

# THE National Telephone Journal

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## TELEPHONE MEN.

### LXVI.—ERNEST EMERSON STOCKENS.

ERNEST EMERSON STOCKENS was born at Acle, Norfolk, and educated at a private school. His business career commenced in the office of Mr. William Dunham, proprietor of the *Miller*, and Messrs. Clarke & Dunham, milling engineers, of Mark Lane, London. It was not until April, 1885, when he entered the service of the United Telephone Company, Limited, at Oxford Court, that his connection with telephony began. Mr. Thomas Fletcher appointed him to the engineering staff, and he was for some time employed on the south of the Thames, being transferred later to the City district under Mr. Ashmore. This brought him in touch with heavy overhead construction and with wayleave difficulties—very often on a large scale. He was also engaged extending routes on the northern side of London to the outlying districts of Tottenham and Edmonton.

Going back to the south of London, Mr. Stockens was next stationed at Deptford, and was engaged on the construction work of extending routes from Greenwich to Woolwich and Erith. These extensions in the north and south of London were carried out under difficulties, some of the routes in both cases being taken across marshes, and mud and water seemed to be the chief characteristics of the wayleaves.

Whilst in the City he had considerable experience in laying some of the early lead-covered cables in the subways under Queen Victoria Street. He also laid the first lead-covered cable across London Bridge. This was a fairly difficult work as the cable had to be laid on the parapet, a ledge about 2 feet wide overhanging the river.

In May, 1894, Mr. Stockens was appointed Local Manager at Ipswich, and was transferred in January, 1896, to a similar position at Chatham centre.

On the division of the Kent district in May, 1897, into East and West Kent, Mr. Stockens was promoted to the position of

District Manager of West Kent, with a district office at Maidstone. Very soon afterwards the agitation for municipal telephones developed and became an accomplished fact at Tunbridge Wells in that district, with subsequent results that are well known.

In July, 1900, on the transfer of Mr. Worte, the manager of the East Kent district, to Hull, Mr. Stockens was appointed to fill the vacancy at Canterbury. During the time he was in Kent several new exchanges were added to the system.

Four years later he again received promotion, being transferred in June, 1904, to Aberdeen, where he had the large North of Scotland district under his control. The change was considerable both in point of distance and in other respects. As regards area, the North of Scotland is perhaps the largest district in Great Britain, consisting, as it does, of about 15,000 square miles, and containing outlying exchanges some two or three hundred miles apart.

The system at Aberdeen at that time was on the call wire principle, nearly all the subscribers' lines being earth circuits. As there were about 2,000 subscribers the maintenance of heavy overhead routes was a fairly serious matter at times. In consequence of the difficulties of arranging a wayleave for underground cables with the Corporation no change was possible, and it was not until November, 1909, that a new C.B. system was brought into use.

Before this became an accomplished fact there was a large amount of work to be done. Plans for underground cables with over 200 distributing poles had to be prepared. The underground cables were ultimately provided by the Post Office under the agreement

between the Post Office and the Company. To secure new premises the Company bought property and built very fine central offices to provide for the new switchroom, equipment rooms, operators' rooms, technical staff, district office staff and contract



department and stores. The change from call wire working to C.B. was a matter of great importance to a busy city like Aberdeen, and the advantages of up-to-date equipment and standardised methods were not more appreciated by the public than by the staff responsible for the smooth working of the system.

During Mr. Stockens' present tenure of office 10 new exchanges have been opened, 28 new switchboards have been installed at new and existing exchanges, 17 earth circuit exchanges have been reconstructed, and all lines made metallic circuit, and to provide better accommodation 20 exchanges have been transferred to new premises. The number of exchanges in the district at present is 37.

Mr. Stockens is a thorough-going telephone enthusiast, typical of many officers of this kind on the staff of the Company, to whom their work is a pleasure. His conduct of the business in Aberdeen, and the North of Scotland district generally, has been characterised by tact and ability of a high order, and during the difficulties of keeping the old call wire system going until the new exchange was opened in Aberdeen his work in placating irritated subscribers, and at the same arranging the huge number of new wayleaves necessary, was of a value to the Company not easily over-estimated.

Mr. Stockens has worked under four superintendents: Mr. C. B. Clay, Mr. C. J. Phillips, Mr. G. F. Preston and Mr. F. Douglas Watson. As regards recreation he claims to be an indifferent but enthusiastic golfer and a keen chess player.

#### STAFF PENSION FUND.

As many of our readers are aware, the trustees of the Company's Staff Pension Fund have recently issued a circular to the contributing members of the fund and its pensioners enquiring whether they wish to have the fund closed on Dec. 31 next and distributed among the persons entitled as soon as practicable after that date.

It appears that the Pension Fund trust deed requires the fund to be closed and disposed of if an effective resolution shall be passed or an order be made for winding up the Company, and neither the Government nor any company or body shall within six months from the date of such resolution or order undertake the obligations of the Company under the trust deed.

The present state of affairs makes it uncertain when the Company will be wound up, and under the above requirements of the trust deed a long and useless delay might take place before the fund could be divided. It was therefore suggested that advantage should be taken of a clause in the trust deed which authorises a variation in the trusts of the deed if the Directors of the Company, the trustees of the fund and a majority in number of the contributing members of the fund agree. Thereupon certain legal formalities have to be carried out, including the preparation and completion of a supplemental trust deed.

The proposal has been fully explained to the contributing members of the fund, who have been asked whether they would consent to an alteration of the trust deed which would enable the trustees to close the fund on Dec. 31 next and make it divisible as soon as possible afterwards. Over 90 per cent. of the members have replied expressing their approval of the proposal and, as the Directors and trustees have also approved, a supplemental trust deed to carry out the scheme has been completed. Immediately after Dec. 31 the two actuaries who have to be appointed to decide upon the division of the fund among the contributing members and pensioners will be instructed to take this task in hand and, as soon as the division has been effected, the Secretary, Mr. Anns, will inform each member of the amount that has been found due to him as his share in the fund.

The arrangements which will have to be made to meet the case of 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, are now under consideration, and it is hoped it may be possible to give further particulars on this point in the December issue of the JOURNAL.

#### "TELEPHONE RATES."

MR. W. E. GAUNTLETT, the author of this paper, was incorrectly described as District Manager, Gloucester. Mr. Gauntlett, as most of our readers know, is now District Manager at Swansea.

## THE HISTORY OF THE NATIONAL TELEPHONE COMPANY.

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

BY ALBERT ANNS.

PART I.

SYNOPSIS.

*Introduction of the Telephone into Great Britain—Bell and Edison Companies open Exchanges—Fusion of Companies—Telephone declared to be a Telegraph—First Post Office License—Formation of Subsidiary Companies—Scott and Wollaston incident—Northern District Telephone Company and the Post Office—Provision of Trunk Lines—New Form of License—Application to Parliament for Wayleave Powers—Action by Board of Works for Wandsworth District—Litigation re Patents—London and Globe Telephone Company—Select Committee of 1885—Great Snowstorm in London—Amalgamation of principal Telephone Companies—Progress of Business and Reduction of Tariff—The New Telephone Company.*

As is not unusual, it was the commercial, and not the official, mind that first appreciated the possibilities of the inventions of Alexander Graham Bell and Thomas Alva Edison, inventions which, with the aid of the microphone invented by Professor Hughes in 1878, but not patented, were destined in a comparatively short period of time to completely revolutionise the social, domestic and commercial life of the world. Patent rights in Great Britain were granted in the Bell case on Dec. 9, 1876, and to Edison on July 30, 1877, and, shortly after, two companies were formed to establish and work telephone exchanges in London and elsewhere.

At this time the advisers of the Post Office were apparently of opinion that the Telegraph Act of 1869 did not give the Post Office any control over the telephone, as in 1878 a supplementary Telegraph Bill was introduced by the Department, and the following clause inserted in the Bill was passed by the Government through the House of Lords:—

"In the construction of the Telegraph Act, 1869, the term Telegraph shall in addition to the meaning assigned to it by that Act include any apparatus for transmitting messages or other communication with the aid of electricity, magnetism or any other like agency."

The clause was opposed in the House of Commons upon the ground that it sought to give the Department power over the new invention, and the Bill was passed with the objectionable provision expunged.

The Telephone Company, Limited, was registered on June 14, 1878, with a capital of £100,000 to work the Bell patent, and the Edison Telephone Company of London, Limited, was floated on Aug. 2, 1879, with a capital of £200,000.

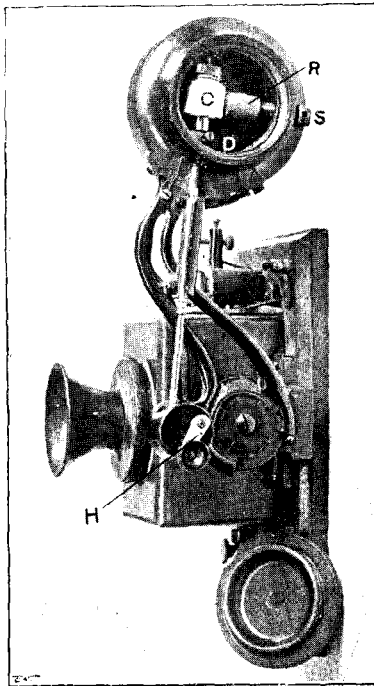
The Telephone Company used the single pole magneto telephone, both as a receiver and as a transmitter; the Edison Company worked with a carbon transmitter and the Electromotograph, a loud-speaking instrument generally referred to as the chalk receiver.

Competing exchanges were established in London, and friction soon arose between the two companies.

An inclusive rate for exchange lines covering an unlimited number of calls was adopted by both companies, the Telephone or Bell Company's tariff being fixed at £20 per annum, the Edison Company, as a fighting rate, offering its service at £12 per annum.

The same unfortunate mistake of charging an inclusive rate was made in America and other countries when the telephone

was first introduced, and as the use of the system increased year by year so it was borne more and more on the



EDISON'S ELECTROMOTOGRAPH.

Turning the handle (H) caused a cylinder of moistened chalk (C) to rotate. A spring contact resting on the chalk was connected to the centre of a mica diaphragm (D) and the variation of traction on the cylinder produced by the passage of the current from the line caused the diaphragm to vibrate and to reproduce the original sounds. An india-rubber damper (R) controlled by a screw (S) was provided to make the articulation clearer.

management that it was neither a scientific nor a businesslike method of charging for the service provided. The reason, doubtless, was that those who were finding the money to exploit a new industry were naturally anxious to have a fixed revenue from their subscribers, rather than risk an unknown return which a charge per conversation would have produced.

That the system under which subscribers who make a few calls have to contribute to the expenses incurred by the Company in providing service for those who make a great use of their lines is hopelessly wrong, is now generally admitted; but it will need a very courageous Postmaster-General to put this unfair method of charging on a proper footing.

The Edison carbon transmitter was much superior to the instrument used as a transmitter by the Bell Company, and on the latter company acquiring the Blake transmitter, the Edison Company at once commenced proceedings against its rival for infringement of patent.

The conviction was, however, forced on both companies that competition in the telephone business was most undesirable alike in the interests of the companies and of the public, but the dominating factor which made an amalgamation a necessity was the possession by one company of the better transmitter and by the other of the more efficient receiver.

The saying that competition always ends in combination was again verified by the fusion of the two companies on May 13, 1880, under the title of the United Telephone Company, having a capital of £500,000, with Mr. James Brand as chairman.

The Edison £12 tariff which had been current during the time of the competition was abolished, and a flat rate of £20 per annum was established for exchange lines within the Metropolitan area.

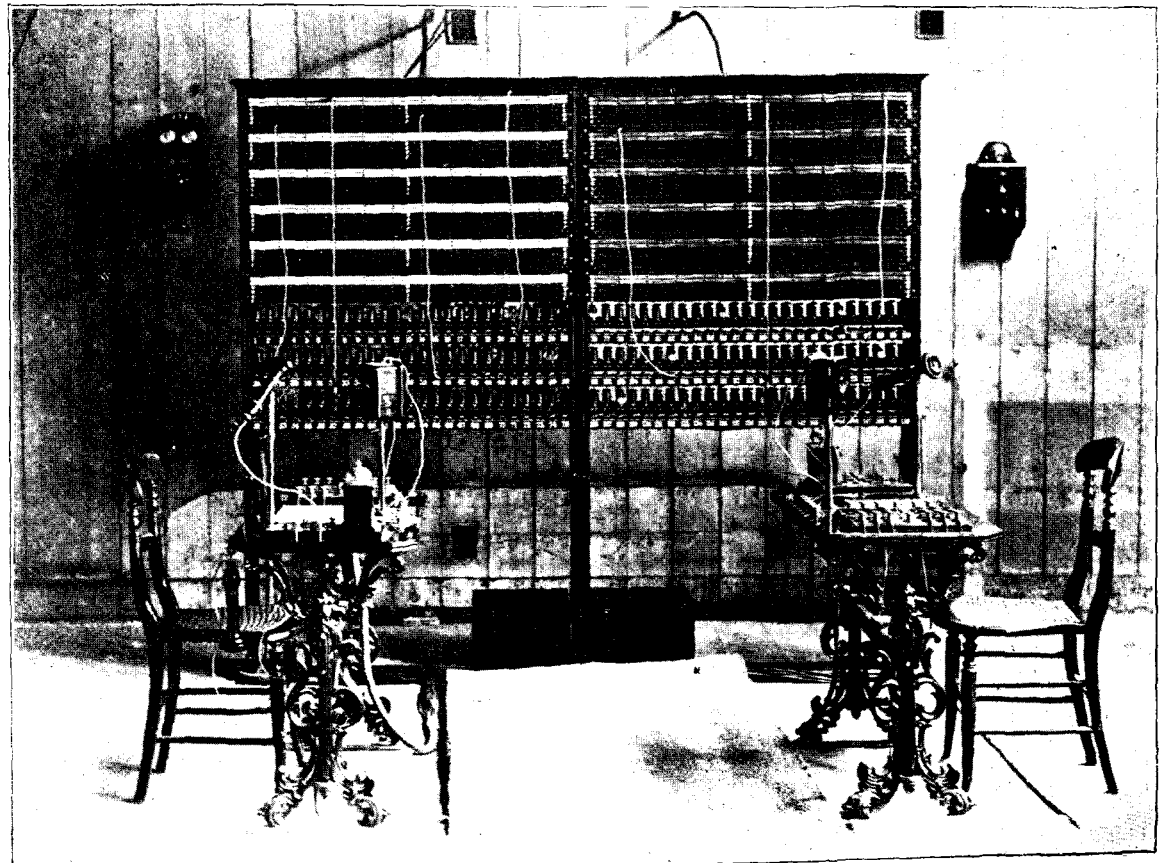
The Telephone Company received for its patent rights and business £200,000 in 40,000 fully paid shares of £5 each in the United Telephone Company, and for similar assets the Edison Company received £115,000 in 23,000 like shares.

But some time before this the Government had become alarmed at the success which had rewarded the courage and enterprise of the shareholders in subscribing the capital to develop and work the new inventions. The Government was forced to admit that the telephone, which it had hitherto regarded as a scientific toy having no commercial value, and had declined to acquire when the patents were offered to it, was providing a quick and satisfactory means of vocal communication between persons at a distance, and that a very formidable opponent had arisen which threatened to imperil the telegraph revenue of the State.

On Nov. 27, 1879, an information was filed by the Attorney-General on behalf of the Crown to enforce certain rights and privileges claimed by the Postmaster-General.

By the information the Attorney-General asked *inter alia*:

- (a) That the wire and apparatus of the defendant company shall be declared to be a telegraph, and messages sent thereby are telegrams within the meaning of certain Acts of Parliament.
- (b) That it shall be declared that the transmission of messages by the defendant company for money or other consideration is an infringement of the exclusive privilege



THE FIRST TELEPHONE EXCHANGE OPENED IN LONDON. 36, COLEMAN STREET.

conferred upon the Postmaster-General by the Telegraph Act of 1869.

The action was commenced in the High Court of Justice on Nov. 29, 1880, and the proceedings lasted five days. The judgment of the Court in favour of the Crown was given on Dec. 20, 1880, and Mr. Justice Stephen, in referring to the definition of various sections of the Telegraph Acts of 1863 and 1869, remarked that the result seemed to be that any apparatus for transmitting messages by electric signals is a telegraph, whether a wire is used or not, and



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MR. JAMES BRAND.

that any apparatus of which a wire used for telegraphic communication is an essential part is a telegraph, whether the communication is made by electricity or not, and that it would include on the one hand electric signals made, if such a thing were possible, from place to place through the earth or the air, and, on the other, a set of common bells worked by wires pulled by the hand if they were so arranged as to constitute a code of signals.

By this decision that a telephone, which was not dreamt of when the telegraphs were acquired in 1869, was an infringement of the Postmaster-General's telegraph monopoly, the shareholders were confronted with the possible loss of the money which they had put into the business. Only two courses were open to them—either to embark on further litigation by appealing against the judgment of the High Court, with the possible loss of more capital, or to make the best arrangements possible with the Postmaster-General. Eventually it was decided to acknowledge the Postmaster-General's rights, and to accept licenses on certain terms, which included the payment to the Postmaster-General of a royalty of 10 per cent. on the gross receipts arising from the telephone exchange business.

From this time the Government, with the laudable but mistaken desire of protecting the telegraph revenue, adopted a policy of retarding in every way the growth of the telephone system. Barriers, legal and otherwise, were continually being erected to check the companies' progress, and as they were swept away or evaded new obstacles were placed in their paths.

Had the Government admitted, when the success of the telephone was beyond question, that the telegraph could not hold its own against the new invention, and then either acquired the telephones, or allowed the telephone companies to

work the telegraphs, a vast amount of the nation's money would have been saved.

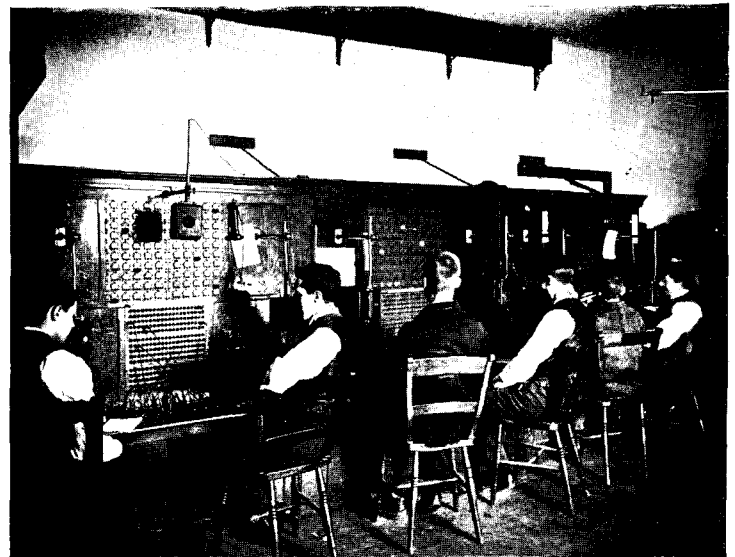
The fact that the public have greatly suffered by the tardy development of telephone facilities in the United Kingdom is not the fault of the telephone companies, nor can the blame be put upon the permanent officials of the Department.

In the case of the licenses issued by the Post Office in 1881 a separate license was granted for each locality in which it was desired to open telephone exchanges. In London, Liverpool, Manchester and other important centres the area was defined by a circle with a radius of 4 or 5 miles, and elsewhere a shorter radius was adopted.

Having decided to accept the Post Office licenses, the United Telephone Company at once proceeded to arrange for the establishment of telephone exchanges throughout the United Kingdom, reserving for its own sphere of influence London and so much of the counties of Middlesex, Surrey, Kent, Essex and Herts as was within a circle with a radius of twelve miles from the General Post Office at St. Martins-le-Grand.

The United Telephone Company had an unfortunate experience when endeavouring to provide Plymouth with a telephone service. In anticipation of the Department granting its request for a licence, the company opened an exchange in that town on Sept. 22, 1881. The Post Office, however, refused a licence upon any terms, and insisted on the exchange being closed. The service was accordingly discontinued on Oct. 29, 1881, and the Department then proceeded to instal a system of its own; the Post Office Exchange being opened on Dec. 15, 1881.

In the first telephone exchanges, opened by the Bell and Edison Companies, boy operators were employed, but, following the appointment of Mr. Joseph Bond Morgan as managing director of the United Telephone Company in February, 1881, the boys were gradually displaced by women operators.



A LONDON TELEPHONE EXCHANGE WITH BOY OPERATORS.

The policy of the United Telephone Company was to exploit that part of the United Kingdom which it did not intend to work itself by the formation of separate companies, as it was considered an important element of success that this new and novel business should be taken up by local people who through their influence would have the machinery in the different areas for raising the necessary capital and carrying out the work of starting and developing the telephone business. The United Telephone Company, being in possession of the master patents, decided not to sell, but to lease to the various subsidiary companies the necessary instruments on payment to the parent company of a royalty of £1 per annum for each telephone or transmitter supplied.

The consideration for the concessions, with one exception, was the repayment to the United Telephone Company of the amounts which it had expended in installing the telephone in the districts assigned, together with an allotment of fully paid

shares in the subsidiary companies so that the parent company retained a controlling interest in the new undertakings. In the case of the Lancashire and Cheshire Company, the consideration was equal proportions of cash and shares.

"The Provincial Telephone Company, Limited" was incorporated on Feb. 17, 1881, with a capital of £75,000, one of its objects being to form and assist in the formation of telephone companies in the United Kingdom. Its activities were confined to the formation of the National Telephone Company and the acquisition of the telephonic business of the Scottish Telephonic Exchange, Limited, Messrs. D. and G. Graham, and the Midland Telephone Company, Limited. It was dissolved on Sept. 18, 1884.

At the time of the amalgamation of the Bell-Edison interests there were several small companies and firms which had started



MR. JOSEPH BOND MORGAN.

independent telephone systems, but they were subsequently absorbed by the subsidiary companies formed by the United Telephone Company.

Telephone exchanges were also started by the Post Office in opposition to the telephone companies, the most important being installed at Cardiff and Newcastle-on-Tyne. The former was opened on Aug. 31, 1881, and the latter on Oct. 1, 1882, but the Department had very little success elsewhere and was never a serious rival in any of the other provincial areas.

It has since been stated that the non-success of the Department was attributable to the action of the Treasury in refusing to sanction the necessary expenditure or to permit the competition being conducted on commercial lines.

The first of the subsidiary companies was registered on March 10, 1881, under the title of the "National Telephone Company, Limited," with a capital of £600,000, the territory allotted being the county of York, and 25 miles round Middlesbrough, Glasgow, Edinburgh, Dundee, Aberdeen and Nottingham and 20 miles round Leicester, together with Belfast and the province of Ulster.

On May 21, 1881, the "Lancashire and Cheshire Telephonic Exchange Company, Limited" was launched with a capital of £250,000, to develop the counties of Lancashire and Cheshire, the Isle of Man, part of the county of Westmoreland, and the six northern counties of Wales.

The next to appear was the "Northern District Telephone Company, Limited," registered on Dec. 13, 1881, with a capital of £100,000, to start operations in Newcastle-on-Tyne, Sunderland, the rest of the county of Durham, excluding 25 miles round Middlesbrough, the greater part of the county of Westmoreland, the counties of Northumberland and Cumberland, the counties of Wigton, Kirkcudbright, Dumfries and Roxburgh, the counties of Peebles, Selkirk, Berwick and Haddington, excluding 25 miles round Edinburgh, and the counties of Ayr and Lanark, excluding 25 miles round Glasgow.

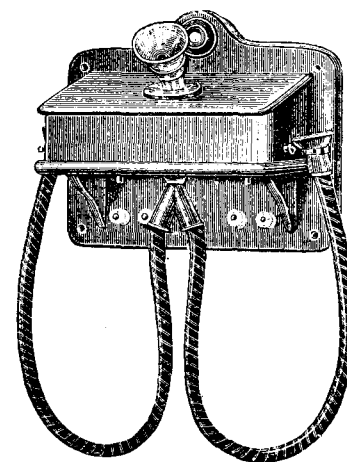
Later on, an exchange of territory between the National Telephone Company and the Northern District Telephone Company was effected, and the respective boundaries re-adjusted.

On May 27, 1882, the "Telephone Company of Ireland, Limited," was formed with a capital of £250,000, to work all Ireland, with the exception of Belfast and the province of Ulster.

The "Western Counties and South Wales Telephone Company, Limited," was registered on Dec. 17, 1884, with a capital of £400,000, to develop the counties of Cornwall, Devon, Somerset, Dorset, Hants, Wilts, Gloucester, Hereford, Monmouth, Glamorgan, Carmarthen, Pembroke, Cardigan, Brecknock and Radnor, and certain parts of Shropshire, Warwickshire and Worcestershire, together with the Channel Islands and the Isle of Wight.

The remainder of the United Kingdom was dealt with when the "South of England Telephone Company, Limited," was floated on Jan. 29, 1885, with a capital of £400,000, and acquired the right to telephone the counties of Northampton, Norfolk, Bedford, Cambridge, Huntingdon, Buckingham, Oxford, Berks, Suffolk and Sussex, and part of the counties of Middlesex, Surrey, Kent, Essex and Herts.

An episode may here be referred to which reflects the peculiar attitude adopted by the Post Office towards the telephone companies. On Sept. 2, 1879, The Telephone Company, which then owned the Bell patent, entered into an agreement with Messrs. Scott and Wollaston to enable that firm to supply telephones for private use, one clause of the agreement stipulating that such



GOWER-BELL TELEPHONE.

instruments should not be used upon exchange systems. This agreement was afterwards assigned to a company called the "Gower-Bell Telephone Company, Limited," and the Postmaster-General contracted with that company to purchase 20,000



Gower-Bell telephones, some of which were afterwards used in connection with Post Office telephone exchanges. A legal opinion had previously been taken by the Department that although Scott and Wollaston or their assignees could not use the instruments for exchange purposes, any purchasers of the instruments were not bound by the prohibition clause.

Another incident occurred when the United Telephone Company, which had started exchanges at Sunderland and Newcastle-on-Tyne, transferred the telephone business in those towns to the Northern District Telephone Company. The Post Office had competing exchanges at both places and at first refused to grant licenses to the Northern District Company. In the early part of 1882 the Post Office authorities filed an information against that company to compel it to close its exchanges at Newcastle and Sunderland. On a statement that the Postmaster-General was prepared at once to grant the company an exchange license for Newcastle-on-Tyne, but that before doing so the company must consent to judgment and cease working its exchange, the company complied, and the Newcastle Exchange was closed on July 25, 1882. The company expected it would receive the license in a week or two, but it was not until May, 1883, that the document was handed to the company. During the ten months that the company's exchange was closed, the Post Office actively canvassed the district, and especially those subscribers who had joined the company's system.

The policy adopted by the United Telephone Company made it impossible for the Post Office to obtain instruments constructed under the Bell, Edison or Blake patents, and, on granting a license to the Northern District Telephone Company in 1883, the Postmaster-General insisted on new conditions being inserted therein putting on the company the obligation of selling or procuring to be sold to the Postmaster-General telephones and other telegraphic apparatus of the same kind as those used by the company as part of or in connection with its exchange business, and further, that the company should grant or procure to be granted such licenses as the Postmaster-General might require entitling him to manufacture telephones and other telegraphic apparatus, in accordance with the specifications of any letters patent belonging to or subject to the disposition or under the control of the company on payment of a royalty by the Postmaster-General. The Postmaster-General had official knowledge of the terms upon which the Northern District Telephone Company had the right to use the instruments of the United Telephone Company, and he knew that the subsidiary company had no power to sell telephones to him. Being unable to obtain a license on any other terms, the Northern District Telephone Company was compelled to accept it with this condition as to sale. This new departure seriously interfered with the development of the telephone business throughout the United Kingdom, as other companies refused to accept licenses containing the objectionable clause, and it was the subject of repeated questions and protests in the House of Commons by Mr. E. Dwyer Gray, the chairman of the Telephone Company of Ireland, and others, until finally a promise was given by the Postmaster-General, Mr. Henry Fawcett, on May 22, 1884, that the matter should be considered whether, with due regard to the public interest, it could be in any way modified.

At the same time Mr. Fawcett stated that the number of applications for telephone exchange licenses, since the institution of the new conditions requiring each company receiving a license to undertake to sell instruments to the Postmaster-General, had been 77 and the number granted had been 8.

It soon became apparent that the establishment of local telephone exchanges did not fully satisfy the public requirements. A strong desire arose throughout the country for intercommunication between towns in the various areas, and the telephone companies approached the Department for permission to erect the necessary trunk lines, and to be in a position to attach to exchanges within the areas persons residing or having businesses outside the boundaries which had been fixed. The Post Office was reluctant to give its consent, and every opportunity was taken to delay complying with the request of the companies. Eventually the Department offered to erect and maintain the trunk wires, charging the companies £10 per mile per annum for the double wire, and taking in addition half the surplus gross revenue beyond the rental. The companies were

prepared, as no better terms could be obtained, to accept these onerous obligations, but they were suddenly changed, and a further condition was insisted upon—viz., that the companies should charge each of their trunk subscribers a minimum annual sum of 10s. per mile.

That the Department's charges for the trunk lines were excessive is shown by the accounts of the National Telephone Company.

In the twelve months ending June 30, 1883, that company incurred a loss of £684 10s. 6d. in respect of the trunk lines rented from the Post Office, and in the following year the deficit on the trunk line between Edinburgh and Glasgow alone amounted to £237 19s. 1d., and in addition there was a heavy loss on the trunk lines in the Yorkshire and Midland districts.

The first trunk line to connect the Metropolis with a provincial town was erected by the Post Office on rental terms for the United Telephone Company between London and Brighton, and was opened for public use on Dec. 17, 1884.

The sanction of the Postmaster-General to connect subscribers outside the various radii was given on the companies agreeing to pay in respect of the ultra-radial wires a royalty of 12½ per cent. instead of 10 per cent. upon the gross receipts.

The Post Office permitted its subscribers to send telegrams by means of their exchange lines, but denied similar facilities to the telephone companies' subscribers except on payment of £5 5s. per annum for each subscriber desiring this special service.

The opening of call offices in any area was practically prohibited, as the Post Office demanded as the price of its consent a royalty of 50 per cent. on the gross receipts from such sources.

The irritation and resentment of the trading community at the Post Office showing so fixed a determination to impede and obstruct the development of telephonic facilities to the public became so great that the Government decided to adopt an entirely new policy. The old vexatious restrictions were rescinded, and in November, 1884, new licenses were granted for the whole of the kingdom, and the areas abolished. The term was the same as in the original licenses—viz., for 31 years from Jan. 1, 1881—with a royalty of 10 per cent. on the gross revenue derived from every form of telephone exchange business. Under the licenses the Postmaster-General had the option of purchasing the telephone business by giving to the companies six months' notice expiring on Dec. 31 in any of the years 1890, 1897 and 1904, but, by a curious oversight, no provision or arrangement was made for his acquiring the companies' property at the expiration of the license on Dec. 31, 1911.

The immediate result of this new departure on the part of the State was a remarkable activity in the development of the telephone systems. New exchanges were opened in quick succession, and the construction of trunk lines to connect up the principal cities and towns was vigorously proceeded with. The absence of statutory powers to enable the companies to carry out their work in the quickest and most economical manner induced the United Telephone Company in 1884 to promote a Bill in Parliament to give the companies powers to execute works as follows, that is to say:—

- (1) They may place and maintain a telephone wire under any street, and may alter or remove the same.
- (2) They may place and maintain a telephone wire over, along or across any street and place and maintain posts in or upon any street, and may alter or remove the same.
- (5) They may for the purposes aforesaid open and break up any street, and alter the position thereunder of any pipe (not being a main) for the supply of water or gas.
- (4) They may place and maintain a telephone wire and posts under, in, upon, over, along or across any land or building or any railway or canal, and may alter or remove the same.

The Bill however was opposed and had to be withdrawn, and the companies continued to hold their wayleaves on sufferance and to rely on the goodwill of private property owners for the means of developing their telephone business.

An interesting experiment was tried in 1884, when call offices were opened by the National Telephone Company. To avoid money payments being made to call office keepers, stamps bearing the portrait of Colonel Jackson, the chairman of the company, were

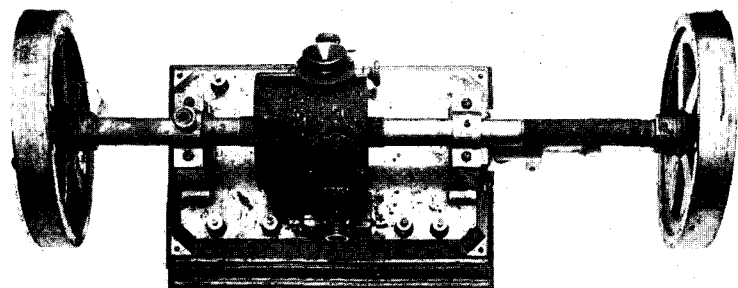
issued and used by subscribers and the public when telephoning from call offices. The arrangement, however, was objected to by the Postmaster-General, and the stamps were finally withdrawn from circulation towards the end of 1891.



SET OF TELEPHONE STAMPS.

On May 8, 1884, the Board of Works for the Wandsworth district applied to the Courts for an injunction to restrain the United Telephone Company from retaining or placing any wire over, along or across any street vested in or under the control of the plaintiffs without their consent, and the injunction asked for was granted, but was not to be operative pending the hearing of the appeal by the company. In the Court of Appeal this judgment was reversed on the ground that the wires did not interfere with the proper user of the street, and were not a trespass upon the property of the plaintiffs. This important decision settled definitely the right of the telephone companies to run wires across streets so long as they were constructed in a safe and proper manner, and became, so to speak, part of the charter of the telephone companies.

About the year 1884 some of the rating surveyors discovered a new source of revenue by contending that there was a rateable value in the overhead wires and plant belonging to the telephone companies. This was challenged by the companies, but decided



EARLY FORM OF THE EDISON PHONOGRAPH.

against them, and since then they have had to stubbornly contest the ever-increasing assessments made by the authorities throughout the United Kingdom.

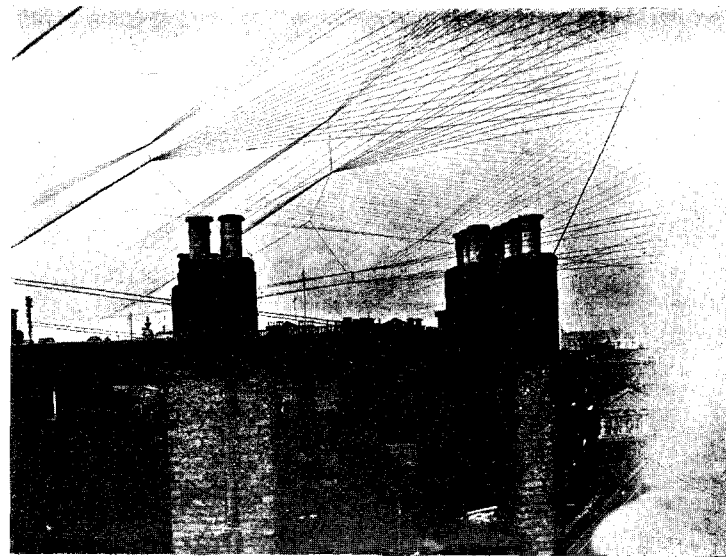
From the time of the formation of the United Telephone Company in 1880, incessant warfare was waged against the many manufacturers and users of infringing instruments.

In 1882 an important action, the result of which finally established the validity of the master patents, was brought against

Messrs. Harrison, Cox, Walker & Co., for making and selling telephone receivers constructed with a horseshoe magnet and the Hunning's granular carbon transmitter, and an injunction was granted with regard to the Bell patent, which was afterwards confirmed by the Court of Appeal.

With regard to the Edison patent, although it was admitted that the Hunning's transmitter came within the terms of Edison's specification, an injunction was refused on the ground that a claim for the invention of the phonograph had been included in the final specification and had not been sufficiently referred to in the provisional specification. The United Company at once disclaimed those portions of the Edison patent that referred to the phonograph, and the injunction being then given the United Telephone Company thereafter remained masters of the situation until the expiry of the patents in 1890 and 1891. Under the fiat of the Attorney-General, when granting leave to disclaim certain portions of Edison's patent, transmitters manufactured prior to July 29, 1882, were protected, and the Hunning's transmitters afterwards used by the London and Globe Company came within that protection.

In 1883 the London and Globe Telephone and Maintenance Company, Limited, offered a telephone exchange service at an inclusive charge of £10 10s. per annum, and opened an exchange in London in close proximity to one of the exchanges of the United Telephone Company. Disputes as to wayleave rights caused a serious dislocation of the business of the United Company, and the tactics adopted by the Globe Company forced on an immediate issue. Wires were tied by the Globe Company round heavy spans of wire belonging to the United Company and then connected to the former



ONE PHASE OF TELEPHONE COMPETITION.

company's exchange, which entitled it to send a current through all the wires thus put in contact, causing intense annoyance to the United Company's subscribers by the incessant ringing of the bells in their offices, and for the time being effectually destroyed their telephone service. Legal proceedings were at once commenced, but finally an agreement was made on June 24, 1884, between the two companies under which the United Company paid the Globe Company £25,000 in cash for its plant, property and assets, including patent rights.

The first multiple switchboards used in Great Britain were invented by Mr. F. B. O. Hawes, an official of the United Telephone Company. Two switchboards were manufactured in the United Telephone Company's workshops, one being fitted in the Central Trunk Exchange, Oxford Court, Cannon Street, London, towards the end of 1883, and the other in the Subscribers' exchange at Chancery Lane, London, at the beginning of 1884.

It was afterwards found that, by a curious coincidence, the evolution of the multiple system was being worked out independently by electricians in England and America, and when

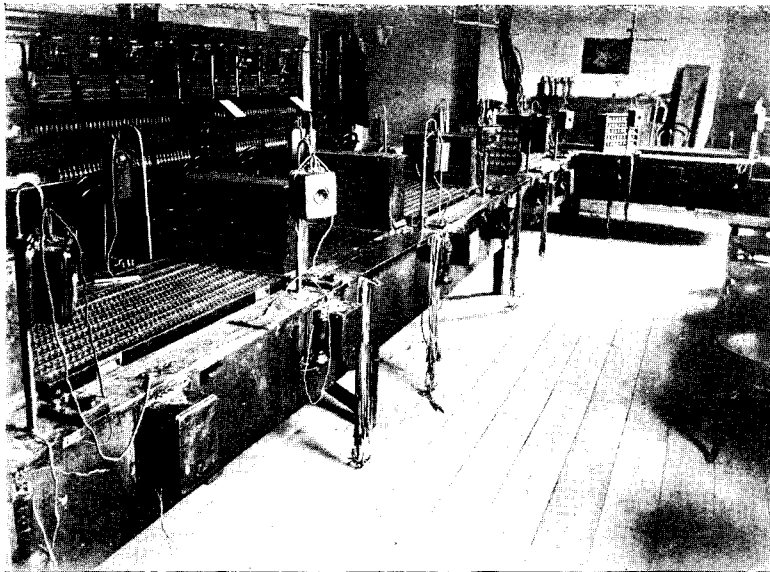
Mr. Hawes invented his switchboard he was not aware of Scribner's American patent of 1879.

In March, 1885, a Select Committee of the House of Commons was appointed to consider the law relating to the control over telephone, telegraph and other wires, and after a prolonged enquiry and hearing the evidence of witnesses representing the public bodies, the Post Office and the telephone companies issued a report on May 12, 1885, fully recognising the great advantage in the public interest of granting to the Post Office and the telephone companies the necessary powers to be exercised under the reasonable control of some official authority. The United Telephone Company had for the second time prepared and presented a Bill in Parliament asking for wayleave facilities, but in view of the appointment of the Select Committee, the Bill was withdrawn. The Committee's report was never acted upon, and the local authorities continued to deny the company the facilities which the Committee considered to be essential to the proper development of the telephone service.

On the evening of Dec. 25, 1886, the Metropolis was visited with a severe snowstorm, which had extraordinary results. In a few hours, owing to the unprecedented climatic conditions prevailing at the time, the overhead plant in London was practically in ruins. The snow accumulated on the wires, then partially melting, immediately froze and, a gale springing up afterwards, the wires fell in every direction, iron poles were bent or broken, and two large derricks, one in Oxford Court, Cannon Street, and the other in Mincing Lane, were torn from the roofs and fell into the street below. The expenses incurred in repairing the damage and the amount of the allowances made to subscribers for loss of service cost the United Telephone Company over £30,000.

To give effect to the recommendations of the Select Committee of 1885, the United Telephone Company again appeared as a suppliant to Parliament in 1888, asking for the third time that reasonable facilities should be granted to enable the telephone service in the interests of the public to be more fully and rapidly developed, but it met with strenuous opposition and, as in the case of the Bills promoted in 1884 and 1885, it had to be withdrawn.

By the end of 1888 the business of the United and its allied companies, particularly the trunk line traffic, had so greatly increased that an arrangement appeared necessary by which each company could have "running powers" over the lines of the other companies, with possibly a clearing house to deal with the traffic. The approaching expiration of the master patents was also a factor



CHANCERY LANE EXCHANGE, LONDON. MULTIPLE SWITCHBOARD FITTED 1884.

in directing attention to the advisability of consolidating the administration and management of the several companies and the advantages which would follow the adoption of uniform methods and systems in the development of the telephone business throughout the United Kingdom.

The first step towards this concentration of interests was the amalgamation as from May 1, 1889, of the three principal companies—the United Telephone Company, the National Telephone Company and the Lancashire and Cheshire Telephonic



HEADQUARTERS OF THE UNITED TELEPHONE COMPANY, OXFORD COURT, CANNON STREET, LONDON.

Exchange Company—on the basis of the market value at that date of the shares of the respective companies. The capital of the United Company and the Lancashire and Cheshire Company was wholly in ordinary shares, and these were standing at substantial premiums, but the ordinary shares of the National Company, which had issued both Debentures and Preference Shares, being about par value, the financial arrangements were facilitated by increasing the capital of the National Company and absorbing the other two companies.

At that time the National Company had expended on plant, including the cost of building trunk wires, £404,852; and was working 10,813 exchange and private lines; the United Company, with 6,793 lines, had spent £310,661; the Lancashire and Cheshire expenditure being £274,031, with 5,978 lines.

The nominal capital of the reconstituted National Telephone Company was increased to £4,000,000, to provide for the great development which was anticipated in the telephone business.

Mr. Frederick Richards Leyland was elected as the first President, the Vice-Presidents being Mr. James Staats Forbes, formerly the Deputy Chairman of the United Telephone Company, and Colonel Robert Raynsford Jackson, who, up to the time of the amalgamation, had been Chairman of the National Telephone Company.

The re-arrangement of the capital account on the basis of the then values of the securities of each company has since been a fruitful source of attack upon the company. The fact that the companies' assets at the time of the amalgamation were worth more than had actually been expended upon them, was the reward which accrued to those individuals who risked their capital in a venture which the Government would not touch.

The result of the first year's working of the combined companies, that is for the twelve months ending April 30, 1890, showed gross revenue £380,075, Post Office royalty £30,494 and working expenses £157,590, leaving a net profit of £191,991. The number of exchange and private lines increased in the same period from 23,584 to 27,706.



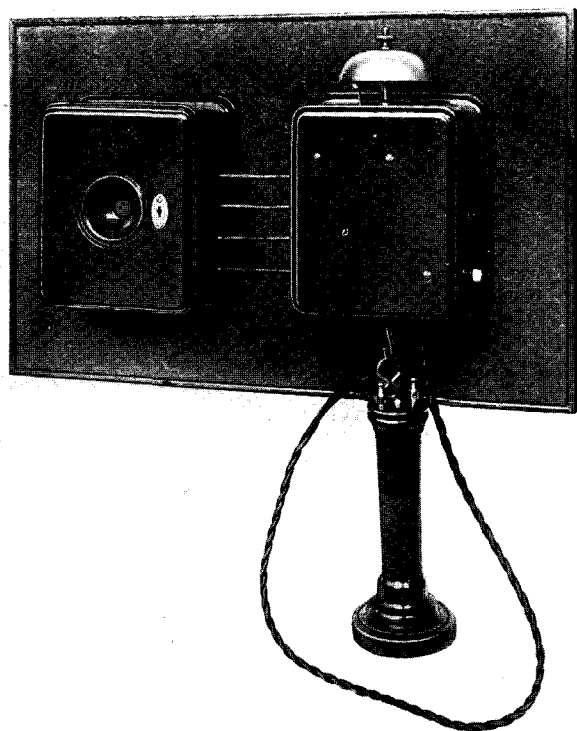
The amalgamation having proved entirely successful, a revision of the rates for the exchange services in the provinces was decided upon on May 1, 1890. The subscriptions in Manchester, Liverpool



By permission of the Proprietors of VANITY FAIR.]

MR. JAMES STAATS FORBES.

and other towns in Lancashire and Cheshire were reduced from £20 to £15 per annum, and a few months later—viz., on Jan. 1, 1891—a general reduction of rates outside the Metropolis was made



SUBSCRIBERS' TELEPHONE SET, 1889.

from £15 and £12 per annum to £10 per annum, with an immediate loss of revenue to the National Telephone Company of upwards of £55,000 per annum.

The outside plant of all the telephone companies at this time was constructed on the single wire earth-return system with results which were far from satisfactory as the cross-talk or overhearing was a continual source of complaint by the subscribers.

For some years after the amalgamation in 1889, the telephone instruments fitted in subscribers' offices consisted of a switch-bell, Blake transmitter and Bell receiver fixed on a green baize back-board, and later on when the magneto system of ringing was introduced the same type of receiver and transmitter was retained.

The last of the litigation with regard to patents was to restrain the New Telephone Company from using the valve transmitter which had been invented by Professor Sylvanus Thomson. The injunction was granted on April 12, 1889, and immediately afterwards the preliminary steps were taken for the liquidation of the New Telephone Company. The winding up however was not completed at the time, and later on when the Duke of Marlborough desired to obtain a universal license, he stopped the proceedings for liquidation and by resuscitating the New Telephone Company not only obtained possession of the license granted to it by the Post Office in 1885, but also of a similar license which had been issued to the Stanhope Telephone Company. The starting of the competition with the National Telephone Company in Manchester, the threatened opposition to that Company's operations in the Metropolis, and the final winding up of the New Telephone Company will be referred to later.

(To be continued.)

## THE EDUCATION AND TRAINING OF THE TELEPHONE ENGINEER.\*

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

THE end of the Company's license has been continually in our minds for some time past, and the critical period is now practically reached. The old order is about to change, and it is therefore a fitting time to review the past and make propositions for the future.

I am sorry that, so far, no one has attempted to write a history of the progress of the National Telephone Company. There are several men living who should be capable of such a work, but before many years have passed the task will have to be taken in hand, if it is attempted at all, by someone who will not be able to claim personal acquaintance with the facts and personalities concerned.

In the earlier days of telephony in this country very little science or engineering ability was called for. Miracles are not performed in these days, and no amount of scientific knowledge would have enabled the art of telephony to have suddenly reached its present stage of proficiency. Evolution came into play as it does in all new inventions and processes, and the rate of evolution was governed more by the public than by the want of scientific attainment or engineering ability on the part of telephone men. Recent events have proved that men were forthcoming capable of dealing with even the most advanced problems appertaining to telephony directly the need for them arose. It cannot be gainsaid, however, that the telephone engineer in the early history of the art in Great Britain shared with the rest of the world the prevailing ignorance concerning matters which have since been proved by laborious investigations to be governed by well-established laws, the commonest of which was then unknown.

The telephone in itself was a simple article, and while the demand for its assistance in the commercial and social world was small, the means required for putting subscribers into communication with each other were very simple. Probably the rule of thumb was the most generally applied rule, and very little consideration was given to the needs of the future. It was quite natural that this should have been so, as the state of civil war that must have

\*Presidential address delivered to the Telephone Society of London, Oct. 9, 1911.

existed prior to the amalgamation of the various companies forming the National must have prevented any very intelligent anticipation of future needs. Those who embarked their capital in the business showed great foresight, as it is assumed that they did not risk their money without understanding the tremendous possibilities latent in the telephone. The need of the time was for good commercial men, and if the gentlemen who were engaged in the task of promoting the business in its earliest stages had not been very keen and level-headed men of affairs, the initial difficulties would never have been overcome or, at any rate, the present satisfactory condition of affairs would have been considerably retarded, notwithstanding the immense advantages of the telephone as a means of communication. In the natural process of evolution the telephone plant became more and more complex and the problems to be solved increasingly difficult.

It is not good business to employ expensive and highly skilled labour when the required results can be obtained by the employment of unskilled labour, and it was natural that, in the early days of the Company's history, men were employed who were perfectly suitable at the time, many of whom must have found it difficult and, in some cases, impossible to keep abreast of the rapid advances made in the art. The cheap labour was not *all* of the unintelligent sort, and it is noticeable that the higher positions of the service to-day are filled by men who not so many years ago were themselves in the ranks of the cheap labour. The special training that it is now possible to obtain in technical institutes was not available to these men, but they had the great advantage of being able to grow up with the business, and it is those who at the outset possessed, or during their years of service obtained, a thorough acquaintance with the theoretical side of the business and combined this with practical experience, who are in the front ranks to-day.

In the days of territorial organisation, one man had generally to look after several branches of the business. This arrangement was satisfactory so long as the volume of business was small, but as it extended the inevitable result followed that the men passed from the stage of "Jack of all trades" to that of being "Masters of none." Functional organisation followed with splendid results as regards efficiency and economy, but its introduction made it much more difficult for any one man to keep in touch with more than his own particular branch of the business.

We have arrived at this stage, therefore, that of the men who form the technical staff of the Company, there are some who started with very little general education, and owing to lack of the necessary ability or determination have not made very great headway in the profession. There are others who started under similar disadvantages and who have forced their way forward with the aid of natural business aptitude and the power of practical application of laws the principles of which, through want of the theoretical training, they can only imperfectly grasp. Whilst others again, who have the necessary theoretical training and practical acquaintance with *some* branches of the work, experience increasing difficulty in keeping in touch with *all* phases of an art which is continually changing its methods and increasing its scope.

The telephone administration, under these circumstances, is met by two difficulties which must be satisfactorily overcome if it is to continue to perform its functions of providing an efficient service to the community at a reasonable cost and with a satisfactory margin of profit. The first difficulty is to make the best use of its existing staff, giving them every assistance to enable them to increase their knowledge, and consequently usefulness. The second difficulty is the selection of suitable recruits and the subsequent training of them.

It would be manifestly unfair, even if practicable, to discard those of the old servants who, because of the unalterable laws of nature, cannot perform an equivalent of work to the more recent additions to the staff. The former have performed pioneer work and have paved the way for the fresher intellects.

Before making any suggestions how these two difficulties should be met, I will discuss the general question of the educational requirements of a telephone engineer.

Some of us have sons, and the important question, what to do with them, will sooner or later arise. Let us suppose that, undeterred by our own experience, we elect to make a telephone man of

one of them, and because of a natural liking for things mechanical we decide to prepare him for the technical side of the business.

One prevalent idea is that a boy who is fond of making models and of carrying on experiments at home is bound to make a good engineer. This, however, is not necessarily the case. Engineering is a very arduous profession calling for mental and physical powers of a high order, and only *those* can hope to succeed who are prepared to lead a strenuous life and who are capable of enduring fatigue. In addition to a strong bodily constitution, the would-be engineer should be imbued with the tendency to do things rather than to speak of them. He should be a man of action rather than a man of words.

What is the best training to give a youth who is destined to become a telephone engineer? Before we can answer this question, we must first know what knowledge and experience is required of such an engineer. Inasmuch as the telephone is an electrical instrument, and inasmuch as electrical phenomena exert a dominating influence in the telephone art, telephone engineering is classed as a branch of electrical engineering, although telephone engineering comprehends important elements not at all electrical in their character. Indeed, it is a recognition of these elements and a knowledge of how to deal with them adequately which constitutes one of the main requirements of telephone engineering. In using the term telephone engineer, I refer to a man who fills one of the higher positions on the technical side of an organisation such as our own. The engineer may have to specialise eventually in one of the branches, such as traffic or equipment work, for a time, but his ultimate aim is to be a telephone expert with a comprehensive knowledge of all branches of the art. I know of no business that calls for a wider range of knowledge than that of the telephone business.

In a paper entitled "The Relation of the Engineer to the Telephone Industry," read some time back before one of the American technical societies by Frank F. Fowle, the author classified the functions of a telephone engineer under four main headings—theory, manufacture, construction and operation. The sub-divisions under these heads cover an enormous field, and give a very good idea of the extensive range of knowledge required by the telephone man. Those of you who wish to read the paper quoted are referred to the reprint of it in THE NATIONAL TELEPHONE JOURNAL.

For my own part I prefer to start with the two broad headings, theory and practice.

Under theory, I classify general education, covering such knowledge as every man holding a position of authority is expected to possess irrespective of the nature of his employment, and certain special subjects that are essential to the telephone engineer as such. These are:

1. Mathematics.
2. Fundamental laws underlying the application of electrical energy.
3. Properties of electrical apparatus and machinery.
4. Properties of materials.
5. Machine construction and drawing.
6. Principles of mechanics.
7. Construction and theory of structures.
8. Laws of physics.
9. Chemistry.
10. Economics.

As regards my other heading—practice—this covers a multitude of subjects, too intangible in some cases to be properly classified, which can only be learnt by experience and by the process of climbing the ladder. It is in the matter of practice that a man can display originality and initiative, even though he be hemmed in by rules and regulations. Many young men think of an engineer as one either actually engaged himself in practical work or as one immediately responsible for the direction of the work of others, a sort of glorified foreman, in fact, and it comes as a shock to them to find that the more exalted the position an engineer attains the less is his personal contact with the practical side of the work. It is often a bitter awakening to find that the engineer is chiefly engaged on so-called clerical work.

Practice in the telephone business covers such matters as the preparation of estimates, plans and specifications, the inspection of

materials, supervision of work, the preparation of returns and statistics, business management and so forth.

We are not concerned with the manufacture of telephone plant, and I do not therefore propose to deal with this branch of the business other than to remark that the telephone engineer who has some knowledge of the methods adopted in the manufacture of plant would be better able to deal with the problems that present themselves in the course of what may be termed the "operation" side of the business.

The first requirement mentioned under "theory" is "general education." What form this should take is a debatable subject. Education is not intended to make lawyers or clergymen, soldiers or schoolmasters, farmers or artisans, but men. The aim of early education should be not so much to fill a boy with facts as to train his mind to acquire useful knowledge, and to inculcate into him fundamental principles, to impart knowledge and implant culture. Education is the harmonious development of all our faculties. Reading, writing, arithmetic and grammar do not constitute education any more than a knife, fork and spoon constitute a dinner. Some favour a classical and some a scientific course of training. If it is intended that a boy shall join the engineering profession, he should, in my opinion, give his attention to scientific subjects in preference to classical ones. There is so much ground to cover in a limited time that subjects which are of doubtful utility should be left out of the curriculum. Herbert Spencer in his historical essay on education includes some very forcible remarks regarding the wickedness of wasting time on what he called the ornamental side of education to the detriment of the scientific side. He said that things worth teaching should be tested by two questions: Is it a fact? Is the presentation of it likely to make the pupil more capable of discovering other facts?

"What we call learning a business really means learning the science implied in it, although not perhaps under the name of science; hence a grounding of science is of great importance because knowledge based on reason has an immense superiority over mere knowledge of facts.

"Moreover, not only is scientific culture requisite for each, that he may understand the *how* and *why* of things and processes with which *he* is concerned as maker or distributor, but it is often of much moment that he should understand the *how* and *why* of various other things and processes with which he is not immediately concerned." Many people decry the value of Euclid and consider that the time given to its study could be used to better advantage. In this connection I was interested to read a little while back that Professor S. P. Thompson maintained that the study of Euclid under the guidance of enthusiastic and intelligent instructors is, in his opinion, a splendid training in methodical and cogent reasoning. Of course, if a youth can be given the advantage of prolonged schooling, then classical subjects should undoubtedly be taken. A knowledge of one or more foreign languages would be an acquisition to an engineer, as it would enable him to keep in touch first hand with contemporary work in other countries, and might serve him in good stead if he should seek employment abroad. A knowledge of the dead languages is, of course, of great assistance in enabling a foreign language to be mastered. Very great attention should be given to such matters as writing, correct spelling and composition. It is vital that an engineer should have a good training in English and be able to express himself clearly both in writing and speaking. It is not an infrequent occurrence to come across a man who can speak well but who is totally incapable of writing a decent letter, and there are others who are unable to exercise their knowledge to its fullest extent owing to the lack of power of expression and to nervousness when putting their thoughts into words. The broader the training the better, as every additional subject studied is bound to increase the breadth of view and to counteract the somewhat narrowing tendency of a purely technical training.

A thorough grounding in elementary mathematics in preparation for advanced subjects is essential. Certain commercial subjects, such as bookkeeping, should be included in the list of preparatory subjects by the budding engineer.

When the usual period of schooling is over, the next step must be governed very much by circumstances. If the parents can afford it, their son should be sent to some good technical college to

study such subjects as physics, magnetism and electricity, and to continue the study of mathematics. Two or three years in some good works, either mechanical or electrical, should then follow, but as the hours will most certainly be long, no regular system of study during evenings should be attempted, the student confining his energies to keeping himself from getting rusty in the knowledge already acquired.

If it is found impossible to allow a youth to go through a course at a technical college and he has to take up active employment immediately on leaving school, then most of his evenings should be devoted to study at home and evening classes.

The question whether technical studies should precede practical experience at engineering works or *vice versa* is one that has given rise to considerable discussion of late. Some advocate a sandwich system—that is to say, alternate periods in shops and at college, the summer months being spent at the shops and the winter months at college. Mr. A. F. Yarrow, the eminent marine engineer, demonstrates *his* faith in this system by insisting on it in connection with the apprentices in his works.

I think the general opinion is in favour of theoretical training being obtained first, the argument being that a youth can take a more intelligent interest in what takes place at the works when he has a knowledge of the theory underlying the operations that are performed there.

Generally speaking, it can be taken that "*school training* is to teach the student to absorb knowledge, *college training* to teach him how to appreciate knowledge, and *workshop training* to teach him to apply knowledge."

As regards the relative importance of the various subjects mentioned under the head of theory in my table, undoubtedly the first place must be given to mathematics. Lord Kelvin claimed that mathematics is etherealised common sense in the same way that logic is etherealised grammar, and another authority claims that the man who is endowed with the priceless boon of a copious mathematics possesses the key to the eternal universe. Although it is possible to do very good work and to earn a very decent living with a total lack of mathematical knowledge, yet it is not possible to be a telephone expert and understand the laws governing the transmission of speech and kindred subjects without a fairly advanced knowledge. Mathematics should be regarded as a tool and not an end in itself, and the man who can apply a limited knowledge to practical problems is better equipped than the man who has mastered the calculus and yet cannot apply his knowledge to problems that present themselves in the natural course of business. The opinion of Plato that geometry was degraded by being applied to any purpose of vulgar utility is not accepted to-day.

A knowledge of mathematics will simplify the study of magnetism and electricity and the fundamental laws underlying the application of electrical energy. Great changes have taken place in the teaching of mathematics in late years since such men as Professor Perry have shown that the old academical methods do not meet the needs of the day. Most technical institutes make a speciality of practical calculations, the syllabus of which covers a wide field.

It may not be out of place to mention here that it was the application of electricity to lighting and the distribution of power which took place some 30 years ago that gave an immense impetus to electrical education. There is scarcely a branch of electrical engineering which has not some bearing on the telephone industry. Electro-statics and electro-magnetics, electro-chemistry, thermodynamics all play their part. Consider a modern exchange with its relays, condensers, motors, dynamos, electric lamps and accumulators. How can a man hope to handle these properly without understanding the theory underlying their application.

(To be continued.)

#### THE TELEPHONE APPRECIATED.

APPRECIATION of the necessity for the telephone is not always all that one could wish, but a letter received from a blind subscriber in a southern town, typed by himself, and reading as follows, speaks volumes:—

"Threepence enclosed" (for Post Office fee account) "with thanks and pleasure. Your instrument adds 50 per cent. to the joy and force of living."

# The National Telephone Journal.

"BY THE STAFF FOR THE STAFF."

Published Monthly at

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

## NOTICES.

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VOL. VI.]

NOVEMBER, 1911.

[No. 68.]

## THE COMING TRANSFER.

IT has naturally enough been our practice to steer clear of all editorial reference in the JOURNAL to Service Instructions, and if we now break from our long-established rule in respect of Service Instruction 620 it is because it is one which concerns the staff in a personal even more than in an official sense. In their generally indefinite knowledge of their future position, one point amongst others which, in addition to the question of grading, caused considerable anxiety to the staff, was that of locality. In the fusion of two huge administrations such as that of the National Telephone Company and the Telegraph Department of the Post Office, radical changes appeared imminent and the abolition of certain offices and the re-arrangement of others pointed to the probable necessity of transferring staff from place to place. Permanent transfer to another town is a prospect welcomed by few; its disadvantages are somewhat lightened if the change is accompanied by substantial promotion, but, to the married especially, departure from a familiar neighbourhood and severance from relatives and friends is no small inconvenience. Even a re-appointment to a new office, with new routine, new responsibilities and new colleagues involves a certain disruption of old and happy associations. Whatever the future may have in store for the staff, they are likely to find little alteration in the daily tenour of their lives at present, for, as a result of communications which have passed between the Postmaster-General and the Company, the following intimation has been received, and has been embodied in a service instruction to the staff:—

"Although some slight changes in the existing organisation of the National Telephone Company's system will be inevitable immediately on the transfer of that system to the control of the Postmaster-General, and although more considerable changes will probably be found to be necessary as time goes on, it is the Postmaster-General's intention

to maintain practically unaltered at the moment of transfer the Company's district organisation; and, except possibly in a few instances, he anticipates no necessity for transfers of staff from one place to another."

This is a very satisfactory assurance. That inevitable alterations in régime, owing to the very nature of the change of ownership, will preclude the maintenance of the Company's organisation in its entirety, everyone must be aware. It seems to us that it is on the lines indicated in the above-mentioned notice that the transfer will be most happily carried out, and the fusion of some conflicting elements gradually and completely effected with the minimum of jealousy and inconvenience and the maximum of efficiency.

## TAKING TIME BY THE FORELOCK.

AMONGST the many criticisms, just and unjust, which have been inflicted on telephone administrations by the daily Press and by its weekly comic contemporaries, one of the most curious that we have met with is contained in a recent issue of the *Hospital*. The writer is so well informed on his subject that he evidently imagines that the transfer of the telephones to the State has already taken place. Indeed, he laments that the Government has paid such a high price for the "recent" purchase of the telephones that it will be unable to lower its charges for the benefit of hospitals. This would doubtless be of absorbing interest to the shareholders of the Company if it were not entirely a graceful and airy fiction. The price, whether it may prove in the opinion of critics high or the reverse, is, as members of the staff know only too well, a long way from being fixed. But whatever it may be it will be based on the value of the Company's plant alone, and the nation will secure the magnificent bargain of a vast, well-organised, reproductive business, without paying a farthing for goodwill or for the Company's property as a going concern.

## PRESENTATIONS.

As the transfer of the Company's business to the Postmaster-General draws near the air is filled with rumours of presentations to officers who, it is thought, are going to sever their connection with the telephone service of this country, or who are going to be moved to other spheres of usefulness.

The committees who are in charge of these presentations should in all cases bear in mind that the multiplication of appeals for contributions may become a burden on individual members of the staff, and it is to be hoped that they will be careful to minimise this burden by suggesting that in any case the contribution should be limited to a very small amount indeed.

The value of these presentations is not to be judged by their cost, but by the feeling which prompts them.

OWING to pressure on space, several interesting articles are held over until next month's issue, which will probably be of increased size, and will comprise a continuation of the "History of the National Telephone Company," by Mr. ANNS.

HIC ET UBIQUE.

THERE are grave doubts whether either THE NATIONAL TELEPHONE JOURNAL or the Company's Correspondence Classes will be continued by the Post Office. The matter, we believe, is still under the consideration of the Department, but in the event of an unfavourable decision the January, 1912, number (published at the end of December) will be the last issue of the JOURNAL, now in its sixth year. The cost of conducting the JOURNAL of course involves a great deal more than the out-of-pocket expenses involved in the printing and postage bill, although even these are not quite covered by the receipts. Besides the honorary contributions furnished by the staff, there are the important items of editorial and clerical work, which represent a considerable charge on the Company.

THE extension of long distance international trunk service continues to make good progress. During last month satisfactory trials demonstrated that Edinburgh and Glasgow could communicate with Paris, and hopes are entertained of extending commercial speech from the French capital to Aberdeen, a distance of 900 miles. We also learn from the daily Press that satisfactory conversations have been held between Basle, Amsterdam, certain German cities and London. We shall hope for trunk communication with Berlin in the not too distant future.

OUR esteemed contemporary the *Municipal Journal*, apropos of the Hythe incident where the wayleave demands of the town council looked like driving the Company to close the local exchange, says: "The National Telephone Company is dying and kicking at the same time." This, we suppose, to use Browning's phrase, is "How it strikes a contemporary." It strikes us that the position might be more accurately described by saying that the National Telephone Company is being kicked while it is dying.

A NEW form of telephone terror has been discovered by the Press. "Subscribers pestered by hustling traders," says the *Standard* headline, and we gather that "all peaceful telephone subscribers are now in imminent danger of being called before their time in the morning by the metallic clamour of the telephone bell, only to be informed by a suave voice at the other end of the wire that some firm in the City have just laid in a fine stock of non-shrinkable blankets for winter wear at prices too low to be quoted—except in confidence. Then the kindly informant rings off, and the heavy-eyed subscriber is denied even the satisfaction of expressing his feelings." We even learn that a citizens committee has been formed in progressive Hampstead to formulate some speedy measure of relief. We should imagine that such an unwelcome and irritating method of advertising would carry its own natural doom with it.

MESSRS. KOZO ISHIKAWA and YOSHIHISA NISHIWAKI, electrical engineers to the Imperial Department of Communications of Japan, are in this country studying telephone practice, and have recently paid several visits to Head Office and various of the Company's exchanges.

THE following paragraphs appear in the October issue of the *Post Office Engineer*, which is "published monthly in the interests of the Society of Post Office Engineers":—

Taking the Company's men first, we find that practically the whole of their duties as engineers may be summed up under two heads. First, the control of overhouse construction of a certain well-defined type; and secondly, the supervision of telephone apparatus work. On the other hand, the duties of an average Post Office engineer include not only those performed by the Company's engineers, but, in addition, underground and trunk line construction, the installation and maintenance of the various and complex telegraph systems of the Post Office, including "wireless," electric light and power work, heating systems, lifts, pneumatic tubes, railway block systems and the administration and sole control of a "section."

When reading the biographies of "Telephone Men" in THE NATIONAL TELEPHONE JOURNAL we have been particularly struck by the slender technical qualifications of some of the "men," who, with meteoric rapidity, have been advanced to responsible positions. The indifference of the Company to technical attainments for the position of district manager has been particularly noticeable. Surely the publication of such rubbish is not "in the interests of the Society of Post Office Engineers" or anyone else.

THE TELEPHONES OF THE WORLD AT THE BEGINNING OF 1911.

By W. H. GUNSTON.

I.—The Large Cities.

THE following list is believed to comprise all the towns and cities in the world which possessed 10,000 telephones on Jan. 1, 1911. Such cities number in all 91, and it is a significant fact that 49 of them are situated in the United States. At the time of writing (October) they total over a hundred, for Bradford, Leeds, Newcastle-on-Tyne and Sheffield (England), Bremen (Germany), Rome (Italy), and the following towns in the States:—Birmingham (Alabama), Memphis and Nashville (Tennessee), Fort Worth (Texas), St. Joseph (Missouri) and Oklahoma were all closely approaching the 10,000 at the beginning of the year. The European figures are all official (with the exception of the two or three estimates marked \*), based on the latest obtainable official statistics. As regards America the figures referring to the Bell Companies' systems are all official, but in the cases of the following towns estimates of the Independent Companies' stations (based on good authority) have been added to the Bell figures:—Philadelphia, St. Louis, San Francisco, Cleveland, Kansas, Detroit, Pittsburg, Buffalo, Los Angeles, Minneapolis, Seattle, Indianapolis, Columbus, Portland, St. Paul, Toledo, Louisville, Grand Rapids and Rochester.

List of Cities and Towns in the World possessing upwards of 10,000 Telephones on Jan. 1, 1911.

	Number of telephones.	Population (thousands).	Number of inhabitants per telephone.
New York, U.S.A. ...	401,859	4,861	12.1
Chicago, U.S.A. ...	239,083	2,220	9.3
London, England ...	203,126	7,184	35.4
Berlin (and suburbs), Germany ...	175,151	2,990	17.1
Philadelphia, U.S.A. ...	134,111	1,567	11.7
Boston, U.S.A. ...	125,759	1,333	10.6
San Francisco, U.S.A. ...	88,139	422	9.8
St. Louis, U.S.A. ...	82,217	756	9.2
Los Angeles, U.S.A. ...	78,406	335	4.3
Paris, France ...	75,439	2,763	36.7
Stockholm, Sweden ...	72,089	342	4.7
Cleveland, U.S.A. ...	67,495	574	8.6
Detroit, U.S.A. ...	67,119	503	7.5
Pittsburg, U.S.A. ...	65,082	692	10.8
Hamburg-Altona, Germany ...	57,554	1,026	18.0
Kansas City, U.S.A. ...	54,912	350	6.5
Cincinnati, U.S.A. ...	49,905	550	10.1
Vienna, Austria ...	47,210	2,085	44.4
Copenhagen (and suburbs), Denmark ...	45,000	514	11.4
Minneapolis, U.S.A. ...	44,198	308	7.0
Buffalo, U.S.A. ...	42,935	450	10.5
Baltimore, U.S.A. ...	42,840	604	14.0
Glasgow, Scotland ...	42,514	1,060	24.9
Washington, U.S.A. ...	40,869	335	8.2
Portland (Oregon), U.S.A. ...	39,606	216	5.5
Milwaukee, U.S.A. ...	35,390	398	11.2
Indianapolis, U.S.A. ...	33,427	240	7.2
Toronto, Canada ...	32,671	355	10.9
Denver, U.S.A. ...	31,566	220	7.0
Oakland (Cal.), U.S.A. ...	31,277	322	7.1
Montreal, Canada ...	31,078	545	17.6
Buenos Ayres, Argentine ...	30,844	1,190	38.6
St. Petersburg, Russia ...	30,500*	1,678	55.0
Seattle, U.S.A. ...	30,321	249	8.2
Moscow, Russia ...	29,300*	1,359	46.4
Liverpool, England ...	29,119	1,170	40.2



	Number of telephones.	Population (thousands).	Number of inhabitants per telephone.
Omaha, U.S.A. ... ..	28,169	159	5.7
Columbus (Ohio), U.S.A.	27,607	192	6.9
St. Paul (Minn.), U.S.A.	27,438	218	8.1
Tokio, Japan ... ..	27,207	2,186	80.9
Munich, Bavaria... ..	27,036	596	22.1
Louisville, U.S.A. ... ..	26,139	261	10.0
Manchester, England ...	25,627	1,225	47.8
Leipzig, Germany ... ..	22,913	503	22.0
Rochester, N.Y., U.S.A.	22,850	238	10.4
Frankfort-on-Main, Ger- many ... ..	22,838	335	14.7
Toledo (Ohio), U.S.A. ...	22,572	176	7.8
Warsaw, Russia ... ..	22,000*	756	34.4
Newark (N.S.), U.S.A. ...	21,743	387	18.0
Providence, U.S.A. ... ..	20,941	269	12.4
Spokane, U.S.A.... ..	20,474	109	5.3
Sydney, Australia ... ..	20,300*	592	29.1
Dresden, Germany ... ..	19,892	517	26.1
Cologne, Germany ... ..	19,062	429	22.6
Grand Rapids, U.S.A. ...	19,060	134	7.05
Buda Pest, Hungary ... ..	18,674	732	39.4
Melbourne, Australia ...	18,500*	550	29.7
New Orleans, U.S.A. ... ..	17,819	347	19.4
Brussels, Belgium ... ..	16,966	637	37.9
Dallas, U.S.A. ... ..	16,927	103	6.1
Winnipeg, Canada ... ..	16,169	130	8.1
Christiania, Norway ... ..	16,164	227	14.2
Jersey City, U.S.A. ... ..	16,343	504	31.5
Stuttgart, Württemberg ...	16,245	249	15.5
Atlanta (Geo.), U.S.A. ...	15,966	167	10.4
Birmingham, England ...	15,314	1,108	72.4
Breslau, Germany ... ..	15,208	471	31.3
Syracuse (N.Y.), U.S.A. ...	14,717	143	9.7
Mexico City, Mexico ... ..	14,500	345	23.8
Des Moines, U.S.A. ... ..	14,023	87	6.2
Worcester (Mass.), U.S.A. ...	13,634	149	10.9
Düsseldorf, Germany ... ..	13,551	253	18.7
Richmond (Va.), U.S.A. ...	13,474	136	10.2
Salt Lake City, U.S.A. ...	13,339	101	7.5
Amsterdam, Netherlands ...	13,011	565	43.4
Newhaven, U.S.A. ... ..	12,730	154	12.1
Houston (Texas), U.S.A. ...	12,597	90	7.1
Edinburgh, Scotland ... ..	12,505	450	36.0
Gothenburg, Sweden ... ..	12,468	167	13.5
Nuremberg, Bavaria ... ..	12,258	333	27.3
Springfield (Mass.), U.S.A. ...	12,252	105	8.8
Hanover, Germany ... ..	12,231	250	20.5
Hartford (Conn.), U.S.A. ...	12,195	122	9.4
Osaka, Japan ... ..	12,132	1,226	102.2
Hull, England ... ..	11,800	280	23.8
Tacoma, U.S.A.... ..	11,283	87	7.8
Albany (N.Y.), U.S.A.... ..	11,119	115	10.5
Zürich, Switzerland ... ..	11,116	183	16.5
Milan, Italy ... ..	10,538	584	55.6
Dayton (Ohio), U.S.A.... ..	10,498	123	11.8
Norfolk (Va.), U.S.A. ... ..	10,149	105	10.4

As regards the proportion of telephones to inhabitants all the highest places (with the sole exception of the second) are occupied by the Americans, as the following figures show:—

	Proportion of population to telephones
Los Angeles (California) ... ..	4.3
Stockholm ... ..	4.7
San Francisco (California) ... ..	4.8
Spokane ... ..	5.3
Portland (Oregon) ... ..	5.5
Omaha ... ..	5.7
Dallas ... ..	6.1
Des Moines ... ..	6.2
Kansas City ... ..	6.5
Columbus ... ..	6.9

Of the large cities of Europe the following show less than twenty inhabitants to each telephone:—

Stockholm ... ..	4.7
Copenhagen ... ..	11.44
Gothenburg ... ..	13.5
Christiania ... ..	14.2
Frankfurt-am-Main ... ..	14.7
Stuttgart ... ..	15.5
Zürich ... ..	16.5
Berlin (City) ... ..	16.6
Hamburg-Altona ... ..	18.0
Düsseldorf ... ..	18.7

It should be mentioned that in the central districts of London (Kensington, Marylebone, Chelsea, Westminster, City, Finsbury, Shoreditch, Stepney, Lambeth, Southwark, etc.) there are 144,765 telephones amongst a population of 2,066,000, or 14.3 inhabitants per telephone. This gives perhaps a fairer comparison with Berlin, Paris and Vienna than the extensive area of official London. It will be noted that all the above-mentioned towns in Europe are in Teutonic countries, which would seem to indicate that the advantages of the telephone are not so readily appreciated by the Latin and Slavonic races.

Several important facts have to be taken into consideration when drawing comparisons from these statistics. The first is that the years of the census vary in different countries. For instance, I have used in the above figures the British census of this year and an estimate of the present population of the American cities and Stockholm, whilst the population of most of the other cities is from five to ten years old. Another and more important consideration is as regards the boundary of the telephone area. The statistics I have given for Great Britain show the proportion of telephones to the population of the actual telephone area; whereas in the case of European towns the number of telephones is divided into the population of the city. Now in many cases there is no doubt that the telephone exchange serves a much larger population than that contained within the city boundary. Moreover, the larger the area the less the density of population and the smaller the likelihood of high telephonic development. Parliamentary and municipal London (*i.e.*, the administrative county), for example, has 4,523,900 inhabitants and 172,239 telephones, which gives an average of 26.3 inhabitants to each telephone—a much better figure than if we take the whole London area with its large rural fringe.

In conclusion, I give the principal capital cities of Europe with their development in order of merit:—

	Number of inhabitants per telephone.	Telephones.	Population (thousands).
Stockholm ... ..	4.7	72,089	342
Copenhagen ... ..	11.4	45,000	514
Christiania ... ..	14.2	16,164	227
Stuttgart... ..	15.5	16,245	249
Berlin (City) ... ..	16.6	122,558	2,040
Berne ... ..	18.3	4,325	78.5
Munich ... ..	22.1	27,036	596
London (County) ... ..	26.3	172,229	4,523
The Hague ... ..	36.1	8,041	259
Paris ... ..	36.7	75,439	2,763
Brussels ... ..	37.9	16,966	637
Buda Pesth ... ..	39.4	18,674	732
Vienna ... ..	44.4	47,210	2,085
St. Petersburg ... ..	55.0	30,500*	1,678
Rome ... ..	60.5	9,533	575
Lisbon ... ..	115.0	3,095	356
Madrid ... ..	155.0	3,500*	540

INVENTORY OF PLANT.

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

HEADQUARTERS.			
J. Dillon .. ..	Contract Clerk..	.. ..	Warrington
H. Weston .. ..	Clerk .. ..	.. ..	Oldham
<i>Deletions.</i>			
A. Lumsden .. ..	Fitter .. ..	.. ..	Glasgow
W. McPhail .. ..	Assistant Engineer ..	.. ..	Paisley
E. Harper .. ..	Local Manager .. ..	.. ..	Bournemouth

## BARTHOLOMEW HOUSE EXCHANGE.\*

By P. J. MANTLE, *Exchange Manager, London Wall.*

THE Bartholomew House Exchange is probably the least known of any of the Company's exchanges in London, and this is no doubt due to the fact that it does not intercommunicate with any other exchange, all its calls being local. The Bartholomew House system is the property of the Exchange Telegraph Company, but the apparatus is supplied and maintained, and the traffic operated, by the National Telephone Company.

Although primarily intended for the use of stockbrokers in communicating between their offices and the Stock Exchange and between one stockbroker's office and another, the exchange contains some subscribers who are *not* members of the Stock Exchange, these being bankers, financial newspapers, outside brokers and others to whom prompt information of Stock Exchange movements is essential.

The Bartholomew House telephones were originally merely adjuncts to the tape telegraph machines, and were supplied by the Exchange Telegraph Company for use in their "Challenge System" (which will be explained later) and to report the tape machines when they were out of order; but more recently the telephone portion of the system has been better appreciated, and it is now possible to rent a Bartholomew House line without installing a tape machine.

There are three classes of subscribers to this system:

*Class A* (£50 4s. per annum).—Comprises a tape instrument and a Bartholomew House telephone, with the use of the call offices in the Stock Exchange.

*Class B* (£25 per annum) — A Bartholomew House telephone and the use of the Stock Exchange call offices, but no tape machine.

*Class C* (£12 10s.)—Use of the call offices in "The House" (*i.e.*, the Stock Exchange) only.

The type of switchboard in use is somewhat similar to that at Battersea, and is probably more like the Kellogg than any other system we know, the chief distinguishing features being automatic ringing and the absence of ringing and register keys. Electrically it differs greatly, but for operating purposes the difference between it and the Western Electric Company's C.B. system is not very great.

The local calls are handled in similar fashion to local calls in any other exchange, but the calls to and from "The House" are dealt with in a special manner, which resembles in some respects our order wire working, and will need a detailed explanation.

Before giving this explanation, it may be interesting to quote an opinion expressed by Sir William Preece in his *Manual of Telephony*:

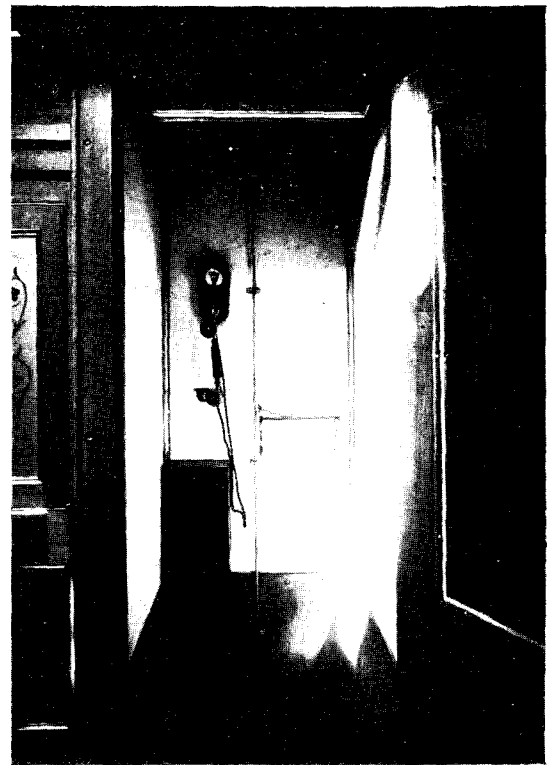
"The call office system adopted at the London Stock Exchange for the convenience of members who wish to communicate with their own offices probably stands unrivalled for smartness of switching. It is only practicable, however, with a comparatively small number of subscribers under exceptional conditions."

There are three separate rooms in different parts of the Stock Exchange each containing a number of cabinets and lines, and each being in charge of attendants who are supplied with two order wires, one for inward and one for outward calls. In the exchange each subscriber is associated with one or the other of these rooms, and his calling signal is coloured accordingly. For example, a subscriber whose convenience is best suited by using No. 1 room will be distinguished by a white opal, a green opal representing a subscriber who uses No. 2 room, and a red opal the user of No. 3.

Most of the traffic to and from the Stock Exchange is between stockbrokers' offices and their own representatives on the market. A subscriber whose calling signal is coloured white wanting to call another member of his firm who is within the precincts of the Stock Exchange calls the "A" operator at Bartholomew House and says, for example, "call John Jones," this being the name of his firm. After the operator has repeated the name after him the subscriber hangs up the receiver and waits. The operator noting his white opal depresses a white order wire key and passes the name "John Jones" to the attendant at the Stock Exchange in No. 1 room. She has then finished her part of the connection.

The attendant after repeating the name, has the member called from the particular market he frequents, and the member then proceeds to No. 1 room, from which he has been called, and completes the connection by originating a call to his own office.

This outward call from the Stock Exchange does not differ in any way from other outward calls where the caller has *not* been brought from the market, and it will be noted that the method of calling to members in the Stock Exchange is to give to the Stock Exchange attendant on the order wire the particulars of the call, which is then reversed and becomes an originating call from the Stock Exchange, or, to state the case more simply, it is as if one subscriber were calling another, and the individual required not being immediately available, the particulars of the call are noted and the call reversed as soon as the individual is available. The calls *from* the Stock Exchange to the Bartholomew House subscribers are handled as follows:—



CABINET AT STOCK EXCHANGE FOR LOCAL SERVICE.

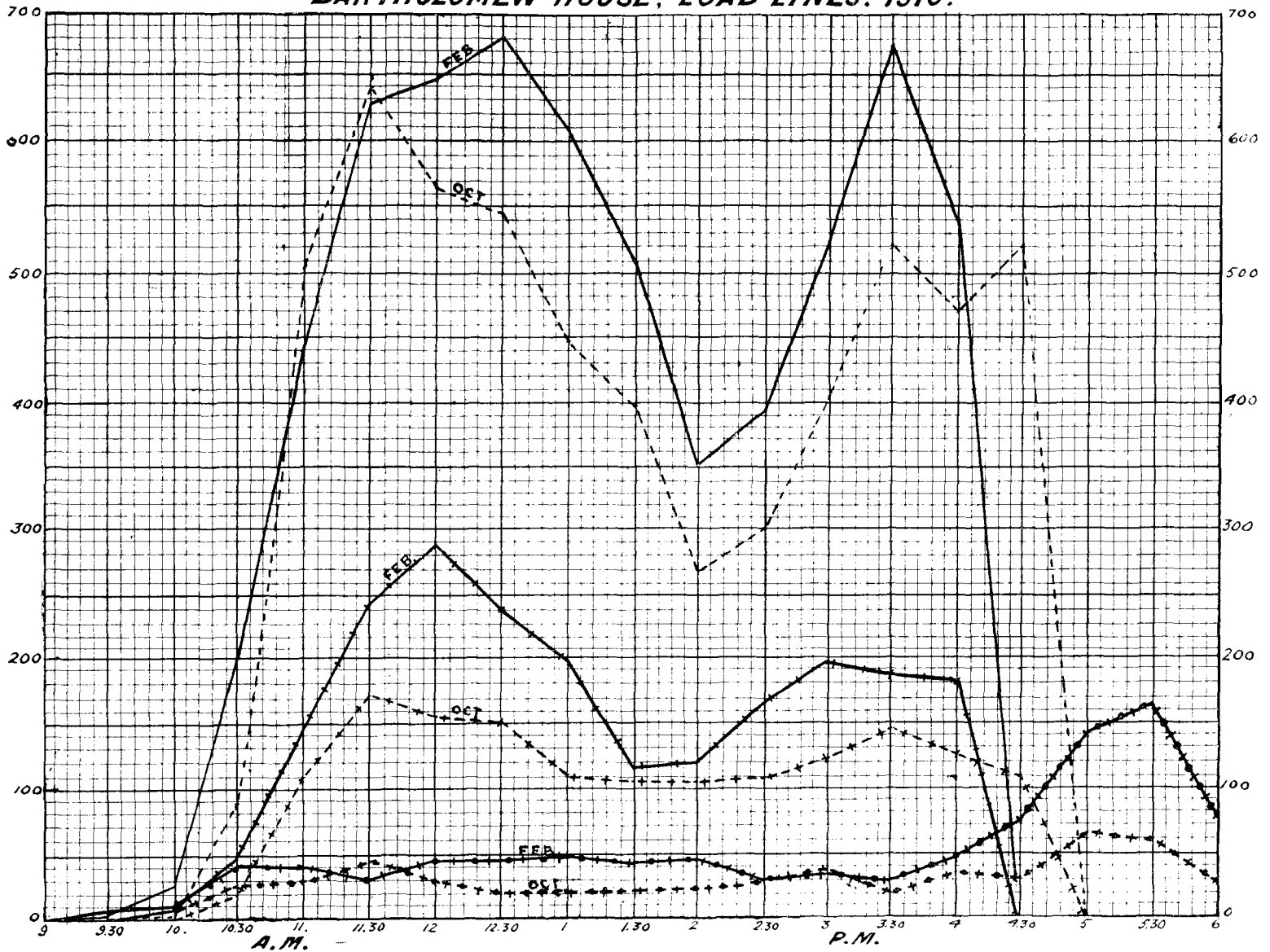
At busy times there may be a long queue of callers waiting. As they file up to the attendant he looks at a set of indicators beside him, to see which cabinets are free, and passes the caller's demand over the order wire by saying, *e.g.*, "214 on 8." On hearing this the caller goes to No. 8 cabinet, and the operator who is doing work similar to that of a "B" operator, connects No. 8 line to No. 214, after testing. The ringing is automatic and commences as soon as the plug is inserted in the multiple. The lines from the cabinets terminate in the exchange on single cords, like junction lines on a "B" position. The operator does not repeat the demand, and does no talking other than to ask for a repeat if she does not hear the attendant, and to advise him when numbers are engaged, there being unfortunately no busy-back fitted.

The clearing signals on these lines are controlled by the switch-hooks of the instruments in the cabinets, and, when the conversation is finished, the connection is cleared without the aid of the attendant. These positions are very difficult to operate, carrying as many as 850 calls an hour, and as the boxes (junctions) are allotted by the attendant the operator has to work at the pace he sets.

We have considered a call from a Bartholomew House subscriber to a member—one of the calling subscriber's own people. We have now to consider the case of a call in which the member wanted belongs to another firm. Assuming the call to be from the same subscriber as before, *i.e.*, "John Jones," but

\* Paper read before the London Operators' Telephone Society, 1910-11.

## BARTHOLOMEW HOUSE, LOAD LINES. 1910.



the individual wanted to be a member of the firm of "Thomas Robinson," the caller will say to the "A" operator, "call Thomas Robinson in No. 2 room."

In this case, to make it clear that "Thomas Robinson" is not being called by his own office but by 214, the operator asks the attendant for "Thomas Robinson for 214."

When this individual arrives at No. 2 room the attendant gives him the number of the caller wanting him. In the absence of such information the members assume that their own offices require them. The attendant allots the cabinet to be used, and passes the call over the order wire simultaneously as before. There are also cases where the called stockbroker is not a subscriber on the Bartholomew House, but belongs to Class C and is only a user of the Stock Exchange call offices. In these also the calling subscriber has to quote the number of the room in which the member is to be brought.

It will be seen from the foregoing that the success of this system depends very largely on the local knowledge of the operators and attendants. There are over 400 subscribers—many of the names are foreign, and as they are not all regular users, an operator at Bartholomew House requires a good memory.

The attendants in the call offices in the Stock Exchange are employed by the Exchange Telegraph Company, and their local knowledge is really astonishing. In No. 1 room, which has 28 cabinets, there is frequently a long line of callers filing quickly past the attendant. To save time he will give the number to the operator

and assign the cabinet, without waiting for the caller to announce his office number, not only recognizing the caller, but remembering his Bartholomew House number at sight, and carefully distinguishing those callers whom he has called—who are required for offices other than their own.

As regards the handling of local calls in the exchange, there is little to relate. As I stated these are similar to local calls on any other exchange, the callers asking for the subscriber required by number.

The "non-member" subscribers, *i.e.*, those subscribers who are not members of the Stock Exchange, are entitled to local calls only, and cannot be connected to or called by "The House."

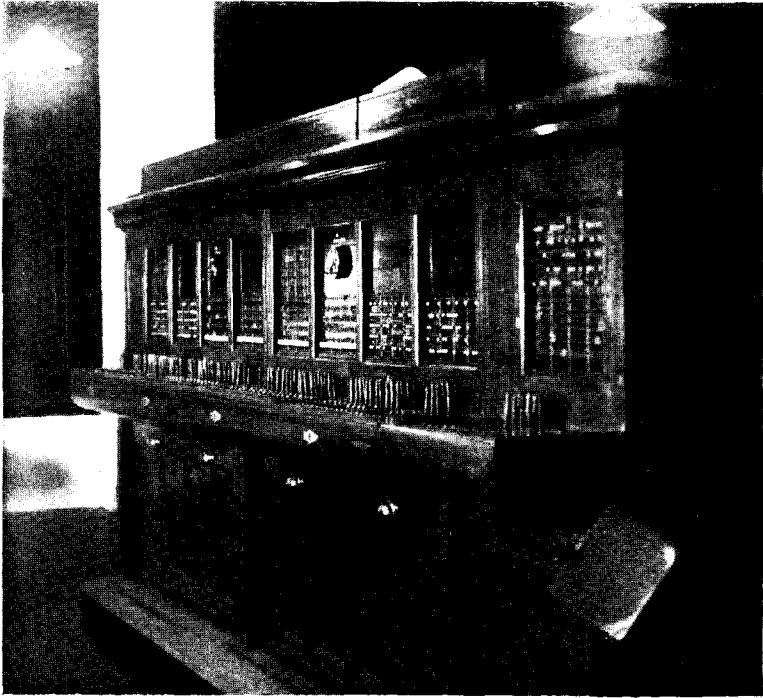
As will be seen from the attached curve, the operators deal with a very large number of calls.

It is not possible in the limited space at my disposal to make any full comparison of the operators' loads here and elsewhere, but it should be remembered that though the total number of calls handled appears large, the time value of these calls is relatively low.

The "Challenge System" to which I referred previously is a system by which a subscriber in Class A (*i.e.*, tape machine and telephone on Bartholomew House) wishing to buy or sell stock can circulate an offer by means of the tape machines to all the other brokers who have them fitted, and anyone wishing to close with the offer can call him on his Bartholomew House line, and, as the Exchange Telegraph Company modestly claims in its advertisement, "by its means within a minute and without leaving his office it is

possible for a broker to lodge a "notice" of his requirements at the office of every other broker in the Stock Exchange, thus reducing the physical obstacles of time and space in the constitution of the market to a minimum."

In conclusion I would point out that although the operating conditions at Bartholomew House are at times difficult, and heavy fluctuations in load take place, there are compensations, not the least of which are shorter hours, the duties being confined within the limits of 9.30 a.m. and six o'clock and three o'clock on Saturdays,



BARTHOLOMEW HOUSE EXCHANGE.

and the fact that, in addition to the ordinary Bank Holidays, the Stock Exchange, and consequently Bartholomew House Exchange, are closed on Jan. 1, May 1 and Nov. 1.

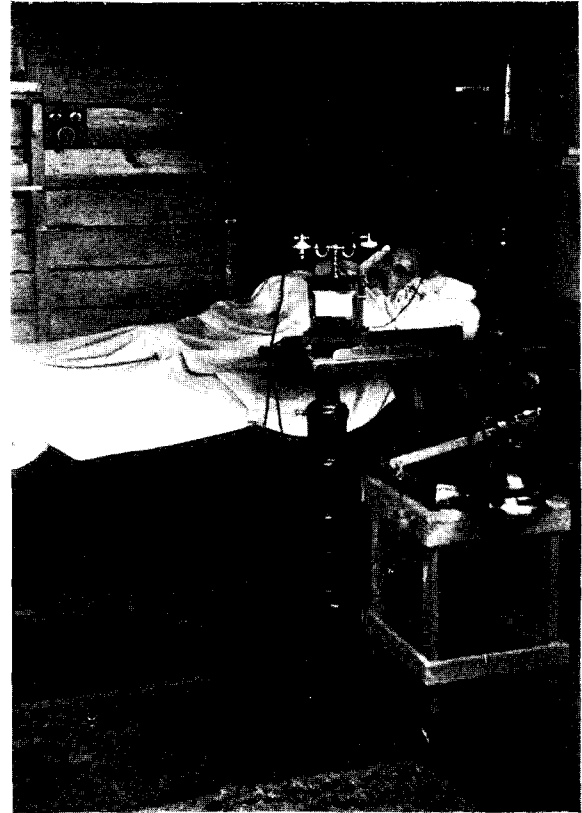
The question of the extension of the Bartholomew House principle to other markets and local centres, appears to be one deserving more consideration than it has hitherto received. Judged by the excellence of the service rendered to the Bartholomew House subscribers, the principle has much to recommend it. As some indication of this excellence, I may mention that the last written complaint of the service was received eight years ago.

### "ADAPTABILITY."

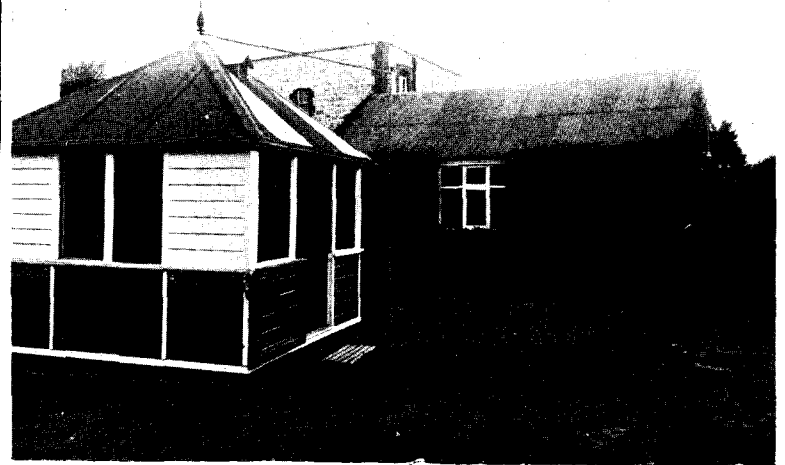
BY THE CONTRACT MANAGER, *Brighton.*

THAT all successful contract men must possess in no small degree the spirit of adaptiveness is understood. The contract man who from a sentence uttered or a glance given by the interviewed can weigh his man and instantly adapt his methods of procedure accordingly, is far more sure of success than his quailing, timorous or halting brother. Too well known to contract men is the individual who can always see the chance of a reduction in rates, "as the wires are just passing the house and the Company has only to attach"—to what is generally another subscriber's circuit! Then there is the old lady who is afraid of the telephone line conducting the electricity during a thunderstorm; but the writer recently had a would-be subscriber who went one better. The lady in question is a semi-invalid and possessed of all the ills this too frail flesh is heir to—chiefly, in her case, imaginary; and, on endeavouring to cajole her into having the service, she made the astounding statement that she was afraid of infection! The good lady meant, be it noted, infection from the speaker at the other end! I assured her with all sincerity that in all the annals of scientific

research no case could be traced of bacteria performing a one-mile sprint over copper wire, and that even were the surrounding elements favourable to their existence the feat was impossible, and, her professional nurse finally coming to the rescue, the lady was converted to my way of thinking.



A contract man in this district had a case recently where the individual canvassed was willing to have the service, but pointed out that, owing to the conditions under which he was obliged to exist, a telephone would be a "white elephant." The contract officer, however, was tenacious and "adaptable" and finally fixed



up the order. The gentleman was unfortunately in the early stages of consumption, and was ordered by his doctor a fresh air diet morning, noon and night. In other words, he was to be transplanted to a portable wooden structure made up as a living room in the grounds of the residence. This *chalet* was built to turn on a solid steel pivot, with wheels working on an iron ring bed on the ground, so that a maximum of sunshine could be obtained.

When the contract officer thought out his plan and gave the idea to the local manager of the district, it was found with a little assistance to be quite feasible, and the service was ultimately supplied at a low cost, as the subscriber gave every facility, supplying the gas pipe necessary, etc. He is particularly pleased with the service, and wrote me quite recently as follows:—"Thanks to the simple contrivance thought out by your representative, the telephone to my *chalet* has proved most satisfactory since its installation, and I have not a single fault to report."

To connect the *chalet* open wires were out of the question, and as the house was already in position and the central pivot underneath was solid, underground work was also undesirable; the finial outside and the stem inside the apex of the roof being in one piece, the finial was cut off outside level with the top of the roof, and a hole was bored down through the centre of the stem to allow a length of  $\frac{1}{2}$ -inch gas pipe to carry the one-pair cable. This and the gas barrel carrying it outside can be seen in the photograph shown. The outside wires were terminated on a rose fitted on the end of the down pipe, flexible cord was carried to a jack fitted on the wall, and a plug connected to the cord of the subscriber's ordinary table instrument. Thus it will be seen that by some thought and considerable "adaptability" it has been possible to bring the telephone into the isolated life of a patient whose monotonous days will, it is hoped, be lightened thereby.

### TELEPHONE WOMEN.

#### CV.—MILLCENT OSBORNE.

MISS MILLCENT OSBORNE, Senior Supervisor, Cardiff, joined the Company's service in April, 1901, was promoted to be supervisor



MILLCENT OSBORNE.

in September, 1908, and was appointed to her present position in September, 1909. Miss Osborne has attained her present position through a considerable amount of hard work, and the ability she

displayed was the means of her being promoted to be Senior Operator after three years' service.

She has also had a further opportunity of showing her worth to the Company during the transfer to the new C.B. exchange on Good Friday, 1910, when, without any previous practical experience of central battery working, the staff had quickly to grasp the intricacies of the new conditions.

Miss Osborne has worked under three clerks-in-charge and three exchange managers, and is not only enthusiastic in her work, but is ever ready to lend a hand in social gatherings for the benefit of her colleagues. She is a strong supporter of the telephone society and thrift club. She is full of enthusiasm in all she undertakes, whether in business or the social side of life, and has become very popular with all.

#### CVI.—JENNIE HOCKEY.

MISS JENNIE HOCKEY, Travelling Supervisor of the Cardiff district, joined the service in September, 1903, and was promoted to her present position on Oct. 1, 1909.



JENNIE HOCKEY.

She has always displayed a considerable amount of enthusiasm in her work, and for this she has been able to find plenty of scope since she has taken up her present duties. The varied conditions that obtain in the different areas which comprise the district, largely on account of the keen competition with the Post Office, require the use of considerable tact and ability.

Miss Hockey is a very enthusiastic telephone worker, and takes a keen interest in both the local telephone society and in any social functions for the benefit of the staff. She is fond of cycling and dancing, and has a humorous vein in her character which is very much to the fore in her social life.



## HOW THEY WOULD DO IT.

(Vide the paragraphs from the *Post Office Engineer* of October quoted on p. 167.)

THREE great ones were in conclave met;  
Their purpose, you'll infer,  
Was to appoint, procure, or get  
A District Manager.

"Our time," quoth A, "we will not waste  
On those late acquisitions  
Who reach with 'meteoric haste'  
'Responsible positions.'

"For naught they know of 'wireless' work,  
Are duffers at pneumatics,  
And problems regularly shirk  
Involving hydrostatics.

"In 'lifts' they are not at their ease,  
And as to 'railway blocks,'  
Methinks they know as much of these  
As centipedes of socks!

"'Tis true they have some 'underground'—  
Some thousand million metres—  
And power plants are also found  
'Midst these benighted creeters.

"But how they got 'em there, I fail  
Entirely to descry—  
Unless from gnomes of fairy tale  
Or angels from on high.

"Such things, moreover, not within  
The pale of 'complex' come  
These jobs so 'well-defined' begin—  
And end—with rule of thumb.

"No doubt, a few Head Office staff  
Are these poor fellows' betters;  
They wield the weird oscillograph  
And trifle with baretters.

"But these concern us not. Enough!  
No more our task defer  
Which is to choose, of proper stuff,  
A District Manager!"

Said B, "I think Augustus L,  
A candidate most proper,  
He is a radiographic swell  
A metallurgic topper."

Said A, "I rather fancy M,  
Who wondrously combines  
Greek elegiacs like a dream  
With pupinised trunk lines."

"Yes, Admirable Crichtons both  
These candidates must be;  
*But can they district-manage?*" quoth  
The shameless sceptic C.

"Tush! *What on earth,*" each colleague cries,  
*"Has that to do with it?"*  
And gazed at him in blank surprise  
As one of little wit.

W. H. GUNSTON.

## CORRESPONDENCE.

## ISLE OF MAN TELEPHONE SOCIETY.

TO THE EDITOR OF THE NATIONAL TELEPHONE JOURNAL.

It has been suggested to me that it might be interesting to other telephone societies in small places similar to ours, if I were to publish in the *JOURNAL* the system in vogue at our local telephone society of offering prizes to members for the best work, best time-keeping, suggestions to improve working, etc.

During this session prizes are offered as below:

For the three best papers or lectures given before the society.

For the best useful suggestion or device to improve the working in any department.

To the inspector who has the best kept district.

To the inspector who has the least ordinary faults on his district during the year.

To the best time-keepers in all departments.

To the clerk who keeps his books and work up to the best point.

It is found that this system acts very well and gives a healthy stimulus to members of the staff to take greater interest in their work.

Douglas, I.O.M., Oct. 19.

G. GILLMORE, District Manager.

## LONDON NOTES.

AMONGST the names of those published at the end of last month's *JOURNAL* as having passed various technical examinations, only a few appeared under "London." As a slightly boastful reference had been made in these notes to the large number of passes secured by the Metropolitan staff, the paucity of names on the list has caused some comment. The explanation is that owing to its length, a complete list was not sent in for publication; the maintenance staff at Holborn, however, sent direct to the Editor the particulars of those of their own number who had been successful, and it was that list which was published. To those who were omitted it may seem rather invidious, but the Editor could scarcely be expected to find space for nearly 200 names. Holborn perhaps ought to have been censored.

OF the four weddings reported last month, the most notable was that of Mr. J. H. Stewart, Divisional Maintenance Electrician, Paddington. Mr. Stewart is very highly esteemed by all who know him, and they will certainly desire for him a very happy married life. The staff at Paddington presented him with a handsome brass curb. Other presentations were— to Mr. F. W. Garvey, Maintenance Clerk, Paddington, an overmantel; to Mr. F. Waye, Inspector, Kensington, a clock; and to Mr. Brown, Clerk, Cashier's Office, Salisbury House, a clock and sugar basin.

LAST year attention was called in this column to the horticultural successes of Mr. W. Bower, a Fitter in the Western district. Mr. Bower has made a speciality of dahlias, and during August and September last, succeeded in carrying off innumerable prizes, including several firsts, at various flower shows. When it is known that Mr. Bower's gardening operations are conducted in the special atmosphere of Dalston, his success will be accounted the more remarkable. Long may he go on growing and succeding.

THE London Telephone Society opened well in its new meeting-place, Chandos Hall, Maiden Lane, W.C. The models prepared by the Company in connection with the Post Office arbitration attracted a considerable number of members prior to the opening hour. When Mr. Greenham commenced his presidential address on "The Training of a Telephone Engineer," there was a very good attendance. The address was certainly worthy of the occasion; it was conceived in no narrow-minded spirit, and treated the subject from that lofty standpoint which all well-wishers of telephone engineering desire to see it attain. It is unnecessary to give an adequate *résumé* of what was a very powerful plea, not only for comprehensive training, but adequate means for accomplishing it; as it is understood that the paper is being reprinted in full in the columns of the *JOURNAL*. The discussion centred round four topics: A school for training staff, an apprenticeship scheme, examinations, and the difficulty of keeping up to date in all branches of telephone science. Mr. W. Noble, Post Office Superintending Engineer, was a visitor, and at the request of the chairman, took part in the discussion; his views on the question were received with very close attention, and the applause at the close of his speech evidenced that his contribution had been highly appreciated.

FOR the society's next meeting on Nov. 8 a change from the published programme has been announced. The committee have been fortunate in arranging with Mr. John Scott, Assistant Superintendent, Midland Province, to relate "Some Experiences in Constantinople." As is generally known, Mr. Scott was the leader of a small band of missionaries who, some months ago, journeyed to the capital of the Near East to prepare for carrying the blessings of telephone service to the fast-regenerating Turkish Empire. One member of the committee has already foretold an evening of "Turkish delight," but whether he referred to the likelihood of Mr. Scott's being furnished with a supply of a certain toothsome dainty, or merely to the intellectual pleasure likely to be derived from the lecturer's remarks is doubtful. Mr. Scott will have a number of slides; he is, moreover, known as a keen and critical observer, with a faculty for telling speech; in addition, there are many stories current about the Constantinople expedition, and members will have an opportunity of asking Mr. Scott whether they are true.

THE Operators' Society's opening meeting is fixed for Monday, Oct. 23. Unfortunately it is just too late for the proceedings to be reported here owing to press exigencies. Mr. Edmonds will deliver his presidential address on "The Telephone Traffic of London; a Retrospect and Prospect." The topic affords a good deal of scope for both narration and prophecy, and is certainly topical at the present juncture in telephone history.

THE fifth session of the Western (London) Telephone Society opens on Oct. 26, under the presidency of Mr. J. McLeish. The committee have allotted the opening evening to a competition for papers of ten minutes' duration, entitled "Maintenance from My Point of View," and from the number of entries already received, there is promise of a very successful meeting. A strong programme for the other meetings of the session is being prepared, and although the arrangements are not quite complete, the material in hand augurs well for an interesting and instructive session and the continued success of the society. The field of operations covered by the society is the West and North-West districts of the Metropolitan area, and all members of the male staff in these areas are

eligible for membership. The subscription is 1s. per annum, and if there should be any reader of these notes who has not yet been approached by a member of the committee on the question of membership, the hon. secretary (Mr. E. Layton, Metropolitan electrician's office) will be glad to give further information. A cordial invitation to these meetings is extended to the Inventory staff and members of staff in other districts.

ARRANGEMENTS are now in hand for the final dinner of the Metropolitan staff, prior to the transfer. The King's Hall, Holborn Restaurant, has been secured for Saturday, Dec. 30, and the committee hope to arrange a varied and interesting programme, which will include dancing. Full details are not available at the time of writing, but they will be issued to the staff shortly.

### GLASGOW NOTES.

*Bell Golf Club.*—The final of the Monthly Medal Competition was held at Carntyne, on Saturday, Sept. 23, with the following result:—

- (1) Mr. W. Stewart .. .. 85 - 4 = 82  
(2) Mr. J. Paton .. .. 102 - 15 = 87

ON Sept. 21 Mr. James F. Scott, Cost Clerk, was transferred to the Kilmarnock district as Chief Clerk. Mr. Valentine, on behalf of the office staff, presented Mr. Scott with a number of handsome volumes and referred to Mr. Scott's good service in Glasgow. The recipient suitably responded and feelingly referred to the pleasant times he had spent in the Glasgow district.

THE long winter nights are now again with us, but we have relaxation in view! Practically all the exchanges and the office staff are taking time by the forelock, and are making arrangements for small sectional dances prior to the demise of the Company. There was some talk of a large gathering of the whole of the staff to be held on the second last day of the year in the St. Andrews Halls, but the idea has been abandoned.

We are now quit of the Inventory staff, the last of the divisions leaving here on Oct. 16. There was much preparatory speculation as to the difference the invasion of the divisions would make locally and the consequent upsets, etc., but, in the words of one of the local staff, "everything went along so quietly that one would never have known they were here."

THE scheme for the improvement of telephone service in Glasgow whereby certain of the Company's exchanges would be closed and the subscribers transferred to existing or new Post Office exchanges and *vice versa*, now nears completion. There are six Company's exchanges still to be closed prior to the end of the year, *i.e.*, Royal, Tron, Bridgeton, Crosshill, Shettleston and Rutherford, and our subscribers will be accommodated in new Post Office exchanges which are, meantime, in course of erection.

THE opening meeting of the Glasgow and West of Scotland Districts National Telephone Society was held in the Technical College on Wednesday, Oct. 11, Mr. J. F. Scott presiding, and there was a good attendance.

Prof. Magnus Maclean gave a most interesting lecture on "Sound." He had a plentiful supply of apparatus, which he used to illustrate different points in his lecture showing the varied effects of vibration on pitch and volume or musical notes. The lecture was most enjoyable and at the close several members had questions to ask, all of which were answered by the lecturer.

On the motion of Mr. C. J. Millar, Prof. Maclean was accorded a hearty vote of thanks.

TELEPHONICALLY Glasgow is quite in keeping with the times, and the following little extract culled from a local print seems to bear out this statement. For the veracity of the story the writer of the "Glasgow Notes" cannot naturally guarantee:—

"A remarkable change has taken place in the attitude of very young children toward the telephone. Ten years ago the child of tender years usually regarded the telephone with a feeling of lively trepidation and could only, with great difficulty, be persuaded to listen at the receiver. Now even the tiniest prattler brought up in a house where the telephone is an established institution generally shows the utmost delight in being allowed to lisp into the instrument, and a well-known voice answering back often sends the child into transports of joy. The explanation that brother or uncle or parent is speaking from his office in town is accepted as a matter of course, the modern child finding nothing at all wonderful or incredible in the business.

"In a Pollokshields household the other day the youngest member of the family, a boy of three, was missing. A search was instituted, and presently was heard his childish treble from the room where the 'phone is. On the door being opened the wee fellow was found standing on a chair and shouting insistently into the transmitter 'I want my daddy! I want my daddy!' The exchange did not keep the gentleman in stock!"

### 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 patent designs, trade marks, etc., can be obtained gratuitously.

#### LATEST PATENT APPLICATIONS.

20,107 Walter Samuel Steljes. Typographic and like receiving instruments for electric telegraph systems. Sept. 9.

20,434 Alexander Marr. Diaphragms of telephonic receivers and like instruments. Sept. 15.  
20,620 William Edward Lake. Telephone installations. Sept. 18.  
20,787 Ernest Sydney Heurtley. Working of telegraph and telephone circuits and the like. Sept. 20.  
20,898 Edward Alfred Graham. Telephone apparatus. Sept. 21.  
21,055 Herbert Watson Sullivan and Charles Edward Hay. Telephonic apparatus. Sept. 23.  
21,069 Sidney George Brown. Compensating device for telephonic circuits. Sept. 23.  
21,116 Horace Manders. Method and means of transmitting human speech and other sounds through space. Sept. 25.  
21,164 Siemens Bros. & Co., Ltd. Circuits for automatic or semi-automatic telephone systems. Sept. 25.  
21,165 Siemens Bros. & Co., Ltd., and Ernest Alexander Laidlaw. Cord weights for telephone systems. Sept. 25.  
21,259 Western Electric Co., Ltd. Switching apparatus for interconnecting the lines of an automatic telephone system. Sept. 26.  
21,351 Edward Alfred Graham. Hand-combination telephonic instruments. Sept. 27.  
21,639 Francis Lauder Muirhead. Telephonic apparatus. Oct. 2.  
21,812 Walter Hawley Derriman. Telephone systems. Oct. 3.  
21,924 Aktiebolaget L. M. Ericsson & Co. Common battery telephone system. Oct. 4.  
22,046 Ernest Stewart McLarn. Telephone switchboards. Oct. 6.

#### SPECIFICATIONS PUBLISHED THIS MONTH.

28,368 Boulton. Telephone call recorders.  
3,730 Ellison & Thorrowgood. Single-wire telephone systems.  
21,311 Sacek. Wireless telegraphy and apparatus therefor.  
25,700 Williams. Enumeration of telephone calls.  
30,047 Johnson. Joints for telegraph, telephone, electric transmission poles, and the like.  
3,946 Girardeau. Automatic commutator for radiotelegraphic plants with indirect excitation.  
11,999 Girardeau. Method of mounting, receiving and transmitting apparatus in radiotelegraphic station.

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

### NEWS OF THE STAFF.

Mr. G. FULLER, Local Manager, Accrington, completed 25 years' service with the Company in March last. He entered the Electrical Department at Blackburn in 1886, after being in the Telegraph Department of the L. and N. Railway. He was transferred to Blackpool three months thereafter and remained there until 1889. In that year he went to Lancaster, and in 1898 was made Local Manager at that place. In 1904 he was transferred to Accrington in a similar capacity.

Miss FLORENCE WEST, who has been Chief Operator at Margate Exchange since May, 1901, was, on resigning the Company's service, presented with a large silver-mounted salad bowl and servers. The Local Manager, who handed Miss West the present on behalf of the staff, expressed his wish that it would remind her of pleasant associations with her fellow-members of the staff.

Mr. T. O'CONNOR PARNELL, Chief Inspector, Bath, has been appointed Lecturer in Telephony (ordinary and honours grades) at the Merchant Venturers' Technical College, Bristol, for the second year in succession.

Faultsman S. LORD, of Nelson, resigned in September to proceed to Australia. The staff of the Burnley area presented him with a cabin trunk and a pipe.

Miss ELIZABETH ANNIE M. BRYANT, Testing Operator, Cardiff, has been promoted to be Supervisor, Cardiff.

Miss LILIAN ENRIGHT, Senior Operator, Swansea Central Exchange, has been appointed Supervisor, Docks Exchange.

Mr. VICTOR SMITH, Engineer's Clerk, Southampton, was presented by the staff with a travelling trunk on his transfer to Salisbury as Senior Inspector.

Mr. W. C. CHAPMAN, Inspector, Salisbury, has been transferred to the Andover Exchange area as Linesman Inspector. The Salisbury staff presented him with a kit bag, Mr. Bianchi, the Local Manager making the presentation.

Mr. LESLIE GEORGE BUCKLE, Inspector, Winchester, has been transferred to Dover in a similar capacity. He was the recipient of a case of pipes, presented on behalf of the staff by Mr. Godden, Inspector-in-Charge, Winchester.

Mr. PERCY STEVENSON has been transferred from Folkestone to Winchester as Inspector.

Mr. THOMAS FARWELL REEVES, Acting Chief Inspector, Southampton, whose success in the City and London Guilds and Institute examination was recently announced in the JOURNAL, has since been awarded the first prize in the ordinary grade of telephony, consisting of bronze medal and the special award of £2, the Pewterers' Company's prize; also bronze medal in telegraphy.

Mr. H. J. ALLEN, Contract Manager, Norwich, has resigned his connection with the Company to take up an important position with the National Telewriter Company. He has been connected with the East Coast district during the last five years, and on his departure he was presented by Mr. O. W. Stevens, District Manager, on behalf of the staff, with a silver cigarette case.

Mr. J. C. PIKE, Draughtsman, Engineering Department, Bristol, left the Company's service on Oct. 7, and was presented with a case of pipes and a tobacco pouch from his colleagues. Mr. E. L. Preston, the Engineer, made the presentation, and referred to the high standard of the work executed by Mr. Pike during his service with the Company, and wished him every success in his new appointment.

Miss AGNES McNAIR, Supervisor, Argyle Exchange, Glasgow, has been promoted to be Senior Supervisor in the same exchange, in place of Miss R. Isaacs.

Miss MARY McINTOSH, Supervisor, Royal Exchange, Glasgow, has been transferred to Argyle Exchange, Glasgow, in place of Miss A. McNair.

Mr. JOHN PATON, Exchange Manager-in-Training, Glasgow, has been appointed Exchange Manager, Hillhead Exchange, Glasgow.

Miss ELLEN BROWN, Operator, Douglas Exchange, Glasgow, left on Sept. 28 to go to South Africa. The staff presented her with a dressing case before leaving.

Miss HELEN DUNCAN, Operator, Douglas Exchange, Glasgow, who left the Company's service on Sept. 28, was presented with a brooch by the staff in her exchange.

Miss ROSETTA ISAACS, Senior Supervisor, Argyle Exchange, Glasgow, has been transferred to the new Douglas Exchange in a similar capacity.

Miss HELEN RENNIE, Supervisor, has been transferred from Central Exchange to Douglas Exchange Glasgow.

Miss AGNES McKERRELL, Supervisor, Central Exchange, has been promoted to be Senior Supervisor.

Miss AGNES SIMPSON, Supervisor, Royal Exchange, Glasgow, has been transferred to Douglas Exchange, Glasgow.

Mr. JOHN MOWAT, Night Operator, Langside Exchange, Glasgow, who left the Company's service on Sept. 1 to study and train for the calling of a Medical Missionary, was presented by his male colleagues on night duty, with a brief bag.

Mr. F. BASTOW, Test Clerk, Bradford, has been transferred to the Engineer-in-Chief's exchange equipment staff, Head Office.

Miss ALICE T. MURRAY, of the Fee Department, Edinburgh, was on the occasion of her leaving the service, presented with a handsome dressing case. Miss Murray was respected and esteemed by the members of the office staff, and she carries with her to her new home beyond the seas the best wishes of those among whom she has worked for the past five years. Miss Murray sailed for Vancouver on Oct. 14.

Miss FLORENCE WALKER, Typist in the Leeds district office, resigned, after five years' service with the Company, and was presented with a leather music case and purse.

Miss MABEL PRENTISS, Operator, Thorne Exchange, left the service on Sept. 28.

Miss CHRISTINA MARSHALL BRYCE has been transferred from Currie to Colinton Exchange in place of Miss JANE HALLADAY MORRISON, who resigned on Oct. 5 to take up duty in the Post Office Telephone Department, Edinburgh. Miss Morrison, who is a good operator, entered the service in June, 1909.

Mr. N. B. NOBLE, Exchange Manager, Bristol, has been transferred to Belfast in a similar capacity. Prior to his leaving Bristol he was presented by the staff with a handsome gold Albert and framed photographic group of the Bristol centre operating staff. The District Manager (Mr. A. Perkins) made the presentation on behalf of the general staff, and the Traffic Manager (Mr. A. E. Coombs) on behalf of the operating staff.

Miss ESME B. WHITE, Operator, Dover Exchange, was presented with a lady's fitted dressing-case, together with a clothes brush, on her leaving the Company's service to emigrate to Perth, Western Australia. The presentation was made by the District Manager, Mr. C. F. Ashby, who wished Miss White on behalf of the staff a safe voyage and everything that was good for the future.

#### METROPOLITAN STAFF CHANGES.

Mr. J. HILL, Draughtsman, Paddington, to be Assistant Engineer, City.

Mr. A. G. MALTRY, Inspector, Brixton, to be Chief Inspector, Hop.

Mr. R. C. GOODMAN, Fitter, City, to be Inspector, Paddington.

Miss MADELINE JAMES, Operator, North, to be Fee Clerk, Rentals Office.

Mr. R. BEAKE, Inspector, Gerrard, to be Test Clerk, Paddington.

Mr. A. F. LEWIS, Inspector, London Wall, to be Chief Inspector, Hop.

Mr. W. SMITH, Inspector, Battersea, to be Test Clerk, Brixton.

Mr. J. F. WALLER, Test Clerk, Brixton, to be Inspector, Brixton.

Mr. A. GARDNER, Chief Inspector, Hop, to be Chief Inspector, Kensington.

Mr. J. E. MARSHALL, Chief Inspector, Sydenham, to be Chief Inspector, Battersea.

Miss DOROTHY SWADLING, Typist, Salisbury House, to be Typist, divisional engineer's office, Paddington.

Mr. D. J. BLACKFORD, Fitter, Gerrard, to be Inspector, Battersea.

Mr. D. P. KIPPING, Inspector, Paddington, to be Inspector, Gerrard.

Mr. R. W. WARE, Test Clerk, Paddington, to be Clerk, Electrophone Department.

#### Traffic Department.

Miss ROSINA WARE, Supervisor, Hop, to be Senior Supervisor-in-Charge, Woolwich.

Miss ELIZABETH HUGH, Senior Supervisor-in-Charge, Woolwich, to be Senior Supervisor, Lee Green.

Miss EMMA DECKER, Supervisor, East, to be Senior Supervisor-in-Charge, Tottenham. On leaving East Exchange she was presented by the staff with an umbrella.

Miss ELLEN LEWSEY, Supervisor, Westminster, to be Senior Supervisor, Hammersmith. She was presented on leaving Hammersmith with a gold bangle.

Miss JANET BOOTH, Supervisor, Gerrard, to be Travelling Senior Supervisor for City.

Miss LOUISE SPENCER, Operator, Dalston, to be Supervisor, East.

Miss AGNES HARVEY, Operator, London Wall, to be Supervisor, Woolwich.

Miss RHODA STANTON, Operator, Hop, to be Supervisor, Westminster.

Miss ALICE BARRATT, Operator, Avenue, to be Supervisor, Hop.

Miss LILIAN MURTHWAITE, Operator, Paddington, to be Supervisor, Gerrard.

Miss ETHEL ORME, Operator-in-Charge, Loughton, to be Supervisor-in-Charge.

Miss ROSA MILLER, Supervisor, Hop, transferred as Supervisor to Westminster.

Mr. FRANK HITCHCOCK, Night Operator, Sydenham, to be Night Clerk-in-Charge, Holborn.

Mr. ALFRED DE BUES, Night Operator, North, to be Night Clerk-in-Charge.

Miss ETHEL GILDING, Miss EMILY CARTER, Miss FLORA PRESS and Miss CAROLINE FAGAN, on the occasion of their transfer from Westminster Exchange were each presented by their colleagues with a gold bangle.

Miss EDITH TRINGHAM, Senior Supervisor, Hammersmith, on being transferred to the North-East district as Travelling Supervisor, was presented by the staff with a gold brooch.

Miss EMMA GOODWAY, Travelling Supervisor, North-East district, on being transferred to Hammersmith as Clerk-in-Charge, was presented by the traffic staff in the Eastern district with a gold brooch.

Miss EMILY ORPIN, on her promotion from Kensington to Avenue as Supervisor, was presented with an ebony dressing set by the Kensington staff.

Miss EDITH HILL, Operator, East, on resigning the Company's service, was presented with combined cheese, biscuit and butter dish.

Miss ANNIE JELLEY, Operator, East, has obtained a second class certificate for practical mathematics, Board of Education.

#### MARRIAGES.

Mr. WILLIAM HIGSON, Exchange Manager, Bradford, resigned the service on Oct. 5 in order to take up the position of Engineer with the Chili Telephone Company. Mr. Higson was married on Oct. 18, and set sail for Chili on the following day. The exchange staff and the Traffic Department presented him with a case of silver tea knives.

Miss ANNIE GERTRUDE LUBBOCK, Operator, Bradford, resigned on Sept. 19, after nine years' service, to be married. She was presented with a silver table decoration by her colleagues.

Mr. JOHN ARTHUR GREGORY, Inspector, Shipley Exchange, was married on Sept. 5 to Miss Annie Kent, daughter of Mr. W. R. Kent, Superintendent of the Telephone and Telegraph Department, Bradford Post Office. The Shipley operating staff presented him with a trinket set and tobacco jar, and from the staff in the West Yorks district he received a case of cutlery as a token of their esteem.

Mr. W. E. WALTON, Electrician, Plymouth, who was recently married, was presented with a tea service by the Plymouth and Cornwall staffs. The presentation was made by Mr. G. Hooper, who conveyed the best wishes of the district staff to Mr. Walton.

Miss CLARA SANDERSON, Chief Operator, Ossett Exchange, Mid Yorks district, left the Company's service on Oct. 5 to be married.

Miss CAROLINE ANNIE HATTEN, Typist, Exeter, who had been in the Company's service nine years, left on Oct. 19 to get married. Mr. H. Reid, District Manager, on behalf of the staff, presented her with a marble clock, and wished her every happiness and prosperity, hoping she would prove as successful in her new state as she had been in her position with the Company.

Mr. W. F. RATHBONE, Chief Inspector, Tunbridge Wells, was presented by the local staff with a silver teapot and stand on the occasion of his marriage, which was reported in the October JOURNAL.

Mr. P. W. WHIBLEY, Inspector, Tunbridge Wells, was presented by the staff with a hammered brass log box and copper jardiniere on the occasion of his marriage on Sept. 30.

Mr. P. W. WHITING, Contract Officer, Hull, on the occasion of his marriage was the recipient of an eight-day clock in oak case, subscribed for by the staff. The presentation was made by Mr. G. W. Campbell, Acting Contract Manager.

Mr. FRANKLIN PEET, Clerk, Nottingham Factory, was presented by Mr. C. E. Fenton, on behalf of the Engineer-in-Chief's (Local) and Factory Manager's staffs, with a handsome set of cutlery on the occasion of his marriage.

#### London Traffic Department.

Miss EVA RUMP, on leaving North Exchange, in view of her approaching marriage, was presented by the staff with a dinner service.

Miss FLORENCE COOK, formerly Operator at North, on resigning to be married was the recipient of an electro-plated cruet from the traffic staff.

The following operators at Gerrard Exchange received the undermentioned presents on resigning the service to be married:—

Miss MAUD SPRINGETT. From staff, a tea-service; from operators in her division, fish server and fork.

Miss EMILY HOYLE. From staff, a dinner service; from operators in her division, water jug, half-dozen tumblers, wine glasses and glass dish.

Miss ELLEN GOTH. From staff, a dinner service.

Miss HILDA WILLIAMS. From staff, a dinner service; from colleagues, trinket set and half-dozen silver tea spoons.

Miss ETHEL SOWERBY (Supervisor). From division, silver butter dish; from the staff, a clock.

Miss ELLEN POLLARD. From staff, a toilet set; from operators in her division, silver butter dish.

Miss BEATRICE WOOD, Senior Supervisor-in-Charge at Tottenham, on leaving to be married, was presented by the operating, maintenance and engineering staff at Tottenham and other exchanges with a silver-plated coffee service, and with several gifts from the operating staff at Tottenham.

Miss GERTRUDE YOUNG and Miss NELLIE GAY, Operators, Westminster, were presented with a toilet service and a fruit bowl respectively by their colleagues on leaving to be married.

#### OBITUARY.

The death occurred on Sept. 29 of Mr. F. FITTON, Wayleave Officer. Mr. Fitton, who was in his 59th year, joined the Company's staff at Blackburn in 1903, was a useful and conscientious worker and was much respected. His loss will long be felt by those who have worked with him.

The burial took place on Oct. 2, a wreath being sent by the staff, who were

represented at the funeral service at Harehills Lane Chapel. The body was subsequently removed to Dewsbury for interment.

It is with sincere regret that we have to record the death of Miss HILDA MARY CASSON, Operator at the Headingley Exchange, Leeds, which occurred on Sept. 13. Miss Casson had been just over three years in the Company's service, and had been ill for about eleven weeks.

The funeral, at which the staff were represented by Miss Fotherby, Clerk-in-Charge, Leeds Central Exchange; Miss Wade, Clerk-in-Charge, Headingley Exchange; and Miss Scott, Senior Operator, Headingley Exchange, took place at Lawnswood Cemetery.

A wreath was sent by the staff, in memory of one who was much respected for her genial and kindly nature.

### STAFF GATHERINGS AND SPORTS.

**Liverpool.**—The final staff dinner under the present régime has been fixed to be held on Dec. 29. There is already every evidence of a very large number being present. In addition to the Company's chief officers who have been invited—many of whom have accepted—it is hoped that all former members of the staff of the Liverpool district will endeavour to be present. If they will put themselves in communication with Mr. E. J. Hidden, District Manager, they can obtain all further information that may be required.

**Swimming Club.**—The club held their third annual gala at Guinea Gap Baths, Seacombe, on Oct. 7. The president, Mr. E. J. Hidden, occupied the chair, and was supported by Messrs. F. W. Taylor (District Manager, Manchester) and T. Plummer (Superintending Engineer G.P.O., Liverpool). Some excellent racing was witnessed, the team race (six aside—each man swimming 50 yards) between Liverpool and Manchester being particularly exciting. Eventually the Liverpool team won by half a yard. In addition to the races, the Liverpool Ladies' Swimming Club (English Championship Life Saving Team and N.C.A.S.A. Squadron Champions) gave an exhibition of life saving and ornamental swimming, and there was a polo match between two local teams. The presentation of prizes by Mrs. E. J. Hidden brought a very enjoyable evening to a close. The acting officials and the committee are to be congratulated on the excellence of the programme and the way in which it was carried out.

**Thames Valley.**—A literary and debating society has been formed between the members of the Post Office and the Company's staff at Reading. Mr. Arman, the Postmaster, and Mr. Maclean, the District Manager, have been elected president and vice-president respectively. The first meeting and debate was held on Oct. 12, which was attended by a goodly number.

**Edinburgh.**—The staff held a smoking concert on Oct. 13 in the "Old Union" Hotel, and had as their guests the "C" division of the Inventory staff, both National and Post Office staffs being present. Appropriately to the occasion, the speeches were few, brief, and in a humorous vein. Mr. C. C. Wrote, District Manager, occupied the chair, and in welcoming the guests said they had all been looking forward with no little apprehension to the coming of the Inventory staff. Fear had assailed them of having to explore the depths of Telephone House in quest of all sorts of information and figures. Happily those fears had not been justified. So far they had put the local staff to no inconvenience whatever, and their daily work had suffered no interruption. Nevertheless, although on such good terms, they would not be sorry to see them depart in search of fresh victims. In the absence of the Divisional Officer, Mr. W. F. Taylor, Mr. Padget replied on behalf of the "National" and Mr. T. Harrison, Supervising Officer, spoke on behalf of the Post Office staff. Mr. Harrison, whilst regretting the absence of his friend, Mr. Taylor, thought the opportunity an admirable one for getting in a little more than the usual "10 per cent." that evening. Since the Inventory began Mr. Harrison said he had been forced to modify his previous unfavourable opinion of the staff of the Company, whom he now thought were a very 'cute lot, and when the transfer took place the Post Office men would have to look out; otherwise they would find themselves left. A capital programme of vocal and instrumental music was provided, the respective staffs all contributing to make the evening pass pleasantly.

**Manchester.**—*Swimming: Manchester v. Liverpool.*—On Saturday afternoon, Sept. 23, the Liverpool Squadron Swimming Team visited Manchester and were met by a large number of the swimming members of the local staff and their friends, including Mr. A. C. Godfrey (Chief Clerk) and Mr. A. Cheetham (club secretary). The party spent the afternoon at Belle Vue, and had a very pleasant time. Afterwards they all made their way to the Victoria Baths, and here a glorious match between the Liverpool and Manchester Clubs was seen. Victory hung in the balance the whole of the race, and after a magnificent spurt F. Nelson touched the bar for Liverpool a foot in front of E. Rielly. The teams were later entertained to supper, a "sing-song" following. The teams were (Manchester) Messrs. J. Elliot, T. Guinan, A. Warren, C. S. Westerby, E. Day and E. Rielly; (Liverpool) Messrs. Dudley Taylor, H. R. Taylor, F. Nelson, J. J. Kerrigan, W. M. Rees (hon. secretary) and F. H. Taylor.

**Oldham.**—*Staff Savings Club.*—A whist drive and dance was held in connection with the above at the Reform Club, Oldham, on Saturday, Oct. 14. There was a large gathering, 22 tables being used. Mr. W. B. Cheetham (Electrician) acted as whist master. Prizes were given to the successful players and consolation prizes to the "boobies." Miss Turner, Clerk-in-Charge, Oldham, made the presentation. Refreshments were then served by the members of the committee, and dancing followed up to 11.30 p.m. Mr. J. H. Flint (clerical staff) acted as M.C. A very successful and enjoyable evening was spent withal.

**Sussex.**—The Sussex district staff are holding two functions at the end of December in connection with the termination of the Company's license, the principal of which will be a supper attended by all the Brighton centre staff, and held at the Old Ship Assembly Rooms at eight o'clock on Friday, Dec. 29. A

supper and musical programme and two or three hours' dancing will be the order of the evening. If all members of the Sussex district staff distributed about the various districts would care to join with the Brighton staff on that occasion, the latter will be pleased to see them.

The other function is a dinner to be held at Eastbourne by the Eastbourne and Hastings staff on Saturday, Dec. 30, and the above remarks also apply here.

**Nottingham Factory.**—Mr. D. Macadie, Electrician, Nottingham Factory, has been successful in winning the Cripps' Challenge Cup in the Stanton Golf Club, with the good score of 70 nett (which is six under bogey for the course). Mr. Macadie plays with ten handicap.

### LOCAL TELEPHONE SOCIETIES.

**Bradford.**—The opening meeting of the session was held on Wednesday, Oct. 18, in the Raleigh Café, Market Street, when a lecture was given by the Engineer-in-Chief, Mr. F. Gill, on "Standardisation." There was an excellent attendance of 95, the majority of whom have joined the society. Mr. H. B. Sutcliffe, the District Manager occupied the chair, and expressed himself well pleased with the good attendance, and hoped that it would continue throughout the session.

**Cardiff.**—A general meeting of this society was held on Sept. 6, when the following syllabus was arranged for the first half of the session:—Oct. 12: Presidential address, Mr. R. A. Dalzell; Nov. 9: "Telegraphy," Mr. T. H. Elley; Dec. 14: Open competition.

The first meeting of the society was held in the New Exchange on Oct. 12. Mr. H. Davis was in the chair, and there was a splendid muster. Mr. R. A. Dalzell gave a very interesting presidential address which was much appreciated, and a very hearty vote of thanks was accorded him.

**Cardiff Operators.**—A general meeting of the society was held on Sept. 26, for the purpose of electing officers and committee for session 1911-1912. Mr. W. J. Marsh presided and the meeting was well attended. Mr. H. Davis, District Manager, was unanimously elected president. It was decided to hold five meetings during the session, the first to be held on Oct. 31, 1911. An interesting and successful session is anticipated.

**Dover.**—The first meeting of the session was held on Oct. 17, when Mr. E. J. Woods, Local Manager, Margate, lectured on "The Purpose, Method of Production and Use of Curves." There was a very good attendance of members and several visitors.

**Gloucester.**—A general meeting was held on Oct. 9, presided over by Mr. C. Elliott, District Manager, when it was unanimously decided to form a society again this year. The opening meeting of the session takes place on Oct. 19, when a paper will be given by Mr. G. R. Collings on "Relays." Some good papers have been promised and it is hoped to again have a successful session.

**Isle of Man.**—The first meeting was held on Oct. 13. President and officers were elected. A short address was given by the District Manager on how to get the best possible results out of the session.

**Leeds.**—The first meeting of the session was held on Oct. 18, the president (the District Manager) presiding. After the president's address the remainder of the evening was taken up in five-minute talks of reminiscences by the following members of the staff:—Miss Fotherby, Clerk-in-Charge, Central Exchange, Leeds; Miss Dransfield, Chief Operator, Morley; Mr. T. Robinson, Chief Clerk, Provincial Superintendent's office; Mr. B. Robinson, Costs Clerk, district office, Leeds; and Mr. J. Lally, Sub-Engineer, Leeds. Mr. Joseph Watson, a director of the Norwich Union Office, Standard Buildings, Leeds, very kindly offered to come and give his experiences of the service, past and present, to the society, who gladly availed themselves of this novel and original offer.

**Liverpool.**—The general meetings of both societies have been held and Mr. J. O. Cooper has been elected president of the Telephone Society for the forthcoming year, and Miss Jones president of the Operators' Society. Both societies have prepared a strong syllabus for the new session, and it is evident that the interest in these societies is being well maintained.

**Nottingham.**—The first meeting of the society is being held on Friday, Oct. 27, at Morley's Café, Wheeler Gate, when the session will be opened with a paper by Mr. W. S. Cox, entitled "Some Notes on the 40-volt Common Battery System of the Post Office."

**Plymouth.**—The session opened on Oct. 4 when the president, Mr. R. A. Dalzell, gave a very interesting address, which was followed by a paper on the "Wheatstone Bridge," by Mr. W. C. Harris.

**Sheffield.**—The first meeting of the present session was held in the Central Café, when the president (Mr. E. J. Johnson) gave an address, and Mr. J. L. Wilson (Contract Office) read a paper entitled "Some Notes from a Contract Officer's Note Book." The District Manager (Mr. R. C. Bennett) was in the chair. There was a fair attendance and a good discussion took place at the close of the meeting.

**Sheffield Operators.**—This society will commence its meetings for the session on Oct. 26.

**Torquay.**—On Oct. 16 the session was opened for 1911-12 by the president, Mr. H. Reid, District Manager, who in a short address gave his views on the coming transfer, and afterwards read a paper on "Allocation of Capital Expenditure." There was a good attendance and a most enthusiastic discussion followed.

**Newcastle.**—The first meeting of this society was held on Oct. 9 before a good attendance of members. A lecture on scenery in Devon and Cornwall was given by the hon. president, Mr. A. Drummond, who was at one time District Manager of the Plymouth district. The numerous illustrations depicting the fine scenery were much enjoyed, and the interesting matters in connection with them, including the advent of the telephone to many places, was fully explained.

### EXAMINATION SUCCESSES.

This month's list is held over owing to pressure on space.