Central Café. The meeting was opened with an address by the president (Mr. E. J. Johnson), and two papers were read by Mr. D. Thomson (Service Inspector), entitled "A Visit to the Sheffield Post Office" and "Comments by Subscribers." The meeting was well attended, and discussion took place at the close of the meeting.

Sunderland and Shields.—The first meeting of this society took place on Oct. 27. Mr. W. J. Douglass presided. A discussion took place on general topics, in which the unmentioned took part: Messrs. W. J. Douglass, E. Spink, R. Guthrie, T. E. Thompson, J. Martin and S. O. Wood.

Swansea.—The preliminary meeting was held on Nov. 9, when it was unanimously decided to hold meetings monthly during the present winter session. Officers were elected for 1911-12.

Tunbridge Wells.—The first meeting of the session 1911-12 was held on Nov. 2, when an interesting lecture was given by Messrs. Drury and Jones on "Simple Telephone Symbols and their Meanings." The lecturers dealt clearly with the subject matter and illustrated the lecture with diagrams on the blackboard.

Wolverhampton.—The first meeting of the current session was held on Oct. 20. The meeting was opened by the chairman giving a *resumé* of the past session's work. The remaining part of the evening was occupied with songs, etc.

STAFF GATHERINGS AND SPORTS.

South-East Lancs.—*Staff Dinner.*—It is proposed to hold a dinner of the district staff at the Café Monico, Oldham, on Dec. 29 next, to commemorate the transfer of the staff to the Post Office in January, 1912. The whole matter has been taken up with the utmost enthusiasm by the staff and promises to be a huge success. A strong committee has been formed to make all arrangements. A very cordial invitation is extended to all members of the Company's staff in other districts who have previously had service in the South-East Lancs. district, and the secretaries (Messrs. M. Pinder and E. Higson) will be pleased to supply information on application.

Telephone Society.—The annual meeting was held on Nov. 2, for the election of officers and general business. Mr. J. Cleary, Assistant Engineer (Stockport), was elected president, and other officers were appointed. A smoking concert terminated the evening, and a number of songs, etc., were contributed by Messrs. F. H. Croasdale, Ashton; E. Warburton and J. Hodson, Stockport; and R. H. Woodford and H. Gough, Oldham. The chair was occupied by the president.

London.—*Association of National Telephone Engineers.*—The annual dinner of this association took place at the Crown Room, Holborn Restaurant, on Nov. 4, Mr. W. Martin presided, and Mr. L. Price occupied the vice-chair. The members and friends numbered 150, and included Mr. Hardy and several other members of the Post Office engineering staff. After proposing the usual loyal toasts, which were duly honoured, the chairman proposed the toast of "The Association," coupled with the name of the hon. secretary, Mr. A. F. Paddon. Mr. Greening proposed the toast of "Our Visitors," and Mr. L. Price that of "The Chairman." An excellent musical programme, arranged by Mr. W. R. Penson, was contributed by Miss Winifred Allen, Messrs. Ernest Thomas, Wilson Martell and J. A. Lee. Mr. Charles Wreford gave humorous dialect recitals, and Mr. Gordon Goodger, who presided at the piano, also contributed several musical sketches. The proceedings closed with the National Anthem, and the general opinion was expressed that it had been one of the most enjoyable of the many social functions held by the members of the National Telephone Company's staff.

Cardiff.—A very successful smoking concert was held in the Albert Hotel, Cardiff, on Nov. 10, when about 100 of the Inventory (Post Office and National) and district staff gathered together. Mr. H. Davis was in the chair. A splendid programme was provided and very much enjoyed by all present, and thanks are due to Messrs. T. Lucas, J. Parker, E. H. Baxter, G. D. Bateman, J. Bedington, E. S. Ritter, W. Wright, E. Jennings, E. Reid, J. E. Jones and J. Jones for the able manner in which they contributed towards the evening's enjoyment. The function was brought to a close with a very hearty vote of thanks to the chairman, which was passed with musical honours.

Maidstone.—On Oct. 25 the semi-final and final swimming races took place at the Maidstone Baths to decide the winner of the cup presented by the *South Eastern Gazette*. Twenty-four teams entered for the Maidstone Swimming Club (Business House) Team Race Handicap, and the National Telephone Company's team were victorious in winning the cup. The Mayor of Maidstone presented the cup, which now adorns the district office shelf. Each member was also presented with a pair of silver-plated vases. Most of the Maidstone staff were present, and the win was very popular locally. The names of the winners, were Fisher, Oliver, Wilson and Waghorn.

INVENTORY OF PLANT.

The following additions, etc., have been made to previous lists:—

HEADQUARTERS.			
Clack, W.	.. .. .	Instrument Department..	.. .. Head Office
Williams, E.	.. .. .	Lines Department .. ..	.. .. Head Office
Rowe, R.	.. .. .	Lines Department .. ..	.. .. Head Office
Brentini, J.	.. .. .	Test Department..	.. .. Head Office
Osborne, W.	.. .. .	Cable Department .. ..	.. .. Head Office
TRAVELLING STAFF.			
Lock, A.	.. .. .	Inspector .. ..	.. .. Oxford
Fitton, H.	.. .. .	Instrument Inspector .. ..	.. .. Manchester
Baxter, H.	.. .. .	Instrument Inspector .. ..	.. .. Manchester
Hudson, E. T.	.. .. .	Instrument Inspector .. ..	.. .. Liverpool
Chany, F. T.	.. .. .	Instrument Inspector .. ..	.. .. Liverpool
Gould, R.	.. .. .	Instrument Inspector .. ..	.. .. Plymouth
Mansley, W. R.	.. .. .	Instrument Inspector .. ..	.. .. Bradford
Henry, G. D.	.. .. .	Instrument Inspector .. ..	.. .. Glasgow
Baskill, J. S.	.. .. .	Instrument Inspector .. ..	.. .. Sheffield
Akester, A.	.. .. .	Exchange Inspector .. ..	.. .. Hull
Radcliffe, C. P.	.. .. .	Inspector-in-Charge .. ..	.. .. Jesmond
Padget, A.	.. .. .	Chief Inspector .. ..	.. .. York
Dodson, A.	.. .. .	Instrument Inspector .. ..	.. .. Hull
Deletions.			
Cleary, J.	.. .. .	Assistant Engineer .. ..	.. .. Stockport
Pearson, W. E.	.. .. .	Engineer .. ..	.. .. Leicester
Williamson, R.	.. .. .	Local Manager .. ..	.. .. Newport
Mountain, A. J.	.. .. .	Draughtsman .. ..	.. .. Bristol
Kennedy, J. T.	.. .. .	Foreman .. ..	.. .. Glasgow
Ewing, J.	.. .. .	Engineer .. ..	.. .. Warrington

On Saturday, Nov. 18, Mr. R. Aitken, of the Engineer-in-Chief's staff, was presented with a fountain pen and some books by his Special Inventory staff as a mark of appreciation.

Mr. A. E. JONES, Local Manager, Grimsby, was presented by his friends in "O" Inventory division with a pair of silver candlesticks on the occasion of his marriage.

A DINNER of the Company's Inventory staff was held in the Holborn Restaurant on Nov. 16. Mr. Watts was in the chair and the company included Mr. Gill; J. Flint, Esq., C.M.G.; Mr. France, Mr. Stirling, Mr. Archer Smith, Mr. F. G. C. Baldwin, Mr. Robert Aitken, Mr. Bryson, all the divisional officers and others, to the number of about 250. During the evening Mr. Watts was presented by the members of the Inventory staff with a Japanese draught screen, a cigar case and a cigar holder; the presentation was made by Mr. Waite in a humorous speech and was feelingly acknowledged by Mr. Watts. Mr. Gill, replying to the toast of "The Company," in a most interesting speech, spoke in complimentary terms of the work done by the Inventory staff both at Headquarters and in the provinces. A short programme of songs and recitations by members of the staff was gone through, Mr. Rendell (of the "E" division) causing great amusement with two topical songs.

To mark the close of the Inventory and the breaking up of the staff engaged on this work, the "A" division held a complimentary dinner to their chief, Mr. J. M. Shackleton, at Barry's Restaurant, Cardiff, on Nov. 14, Mr. F. G. Brown being in the chair. The whole of the staff on the division were present, as well as a few members of the "Q" division who were assisting in the Newport centre. The principal toast of the evening was "Our Guest," proposed by the chairman and enthusiastically honoured, after which Mr. G. H. Crampton in a very able manner presented Mr. Shackleton on behalf of the staff with a framed and signed etching, "The Lower Pool of London," by R. A. Wyllie. The following members of the staff contributed to the evening's enjoyment with songs, recitations, etc.:—Messrs. G. C. Bedington, O. M. T. Clarke, L. H. Davis, J. Emlyn-Jones, G. H. Pallard, F. Moon, E. S. Ritter and W. R. Wright. Mr. W. Romain was, as usual, a very capable accompanist.

THE staff of the "Q" division gave a complimentary dinner to Mr. Waite on Friday, Oct. 27, at the Florence Restaurant, W., Mr. J. H. Storrie in the chair. The guests, in addition to Mr. Waite, included Messrs. G. W. Hook, J. L. Brown, A. O. Gibbon and E. R. Davies, of the Post Office checking staff, and Mr. R. Bryson, of Head Office Inventory staff. The chairman took the opportunity to present Mr. Waite, on behalf of the "Q" staff, with a tantalus, suitably inscribed. Messrs. A. O. Gibbon and F. Moon, of the Post Office and "Q" staffs respectively, assisted in an excellent musical programme. Mr. F. Saunders (Exchange Electrician, East) was at the piano.

STAFF PENSION FUND.

WITH reference to the announcement in the November issue regarding the arrangements which will have to be made to meet the case of those members of the Fund who wish to assign their shares to the Postmaster-General under the provisions of Section 6 of the Telephone Transfer Act, 1911, the Trustees are not yet in a position to give particulars, but will do so at the earliest possible moment.