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TELEGRAPH SUPERVISING OFFICERS' CONFERENCE.

THE third annual Conference of Telegraph Supervising Officers was held at the Secretary's Office, G.P.O. North, from Feb. 22 to Feb. 25, inclusive. The chair was occupied by Mr. R. A. Dalzell, C.B.E., Chief Inspector of Telegraph and Telephone Traffic, and the following Telegraph Supervising Officers attended:—

Misses J. Blackwood (Glasgow); L. Hartje (Liverpool); E. Hill (Birmingham); E. Makin (Manchester); and H. Wallis (C.T.O.). Messrs. T. Barratt (Nottingham); G. Brown (Leeds); Mansfield Brown (Newcastle-on-Tyne); L. Burford (L.P.S.); B. Cadman (Liverpool); E. Fisher (Edinburgh); J. Gaiter (Aberdeen); G. Gibbs (Southampton); J. Hopgood (C.T.O.); G. Hutchinson (C.T.O.); J. Kermode (Dublin); J. J. Mansell (C.T.O.); C. Mansell (Plymouth); J. McKeown (Belfast); D. Miller (Glasgow); T. B. Morrall (Sheffield); R. Osborne (Birmingham); F. Riley (Bradford); D. Ross (Leicester); C. Sanderson (C.T.O.); G. Smith (Bristol); R. Stubbs (Hull); E. Tildesley (Cardiff); J. Wadsworth (Manchester); and R. Wright (Brighton).

At several of the sessions Mr. John Lee, Controller, and Mr. A. W. Edwards, Deputy Controller, Central Telegraph Office, were present and took part in the discussion. Members of the Traffic Section also attended.

Sir Evelyn Murray, K.C.B., Secretary to the Post Office, who was accompanied by Mr. F. J. Brown, C.B.E., Assistant Secretary (Telegraph Branch), in opening the Conference said that the usefulness and value of these Conferences did not begin and end in that room. They wanted to bring together for the common good the experience and knowledge of the traffic experts at Headquarters and the officers in charge of provincial telegraph offices. The quality of the telegraph service was now as good as, if not better than, in pre-war days. The number of complaints from the public was extraordinarily small and the British public had no false modesty about making complaints. If there was one qualification that could be made it was a doubt as to the efficient and economical organisation of the delivery service. The cost of the delivery service was about £1,600,000 a year, or about 5d. a telegram. On the question of economy, which was one of the burning questions of the day, one fact which was striking and disturbing might be mentioned. In the estimates for next year it was reckoned that the operating costs of the telegraph service would alone exceed by 1½ millions the telegraph revenue, that was to say, the revenue of the telegraph service would not be sufficient even to meet operating costs, let alone charges for depreciation, engineering costs, etc., and there was no prospect of a material increase of revenue to meet these charges. Any possibility of reducing or bringing that deficiency within measurable limits depended on economies that could be made. He proposed to revise establishments during the coming year and to bring them as far as possible into closer agreement with actual traffic requirements. He extended a cordial welcome to the representatives from provincial offices and expressed the hope that the Conference would be eminently successful.

The agenda was then proceeded with. Papers were read and discussed in the following order:—

“The method of supervision likely to promote the most efficient internal management of telegraph traffic. The desirability of specialisation on testing duties.

Test Records.

The treatment of telegrams at the enveloping stage, and the delivery of telegrams.

Telegraph Breakdown Organisation.

The extension of quadruplex ‘simplex’ working.

Telegraph Concentration.”

Discussion throughout was animated and instructive. On completion of the agenda, the general consensus of opinion on the subjects discussed was presented in a series of conclusions, which were adopted unanimously.

The proceedings of a most successful and inspiring Conference terminated with a cordial vote of thanks to the Chairman.

On the evening preceding the opening of the Conference a dinner was held at the Holborn Restaurant at which the provincial representatives were met by members of the Headquarters Traffic Section and many Supervising Officers of the Central Telegraph Office. A pleasing feature was the number of female Supervising Officers from the Central Telegraph Office present.

IMPRESSIONS OF THE 1921 TELEGRAPH SUPERVISING OFFICERS' CONFERENCE.

BY A PROVINCIAL REPRESENTATIVE.

After one's experience at the Telegraph Supervising Officers' Conference it is easier to understand why conferences are so prominent a feature in the life of every important organisation. From the very beginning of the Conference the elements without and the “powers” within vied with each other in making the day bright and pleasant for the delegates, and a most agreeable atmosphere was created in which unity of purpose and earnestness of spirit were to have free scope.

We were started happily on our deliberations by the Secretary, Sir Evelyn Murray, who welcomed us to Headquarters, and indicated some of the problems which were to have our attention; and towards the conclusion of the Conference we had some felicitous words from the Assistant Secretary, Mr. F. J. Brown, who told us also a little of the history of the Imperial Cable in the setting up of which, by the way, it is understood, he himself has played no inconspicuous part.

If before our meeting there was a feeling that the personnel of the conference fell into two distinct groupings—the Traffic Section and the delegates—the idea was dispelled early in the proceedings, as we all came under the genial and kindly influence of the Chief of the Traffic Section and his staff.

The blending process was initiated by “the welcoming handgrip and smile” given at the Conference Dinner to each and every visitor by Mr. Dalzell

and his officers, and the intervals for informal conversation brought the delegates to know each other more and more intimately, so that by the time the several courses had disappeared and the attractive musical programme had been disposed of any misgivings or anxieties as to the nature of the reception we should obtain at the Conference Room next day, vanished into the "Never has been."

A striking, and in the writer's opinion, a not unwelcome feature of the Conference was the large number of "set" speeches made by the delegates. No doubt this was a necessary consequence of the desire to express not merely one's own personal opinion on any subject but also the opinions held by other responsible local officers. Even if there is a certain amount of repetition involved, as offices of more or less the same standing have their similar local practices and customs described, it is probable that greater accuracy and clearer judgments are likely to be presented by prepared speeches on the main questions. Furthermore, as the discussion develops and new viewpoints present themselves notes can be most profitably made in the appropriate portion of the set paper. A query here or there may be answered before it has been asked and then of course it need not be put, or, as "iron sharpeneth iron" fresh queries may be suggested and can be readily inserted at will in a set speech.

The main papers—most of them written by the Traffic staff—first presented to our minds the Unity of Purpose which was a specially marked impression received from the Conference, and it was a happy direction of the Chairman that the several papers, although typed and circulated previously should be read by the gentlemen who prepared them. The respective personalities of the writers, their evident grip of the subjects, and their earnestness of manner gave added interest to the papers, and with the pervading spirit of brotherliness, already clearly apparent, produced on us the further impression that the Traffic Section was "built as a city that is at unity in itself."

"For thither the tribes go up—"

The tribes in this case being the Provincial representatives, and although I say it myself who am one of them, I think they would altogether be hard to beat for a gathering of delegates—eager and earnest and at the same time unpretentious; serious and thoughtful, and at the same time enjoying a laugh when as happened frequently a spark of wit flung out vibrations to excite our risibilities. From Aberdeen to Plymouth, from Dublin to Hull, from the north, east, west and south they came, each to bring his individual experience to the common meeting-place to have misunderstandings put right and to catch something of the spirit of progress in methods and manners.

The lady delegates, contrary to supposed traditions, left most of the talking to the mere males, but we felt at the same time that we owed no little part of the homeliness and pleasantness of the surroundings to their presence amongst us.

Finally, we were impressed with the recital of the many subjects which Mr. Dalzell told us were occupying the serious attention of the Traffic Section, and we all came away feeling that wherever our "daily round" took us our common task would never again appear mean, because we had been made to realise that in our lesser struggles with local problems we were to have, with those who handle the wider problems at Headquarters, one common air—the maintenance of the British Post Office Telegraph Service as the most efficient in the world.

A brief word of special thanks before we stop. First of all to the Chairman (Mr. Dalzell) who very thoughtfully arranged to release the delegates early on one of the afternoons in order that they might have an opportunity of seeing the several items of telegraphic interest in the Efficiency Exhibition at Olympia. Secondly, to the Controller for the pleasure of the visit to the Central Telegraph Office and for the provision of the several very patient and painstaking guides, and thirdly, to our Conference Secretary, Mr. A. P. Ogilvie and his enthusiastic colleagues for their untiring friendliness and helpfulness to the "Provincials."

If back again amid the old worries and duties we try to gather into a few words the broad lesson to be learnt from our experiences in Conference week, the following concluding lines may not be wholly inappropriate.

"With work, good cheer and kindness and laughter up the sleeve,
This queer old world's not half so bad as some folk make believe."

PORTABLE TELEPHONES.

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

DEAR SIR,—I enclose a cutting from one of your brilliant and up-to-date contemporaries. (Our correspondent encloses a picture of a portable telephone described as a "Berlin invention" which enables subscribers to fix the instrument in any apartment they choose by means of sockets on the walls). It depicts and describes a piece of apparatus, the principle of which has been in use in this country ever since telephones have.

The fact that it is called an "innovation" is a delightful commentary on the knowledge of the subject described, and throws a light upon the methods of the critics who will even go to Germany for a 40 year old "novelty" as evidence of the superiority of other telephone systems over ours.

A. W. ROBINSON.

BAUDOT MANIPULATION IN ENGLAND AND FRANCE.

IMPORTANT CHANGES IN BRITISH OPERATING PRACTICE FORESHADOWED.

NEARLY all of the inland Baudot circuits of the United Kingdom, which now number 30, have been installed since the outbreak of the great war; therefore, the conditions as regards the staff available for training were in most cases abnormal. Excellent results were obtained, especially with the staff temporarily obtained for working the system, but with the return of staff from war service it was felt that with the restoration of the pre-war staff conditions certain operating problems would have to be considered. At the Telegraph Supervising Officer's conference of Jan. 1919, various questions relating to the Baudot system and the experiences at the different offices were discussed.

In a paper read before the London Telegraph and Telephone Society on Nov. 25, 1919, dealing with the Paris Telegraphs, Mr. H. Booker mentioned the method of manipulation observed while in the Central Telegraph Office there, pointing out that while the signalling looked laborious, the French operators remained at sending points regularly for four successive hours, and that the question of the difference of the British and French methods was worthy of a closer investigation.

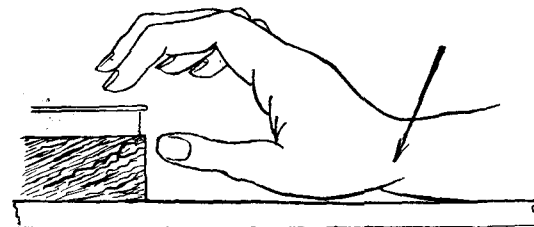


FIG. 1.—FIRST POSITION: THE WRIST IS THE PIVOT OF THE MOTION.

At the second Telegraph Supervisors' Conference it was recommended that something should be done in the direction of regularising the Baudot training which had been determined largely by local circumstances.

A conference was appointed to consider the matter under the presidency of Mr. John Lee, the Controller of the London Central Telegraph Office.

The Conference visited certain provincial towns and observed that each of them had a general style peculiar to its own office, and that not one of them quite agreed with the methods adopted in the other offices.

Moreover, it was very evident that few, if any, were altogether free from objection, and in general the Baudot signalling showed decided tendencies towards styles which were cramped and restricted.

Much useful information was obtained from Baudot operators, from learners, dirigeurs and instructors, and valuable assistance was rendered by U.P.W. representatives.

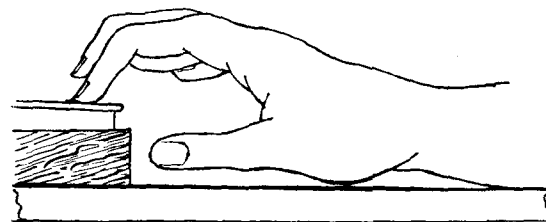


FIG. 2.—SECOND POSITION: THE WHOLE WEIGHT OF THE HAND SHOULD ACTUATE THE KEYS.

The inquiries tended to show that in some cases operators have been passed as qualified for handling traffic at too early a stage and had drifted into questionable practices both as regards posture and manipulation—not infrequently these could be traced to the learner having imitated a style practised by an expert operator whose style was open to serious objections.

The conference deliberated upon the collected evidence and it was realised that a freer style of manipulation was essential. Also, that while such a system of Baudot manipulation would promote efficiency, the interests of the staff would be advanced by the adoption of a method of sending which would ensure greater freedom in posture and in signalling inasmuch as it would prevent the appearance of such disabilities as have been very difficult to remedy in the case of Morse telegraphy.

period of three days, in the morning and afternoon on two of these, and in the late evening hours on the remaining day, atmospherics being known to be more prevalent during evening and night working. Fifteen minute periods of transmission and reception were arranged for, with fifteen minute intervals, to allow of necessary repetitions being obtained. Some difficulty was at first experienced, but conditions improved vastly later, when perfect signals at 100 words per minute were obtained. Indeed, so successful was the working at this rate of speed that trials at 150 words per minute were made with complete success, and a succession of messages were received at Aldershot without a single repetition being required.

It speaks volumes when it is stated that of the 575 telegrams transmitted to, and 478 received from, Aldershot, a total of 1,053, only seven per cent. did not altogether correspond with the typed copies of the original telegrams, the remaining 93 per cent. being correctly received. Of the 150 messages requiring correction, 9 per cent. of the errors were attributed to atmospherics, 6.5 per cent. to operating errors and the balance to valve troubles, apparatus faults, etc., So perfect were the signals that had Creed apparatus been installed Creed working could have been successfully achieved.

A facsimile of the Morse signals as received at 150 words per minute is given.

The trials demonstrated the possibilities of Wireless Wheatstone working between London and Cologne, and the utility of such as an auxiliary to the existing Cable and land-line service in times of pressure and interruption. Wireless Wheatstone would also have the added advantage that without the installation of Wheatstone apparatus it would not be possible to "listen-in" as is the case with key working.

A. W. EDWARDS.

THE BAUDOT.—XIX.

At the left hand bottom corner of the front of the receiver and in close proximity to the impression wheel V¹ (Fig. LV), and its companion the typewheel, is fixed a rectangular brass plate P. This plate is screwed to the casing P¹, see Fig. LIV, which gives a sectional view of the parts about to be described. A short, shouldered axle (Figs. LIV and LVI A'', and LV S) is screwed firmly on to the plate P. Fitting easily upon this axle is a metal sleeve l (Figs. LIV to LVI to LVI). Upon the inner side of l and at right angles to it is a steel prolongation known as the impression arm b (Figs. LIV, LVI), tapering to a rounded end. Just behind this arm is a triangular cam piece H (Figs. LIV to LVI) maintained in position on b by three countersunk screws 1, 2 and 3 (Fig. LVI). H is provided with a heel piece t and a triangular spur a, and itself terminates in a pointed edge f. The latter is capable of engagement with the teeth of the impression wheel. When at rest the edge f of H remains in position close to the rotating impression wheel, which regularly presents its notched periphery before it.

Upon the sleeve l is lightly fitted a small steel drum l' which carries a ratchet wheel G round its inner edge (Figs. LIV to LVI). Firmly fixed over the drum l' is another sleeve l'' with two roughened channels cut round the outer edges of its circumference. The drum l' and the sleeve l'' are together known as the impulse cylinder.

Another cylinder, the compression cylinder, is shown z (Fig. LV). It is centred at x on to an axle fitted with a spiral spring and screw R, which retains z against the impulse cylinder. A small handle h moved in the direction of the arrow permits the raising of z from the impulse cylinder and the insertion of the paper tape necessary for printing.

The threading of the tape is shown in Fig. LV by means of heavy lines round the paper-guide T¹ the pin-guide T, then round the impression cylinder, and in between the impulse cylinder and the compression cylinder, and then, as indicated by the arrow, out in the direction of the paper-shoot N.

When mounted upon l the ratchet wheel of l' is engaged by the flat spring and click K, K, fixed on the upper part of the impression arm b (Fig. LVI) and known as the impulse click and by a second click and spring K¹K¹ (Fig. LV) which in their case are fitted to the support of the powerful U-spring E. K¹K¹ bear the name of the retaining click and spring.

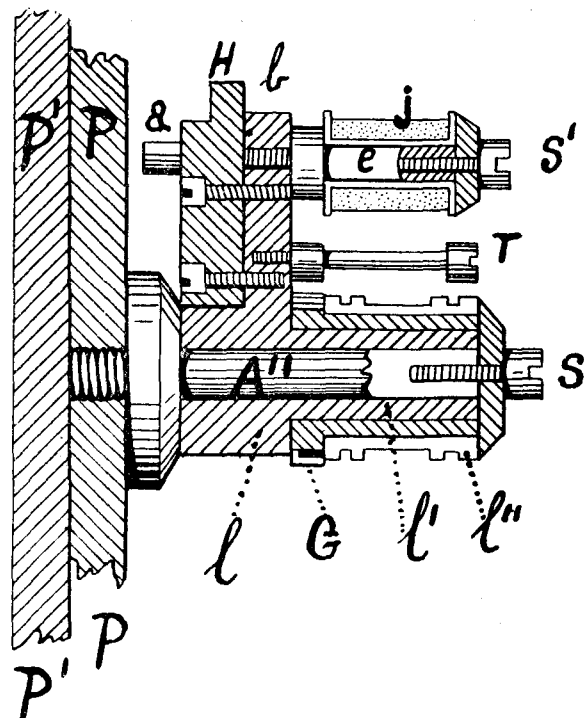


FIG. LIV.

At the extreme end of the impression arm b (Fig. LVI) is a smaller axle e upon which, capable of free rotation is a troughed cylinder called the impression cylinder j, which is filled in with gutta percha, paper, or similar resilient material (Figs. LIV to LVI). T, is the pin guide already mentioned. A grooved metal wheel, into which is fitted a removable circular pad of inked felt, rotates over the periphery of the typewheel under the pressure of a spiral spring, and thus inks the embossed letters ready to come in contact with the paper band. S, S¹ are screws which retain the cylinders upon their respective axes.

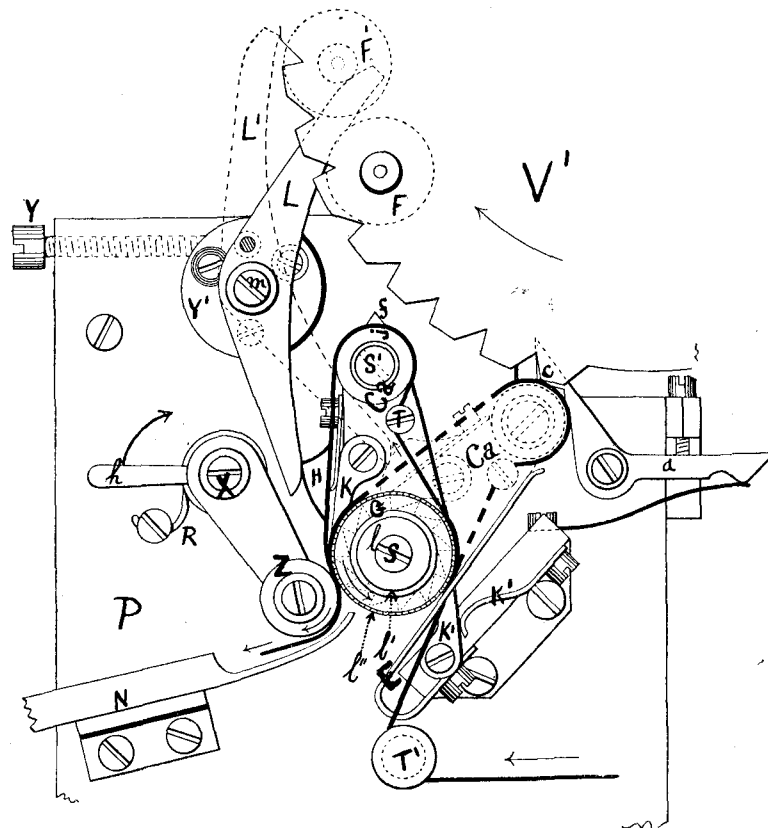
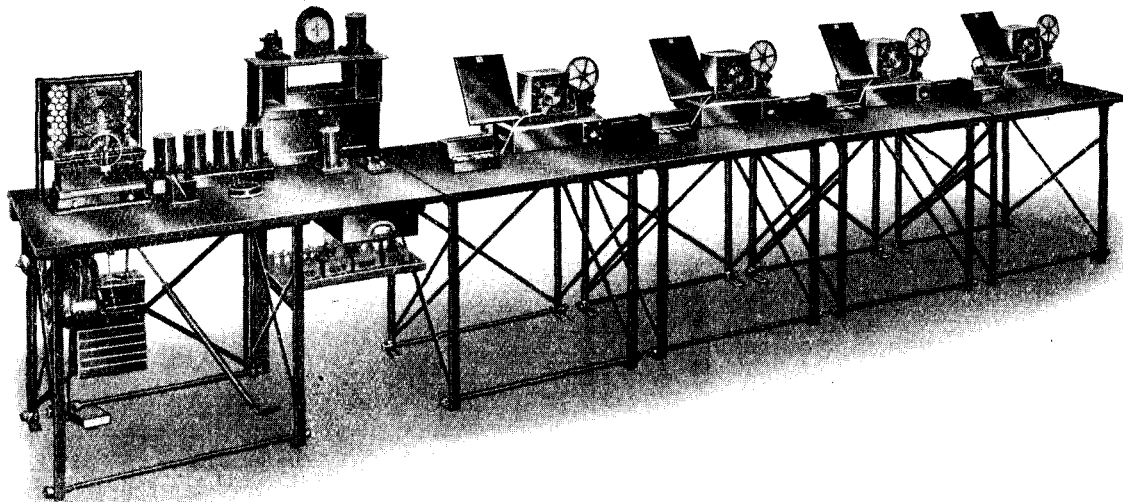


FIG. LV.

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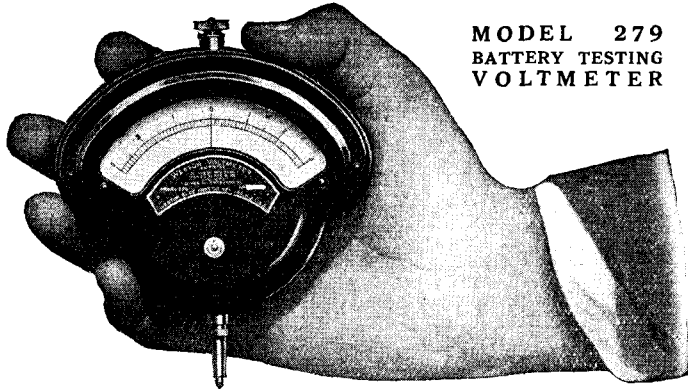
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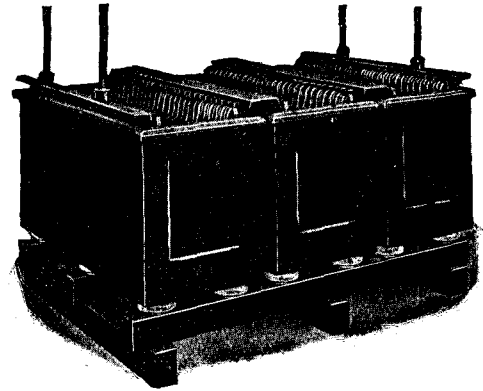
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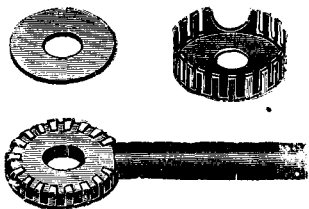
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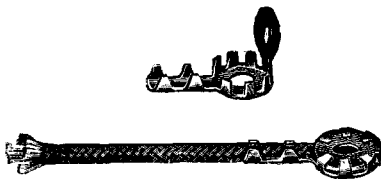
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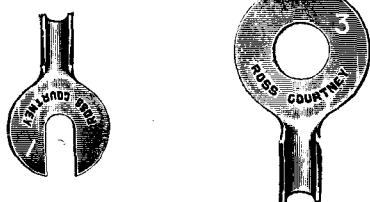
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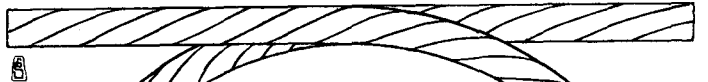
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We are now in a position to study the sequence of movement following on the release of Ca (Figs. LI, LV), by the click *c* moved by the action of the pedal and other levers already described.

As soon as the retaining click *c* of the lever *d* is jerked backwards it releases hold of the spur *a* (Figs. LIV, LVI) fixed to H which forms a solid part of the entire impression movement Ca. The latter impelled by the U-spring E is thrown to the left upon its axle A" (see also S, Fig. LV), and in the same direction as that of the rotating impression wheel V¹. The release of Ca is so timed as to permit the engagement of the portion *f* of the cam H (Figs. LIV to LVI) between two of the impression wheel teeth and the impression wheel V¹ in its rotation therefore carries the arm Ca with it to a position, indicated in heavy lines in Fig. LV, free of V¹. As the

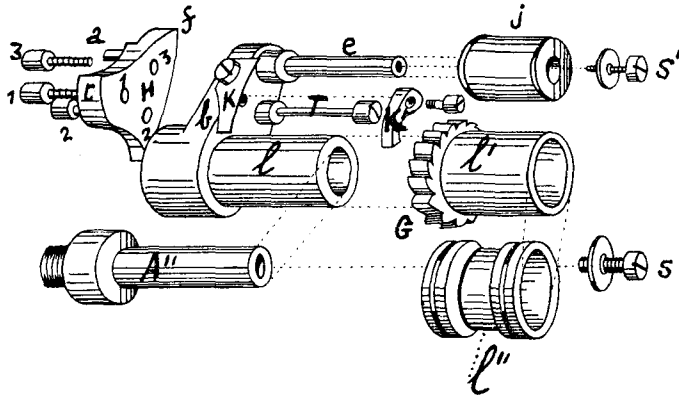


FIG. LVI.

typewheel and V¹, the impression wheel, rotate together the movement of Ca immediately in front of the lettered periphery of the former permits of a rolling movement of *j*, the impression cylinder (Figs. LIV to LVI) against it thus printing the desired letter. This done Ca remains in the indicated position free of V¹ until the unlettered 9/40 of V¹ comes round when at that very instant a roller F (Figs. L and LV) mounted on the back of the impression wheel V¹ meets the upper portion of an oscillating replacing lever L and throws the latter back on its axis *m* into the position F¹ L¹. This action causes the lower portion of L to strike forward against the heel-piece *t* of H (Figs. LV, LVI) thus pressing back the entire impression movement Ca and again locking the spur *a* of H with the retaining click *c* of the lever *d*.

The axis *m* of the lever L is mounted on a circular platform Y¹ (Fig. LV) which latter is screwed to the brass plate P, by three screws and slotted openings. By means of the latter and a long screw Y, which passes through the thickness of the Plate P itself, the position of the platform Y¹ and the lever L may be adjusted as regards the exact striking distance of L and the heel of the cam H.

(To be continued.)

REVIEWS.

"Plain Economics." By John Lee, M.A. 110 pp. Sir Isaac Pitman & Sons. 3s. 6d. net.—Mr. Lee's work has for sub-title "An examination of essential issues," and it proceeds in simple and straightforward terms "to make some complicated issues plain." Economics the author describes in short as the science of making our living; that is, he explains, not my living but our livings mutually. It is strange, therefore, that a science which touches all men so nearly is so little studied. Indeed, to many, economics appears a formidable subject not lightly to be grappled with, or one touched on sparingly in the higher stages of education and soon forgotten. In a series of instructive chapters, this short book deals with theories of exchange and value, and describes the chief factors in production, explains Spending and Consumption, Currency, Credit, Competition, Guild Socialism, and the Economics

of the State, and touches helpfully on all those burning questions with which the subject bristles.

Mr. Lee makes a plea in his last chapter for a fusion of theories. After showing how Individualism has had its day and how Bureaucracy, Socialism, and Communism do not provide altogether acceptable economic remedies, he comes to the conclusion that a new science of management with closer regulation of profits, and a closer interest of the State in methods of ownership and obtaining capital indicate the next lines of development. Co-operative effort and pride in our craft will lead us not to undervalue our work and to spend our leisure more worthily, for after all, as he says, man does not live by economics alone. In the chapter on "The State and Benevolence" he says very happily "Alms as a system brought the best impulses forth with the worst results," and in reference to Society accepting the heavier burden in support of the weaker, which makes heavy demands on those who have more means: "If the toss of a coin to a mendicant establishes some sort of claim to the Kingdom of Heaven, we shall be able to say in our day that the prompt payment of a demand for taxes makes a similar claim. It is less picturesque." In another place we note that Mr. Lee says that legislators all the world over are not at all certain that it is desirable to arrest the influence of the "combine." We venture to suggest that this may be because constituent members of combines are largely members of legislatures "all the world over."

"Elementary Telegraphy." Second Edition Revised. By H. W. Pendry, author of the "Baudot Printing Telegraph System." 7s. 6d. net.—This book contains over 200 pages of clearly printed matter, with nearly the same number of illustrations, and can be well recommended for the use of the elementary student.

A valuable account of accumulators, construction of aerial lines, manufacture and description of air-space cables, and an elaborate explanation of central battery circuits, now so widely used, are included in this handy technical volume.

A somewhat unusual feature is the inclusion of a number of questions at the end of each chapter, dealing with its contents. This should enable the student to commence his training for the examination from the beginning of his studies. The appendix contains questions set at the City and Guilds of London Institute Examinations, Grade I, from 1908 to 1920 inclusive.

The whole of the elementary ground is covered in a masterly and readable manner with a thoroughness in keeping with this well-known teacher, and writer of the "Baudot Telegraph System."

A perusal of this book by Service members other than students, should prove of value in the acquisition of valuable hints and information not generally contained in text books.

"Wireless Telegraphy and Telephony." An outline for electrical engineers and others. By L. B. Turner, M.A., M.I.E.E. Published by the Cambridge University Press. 195 pages. Price 20s. net. The object of this book, as stated in the preface, is to provide persons who are neither wireless operators nor specialist wireless engineers, but who occupy an intermediate position between these classes, such, for example, as electrical engineers who have never studied this particular branch of their general subject, with a brief account of the present position of wireless telegraphy and telephony.

The whole ground of modern wireless telegraphy and telephony is covered, although owing to the limits of space only an outline sketch of the subject has been possible. After an introductory chapter, in which the general principles of the subject are explained, there follow chapters dealing with electromagnetic radiation, oscillatory circuits, the production and the detection of high frequency alternating currents, the thermionic tube, the use of the triode as amplifier, rectifier, and oscillation generator, retroactive amplification and rectification, and wireless telephony. The

concluding chapter deals with several important miscellaneous points which could not conveniently be dealt with in the preceding sections.

The book is characterised throughout by the extremely clear-cut presentation of the subject to which those who have read any of the author's previous contributions to the literature of wireless telegraphy will be accustomed. Although the book cannot be called a mathematical treatise, the author has not hesitated to introduce mathematical reasoning where this serves to facilitate the explanation of any point. The mathematics are, however, in no case beyond the scope of an engineer with an ordinary mathematical training.

The book is well arranged, the printing and paper are good, and the diagrams and plates are extremely clear. Most persons have experienced at one time or another, when reading a portion of a book which necessitated frequent reference to a diagram, the annoyance of having continually to turn to and fro between the diagram and the text, owing to one being on a different page from the other. The diagram illustrating the action of the Poulsen arc has a considerable amount of text referring to it, and to avoid the difficulty mentioned, it has been printed twice, on successive pages, so as always to be in view while the text referring to it is being read. This is a very good point in the get-up of the book, and we wish it were more often adopted by publishers.

For a first edition the number of printer's errors which we have noticed is very few.

In discussing the relative advantages of signalling on a Poulsen arc installation by the use of a back-shunt or of a spacing wave, the author says that the use of a spacing wave is objectionable because power is being consumed just as much during spacing as during marking. This would lead the reader to infer that with the back-shunt power is not being consumed during spacing, which, of course, is not the case.

In the discussion of the triode as oscillation generator, the argument in the third paragraph on page 130 is not clear. It would seem that some words have been omitted by the printer from this paragraph.

In connexion with the design of a wireless telephone system with which two correspondents can converse with the same ease as with an ordinary telephone, the listener being able to break in and interrupt the speaker when necessary, the author uses the description "duplex" wireless telephony for such a system. In a footnote he says: "A 'simplex' connexion is one along which communication can pass in only one direction at a time. A 'duplex' connexion carries communication in both directions simultaneously. *The ordinary line telephone provides a duplex connexion.*" (The italics are ours.) We are afraid that a sending and a receiving clerk at each end of an ordinary line telephone, endeavouring to carry on communication in both directions simultaneously, would not succeed in passing much traffic!

On page 171 certain percentages for antenna efficiencies are given as 12 per cent. and 25 per cent. respectively. These should apparently be 14 per cent. and 33 per cent. respectively.

The foregoing are the sole adverse criticisms we have to offer. The book is a really excellent outline of the subject, and we have read it with great pleasure. We are certain that, if Mr. Turner could find time among his multifarious duties to produce a larger treatise on the same lines, but going more fully into the subject, it would meet with a warm welcome.

"Introduction à la théorie des Courants téléphoniques et de la Radiotélégraphie. By J. B. Pomey, Ingénieur en chef des télégraphes. With a preface by A. Blondel, membre de l'Institut. Published by Gauthier-Villars et Cie, Paris. XIV. + 509 pages.

This volume constitutes an advanced course on the physics of telephone transmission and wireless telegraphy.

The author makes free use of vector calculus, but as many telegraph engineers are not familiar with this powerful branch of

higher mathematics the first chapter of the book is devoted to a very useful, though necessarily brief, sketch of its principles. The whole field of the fundamental theory upon which modern ideas of telephonic transmission and wireless telegraphy are based is then covered, the various problems involved being dealt with in a remarkably thorough and logical manner. One chapter is devoted to a discussion of the theory of the catenary and of the other mechanical points involved in the construction of wireless aerials and their supports.

We are disappointed to see that the author has not touched upon the thermionic valve. Possibly in a later edition a chapter will be added dealing with this important subject.

Otherwise the book is remarkably complete, and we are sure that it will be found of great use to wireless and telephone engineers and others interested in the higher branches of the subject.

TELEGRAPHIC MEMORABILIA.

THE Annual Report of the Post Office Relief Fund published towards the end of February and giving the certified balance sheet for the year ended Aug. 31, 1920, is an interesting and gratifying document, in that it shows a decrease on the liabilities of the fund as compared with the preceding year of over £500, *i.e.*, £22,073 as against £22,627. This result is more satisfactory even than the figures would appear to declare, as under the Committee's scheme for the Secondary Education of orphans there is a steady increase in the number of children benefiting owing to the number of dependent children coming within full educational benefits due to the efflux of time. The nominal value of investments held in August last, alone reaches the remarkable figure of £314,735.

Somehow or other the appointment of Lt.-Col. A. F. H. S. Simpson, C.M.G., R.E., late Director of Wireless to the Indian Telegraphs, to a seat on the Boards of the Marconi Companies has been overlooked. The connexion of the Lt.-Colonel with wireless interests is of no recent date. As far back as 1905-6 he could have been seen in his Alipore headquarters near Calcutta, well alive to the future of this branch of telegraphy. He will, doubtless, recall how in those earlier days one of their high teak masts was suddenly swept away in a hurricane, snapped off like a carrot close to the ground, the stays being torn out of the earth, and the whole being carried out to sea, lost for ever to sight and knowledge.

So significant an event as direct wireless working between London and Berlin by means of Creed apparatus could not indeed be passed over without something more than the mere recitation of the fact. It marks a noteworthy milestone along the road. The communication is of course an expensive one, as it entails the up-keep of the Stonehaven wireless station practically as a "repeater" office, and the utilisation of a wire between London and Stonehaven as a speaking circuit. That there are interruptions is of course natural—Moscow bumping in now and again, for example—but then interruptions are by no means unknown on the older system of utilising metallic conductors. It is understood that the London end of the—what shall we write in place of "wire?"—will shortly terminate in the Cable Room, an allocation proper to Anglo-Continental circuits.

I find that very few of my acquaintances have read the particularly lucid articles on "The Wonders of Directional Wireless" by W. H. Eccles, a scientific expert of no mean repute, which appeared in the *Daily Telegraph* of Feb. 11. The article had special reference to Directional during the late war. The chain of directional wireless stations established by Capt. H. J. Round, of the Marconi Company, and others, and extending along the East Coast of England, enabled the British, and as also, let it be placed on record, a similar chain of stations established by German engineers in Belgium and North-West Germany, enabled the Germans to locate the position of hostile air-craft, sea-craft, &c. It was not, be it understood, so much that the messages themselves invariably conveyed the desired information, but that the strength of those signals as reported by three or more observing stations were utilised by a process of triangulation to determine the exact locality of the origin of those signals at the *observed* stations. The locality of German submarines and German air-craft was repeatedly obtained by this means. With regard to air-craft, Mr. Eccles remarks that the work of British observing stations, "was more successful with Zeppelins than with aeroplanes, probably on account of the fact that the antennæ used by aeroplanes in transmitting messages are greatly inclined from the vertical."

The German method of determining the position of their own aeroplanes or Zeps. consisted, continues the writer "in the aircraft sending signals so that two or more German land stations might determine its bearings; these stations compared their measurements (*using land lines*), and then telegraphed the result back to the plane or airship. The Allies, on the other hand, worked by other means. Certain land stations or wireless beacons transmitted signals, which were picked up by a loop antennæ on the aircraft, and the observer, by plotting the bearings of these known stations on a map, was able to

determine his own position. The advantage of this method was that the aircraft remained perfectly silent, and therefore did not give its position away to the enemy.

"An interesting story is told of the German method of position finding. It occurred in the Mediterranean, where two of our anti-submarine watching stations, *not connected by cable*, were forced to exchange observations by wireless, thus disclosing their existence to the Austrian submarines. On one occasion an Austrian submarine came to the surface, asked our watching stations to determine her position, sent a string of signals for them to observe, waited for them to deduce and telegraph the reply, thanked our watching stations, and disappeared!"

The necessity for the co-operation of *wire* telegraphy in these defensive measures will be quickly understood by certain "T. & T. J." readers who, either in a civil or military capacity during the late stressful years were in close association with the various arms of the Services concerned. To these the special stress of my italicisation of the above three and four words respectively, will not be necessary.

This altogether engrossing account concludes with references to the peace-time applications of this entrancing phase of wireless, some of which have already been more or less skeletonised in these columns from time to time. The contemplated *radio-phares* of the French, for example, by means of which vessels properly equipped may determine their own positions, warnings upon approaching dangerous coasts during foggy weather, &c.

His final paragraph treats in a few words of the possibilities of duplex wireless over long distances which many readers may not know is arranged as follows:—Each terminal is equipped as a transmitting and receiving station as is the case, let us say, in a duplex sounder circuit, but in the case of long distance duplex wireless, from these islands to America for instance, the transmitting and receiving stations would be separated a considerable number of miles, probably 40 to 50, the receiving and sending stations being connected by a couple of wires or one line duplexed so that the necessary RQS, &c., could be exchanged.

The use of *directional* wireless in duplex working is essential for, "the receiving station has a loop antennæ, and is therefore directional; this is arranged so that it is broadside on to its transmitting station and edge-on to the distant station to which it is listening. When this principle is applied at both ends it is possible for the operators to read the signals from a great distance, while the relatively near-by transmitting station is simultaneously sending messages; each receiving station, in fact, turns a deaf ear to its transmitting partner."

The difference between the duplex use of *directional* and the war and peace time uses of the same phase of wireless is simply that in the latter the loop antennæ is stationary, only having one definite station for its correspondent.

The following excerpt from that staid but always interesting weekly, *The Observer*, strikes in a pleasantly humorous manner the psychology of the telephone and the public, or the public and the telephone, whichever may be the correct order of seniority.

"Even in the average circumstances of speaking through the wire or attempting speech, the drawbacks are marked and irksome by comparison with other inventions. If you get the wrong train or miss it, that is your own fault except in the rarest cases. But in ringing up it is not your fault if the number is engaged or you are given a wrong one. Then, unlike all the other devices, the telephone can hit back. You are not safe. No locomotive engine with railway carriages ever paid you an unexpected and unwelcome visit. That liability would be a contingent nightmare in every street. It is entirely in your choice and discretion as part of your proper business to catch a train; but upon the initiative of all and sundry the telephone may catch you whether you like it or not; and it may be on their business to the prejudice of yours and the bootless loss of your time. Useless letters you can throw into the fire or the basket. Telegrams can be read in a moment. Human nature at its most eccentric rarely sends wholly irrelevant or intrusive telegrams. But on the telephone you may find yourself the prey, and even the protracted prey, of bores whom you do not know; or otherwise the victim of unseasonable interruption. Human civility forbids you to cut off the futile call with abruptness as you can throw away the useless letter or telegram."

There will be subject matter for another leaderette when the general public have the automatic system at their elbow, and when, therefore, there will be no one but the caller to blame for "wrong number" or "wrong exchange!"

There is another invention which has reached a practical stage and which may be attached to any subscriber's telephone. It was, I believe, invented by a German—before the war—and is now either on or about to be placed on the market. It answers to some such horrid name as "Telegraphone," and is a combination of (1) a telephone, (2) a dictaphone, and (3) a gramophone. If the subscriber wishes to leave his office he simply switches the apparatus on and hurries off. Should the subscriber be called during his absence, No. 3 replies, "I am Victoria 4762, Mr. Cuthberton-Smith is out. If you wish to leave a message for him, please speak." Then there is a gurgling noise and the dictaphone comes in circuit. We will not be rude enough to intrude into the secrets of the dictaphone cylinder as to the nature of the reply, nor will we utilise our imaginations in so hopeful a sphere!

Our contemporary, *Truth*, in an apparently honest endeavour to give some measure of credit to government organisation recently printed the following paragraph in its columns:—

"Nowadays, when it is the fashion to tilt at everything run under Government control, it is refreshing to hear of an instance where the Post

Office offers a service cheaper and quicker than a private commercial concern. A correspondent wishing to communicate with a ship sixteen hours out from Marseilles applied to the Marconi Company, who informed him that owing to delays on land lines, it was unlikely that the message would reach Marseilles before the ship, the reason being that messages are sent over the ordinary cables to the wireless station nearest the addressee and thence wireless. The charge was to be 10½d. per word. He then inquired of the Post Office as to the chances of speedy delivery of a telegram to the ship on arrival. He was informed that the message would get there in good time and the charge would be 2½d. per word, the reason being that the *Post Office uses wireless from London to Marseilles, while the wireless company uses the land cables*. What the reason may be for this paradoxical situation is altogether beyond me."

The italics are mine, together with the writer's sympathy for the paragraphist of the well-known weekly. It would be interesting to hear the explanations of the counter-men of both the Marconi and the Post Office who are alleged to have given the above "information"

No attempt will be made to dis-entangle this maze of thread, but it may be here and now stated most definitely for the benefit of both the Marconi and Post Office officials that the reason for the more expeditious treatment in the case of this particular 2½d. route is the fact that there exists a direct telegraph *wire*, open day and night, between London and the port of Marseilles.

A personal apology is due to my personal friend, Mr. Murray, for a slip of the pen in the March number of the T. & T. JOURNAL, wherein mention was made of "The new Baudot distributor, connexion box and pin connexions." Of course, except for the fact that it has a Baudot type of distributor, the apparatus to which my remarks referred was the Murray Multiplex now being installed on the Belfast circuit. As a matter of actual fact my attention was specially taken up with the neat pin connexions and general compactness of the *altogether* of it, as the French would say, and I did not pay quite the attention, &c., &c., but there, I am confident Mr. Murray will understand.

All members, past or present, of the late Submarine Telegraph Co., the old "F.G." and the newer Cable Room, C.T.O., will regret to hear of the death of Mr. W. G. Clark, known to many as "Werter," at the East Sussex Hospital, Hastings, on the 7th of last month, from pneumonia.

He had been pensioned nearly ten years, having retired from the Service on June 5, 1911. Mr. Clark served his apprenticeship in telegraphy with the late Submarine Co., commencing duty with them in October, 1868. Of a stolid, plodding, yet genial nature, he had an individuality singularly his own.

J. J. T.

TELEPHONE DEVELOPMENT OF SOUTH AND CENTRAL AMERICA.

Dr. Victor M. Berthold, the chief Foreign Statistician of the American Telephone & Telegraph Co., who has for the last seven years devoted himself exclusively to the study of telephonic and telegraphic development in South and Central America, has kindly forwarded to me some recent statistics relative to the American Republics. The figures given in my recent article (page 70) were admittedly based on pre-war figures, as, except in the case of Buenos Aires and Monte Video, later information was not obtainable. The following are the statistics for Jan. 1, 1919:—

South America.				No. of stations.
Argentine	...	...	...	105,205
Bolivia	...	...	...	2,650
Brazil	...	...	...	67,366
British Guiana	...	...	...	1,214
Chile	...	...	...	23,670
Columbia	...	...	...	5,263
Dutch Guiana	...	...	...	436
Ecuador	...	...	...	3,626
French Guiana	...	...	...	173
Paraguay	...	...	...	190
Peru	...	...	...	7,148
Uruguay	...	...	...	19,486
Venezuela	...	...	...	7,437
				243,864

Dr. Berthold estimates a present population of over 63 millions, which means that there is 1 telephone to every 259 inhabitants of South America. Buenos Aires had 54,676 stations, Rio de Janeiro 23,510, Monte Video 11,216, and Santiago (Chile) 6,554.

Central America and West Indies.

Mexico had 40,211 telephones (with 19,491 in Mexico City), Cuba 27,765 (with 20,057 in Havana), Panama 4,734, and Salvador 2,404. Costa Rica, Guatemala, Honduras and the Dominion Republic had each over 1,000 telephones. The figures for Central America in my paper should be increased to 11,648, and for the West Indies to about 30,000. W. H. G.

The
Telegraph and Telephone Journal.

PUBLISHED MONTHLY IN THE INTERESTS OF THE TELEGRAPH AND TELEPHONE SERVICE, UNDER THE PATRONAGE OF THE POSTMASTER-GENERAL.

Editing and Organising Committee - - -	}	JOHN LEE.
		J. J. TYRRELL.
		W. A. VALENTINE.
		J. W. WISSENDEN.
Managing Editor - -		W. H. GUNSTON.

NOTICES.

As the object of the JOURNAL is the interchange of information on all subjects affecting the Telegraph and Telephone Service, the Managing Editor will be glad to consider contributions, and all communications together with photographs, diagrams, or other illustrations, should be addressed to him at G.P.O. North, London, E.C.1. The Managing Editor will not be responsible for any manuscripts which he finds himself unable to use, but he will take the utmost care to return such manuscripts as promptly as possible. Photographs illustrating accepted articles will be returned if desired.

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No. 73

TELEGRAPH AND TELEPHONE SOCIETIES.

Now that the season of the London Telegraph and Telephone Society is coming to an end it is opportune to draw attention to the valuable services which this Society has rendered in the discussion of questions affecting telegraph and telephone procedure and organisation. All the more it is a great pity that similar societies which have been established in the provinces have not been as successful as might have been wished. There is a wide range of subjects open for discussion and many points of view from which they can be discussed. It might be possible to arrange for papers which have been read by one society to be read at another in order that further discussion might be encouraged. We should be glad, also, to find room in this JOURNAL for papers which are read at provincial Societies equally with those which are read by the London Societies. There are many reasons why practice and experience must differ in different towns. As regards telegraphs there are local differences in respect of the incidence of traffic which might open up discussion of comparative procedure. We can quite believe that the cotton traffic in Liverpool, the fish traffic at Aberdeen or Grimsby, the Stock Exchange traffic at all large towns, and Football Zone and Cricket Zone systems all offer scope for enlightenment from the provincial point of view. Similarly in respect of telephones we imagine that Leeds might have special contributions to offer from its experience with automatics, that the Liverpool-Manchester and Glasgow-Edinburgh routes which have each special characteristics might also be a valuable basis for the discussion of rapid telephonic service. In fact it might be possible to have the same questions discussed at different societies, and by the change in the point of view to elucidate them far more thoroughly than has yet been accomplished.

Apart from this practical result each discussion itself is of enormous value. It gives us an objective vision of our own service ;

it widens the purview ; it enables officers who have given special study to particular aspects of telegraph and telephone procedure to give us the benefit of that study. In a word it raises the whole worth of our calling. We can imagine for instance a number of provincial telegraph and telephone societies being anxious to hear Mr. Avery's paper on the Imperial Cable Service, for that service is of immense importance not only to London but to the country at large. If any of our provincial brethren are interested in the organisation of Telegraph and Telephone Societies, we are perfectly certain that the Secretary of the London Society, Mr. Stuart Jones, will be ready to afford all information, and we understand that if it is decided that particular papers already delivered to the Society in London would be of help to Societies in the provinces arrangements can easily be made for them to be delivered to these Societies.

THE WONDERS OF WIRELESS.

READERS will have noticed during the last few months that an increasing part of our space has been occupied by information about the developments of wireless telegraphy. In the present number, Mr. A. W. Edwards tells us how old Moore's prophecy has been realised, and our old friend J. J. T. gives himself over to an eulogy of telegraphy without wires to the extent of half of "Telegraphic Memorabilia."

This child of tender years indeed shows exceeding great promise. The developments during the war have been great, but the scientific dreamers of dreams to whom civilisation owes its greatest triumphs have visions of applications of Hertzian waves which are almost alarming in their possibilities. If even a few of the dreams are translated into actual fact, the development of the child to puberty and manhood will be one of the triumphs of the present century. But a few years ago, "wireless" was regarded more as a scientific toy ; but, with the passing years and the development of thermionic valves, improved methods of detecting, and magnifying, both transmission and reception are now commercial facts, hindered as they may be by difficulties of direction and by interference from jamming and atmospheric.

One school of thought has already cast doubt upon the electron theory and even on the very existence of the æther, by means of which the Hertzian waves are said to be disseminated, while another claims to have succeeded in weighing and measuring what has hitherto been regarded as without size or weight. We shall no doubt each follow to the limit of his understanding these great scientists in their lofty flights into the realms of the unknown, and endeavour to arrive at some mental picture of the results.

To the student whose early teaching is overthrown by the later theories of science, the new terms, the infinitesimal measurements and the new functions of familiar objects are confusing, and we are, therefore, glad to announce that we have secured for early publication a series of fully illustrated articles on modern wireless telegraphy and telephony by Mr. F. Addey, B.Sc., M.I.E.E., Fellow I.R.E., whose name is familiar to many of our readers. These articles will probably commence with our May number.

HIC ET UBIQUE.

THE following are the members of the new Select Committee "to enquire into the organisation and administration of the Telephone Service and the method of making charges":—Rt. Hon. Evelyn Cecil (E. Herts, C.U.), Chairman; Evan Hayward (S. E. Durham, Liberal), Solicitor; Rt. Hon. John Hodge (Gorton, Lab.), President, Iron and Steel Trades' Confederation; G. F. Hohler, K.C. (Gillingham, Unionist); J. Stanley Holmes (N.E. Derby, Liberal), Chartered Accountant; General Sir Archibald Hunter (Lancaster, C.U.); Sir Evan Davies Jones (Pembroke, C.L.), Public Works Contractor; R. J. Lynn (Woodvale, Belfast, Unionist), Editor, *Northern Whig*; Lane Mitchell (Streatham, C.U.), twice Mayor of Camberwell; Captain A. H. Moreing (Buckrose, C.L.), Mining Engineer; W. G. Perring (N. Paddington, C.U.), Retail Business; Alex Richardson (Gravesend, C.U.), editorial staff of *Engineering*; A. K. Rodger (Rutherglen, C.L.), Provost of Rutherglen; W. S. Royce (Holland-with-Boston, Labour); and A. E. Waterson (Kettering, Labour).

HAVING obtained their Select Committee, our critics are not altogether satisfied if we may judge by one of the most flamboyant, the *Sunday Express*, which thus disburdens itself:—

Although the telephone fiasco is saddening and maddening, it is also droll, for it reveals the innocent impotence of the entire business world in the coils of the bureaucratic boa-constrictor. All the meetings, speeches, protests, deputations, and whirlwinds of public anger were wasted. The permanent officials who hide behind Mr. Illingworth laughed at the agitation and neatly side-stepped its body punches and knock-out blows. The debate was a roaring farce, and public opinion was impudently and cynically tricked out of its prey. The bureaucrats knew that they could rely upon the timid lethargy of a tame House of Commons which is so utterly out of touch with its constituents that it did not even go to a division. The telephone ramp has now gone through, and the select committee, after solemnly sitting for months, will only add another futile report to those that are mouldering in the pigeon-holes of bureaucracy.

And yet the whirlwinds were well stage-managed!

THE *Daily Mail*, turning aside awhile from its scrutiny of the meals consumed by the German delegates when in London, returned to the telephone question on March 11 with the headline: "Telephone users must wake up." "The forthcoming enquiry will be the 'Battle of the Marne' of the telephone business of Great Britain," it says. "It will decide whether the vested interests and dull prejudices of our autocratic bureaucracy shall prevail against business sense, freedom and progress." Eliminate the words "of our autocratic bureaucracy," and we agree. The position could not be more succinctly stated.

THE Ministry of Posts and Telegraphs for Jugo-Slavia has decided that the rates for telegrams shall be increased from 10 (about 2d.) to 20 paras per word. The minimum charge is fixed at 2 dinars (1 dinar=a franc or about 9½d., normal exchange).

Subscriptions for telephones at Belgrade, Sarajevo, Zagreb, Ljubljana, and other cities, from July 1, 1920, are:—(a) For hotels, cafes, industrial plants, factories, commercial firms, commercial agencies, law offices, stores, and all places serving for public re-unions, 500 dinars per year (£19 17s.). (b) For newspaper editorial rooms, private apartments, state and official offices, 300 dinars per year (£11 18s.). (c) For telephones installed in residences of public functionaries, 200 dinars per year (£7 19s.).

ACCORDING to the *Morning Post*, a bill will shortly be introduced in the French Chamber sanctioning the abolition of the flat rate charge for telephone service in Paris and other large cities, and the introduction of new rates. The charge for areas with over 10,000 lines will be 550 francs (£21 16s.) including 1,000 free calls.

THIS portends, of course, another Telephone Ramp—to use the language of most of our contemporaries. From Liverpool to Ljubljana, from Vienna to Vexjo, from Paris to Potsdam, from Rotterdam to Ramsbottom, it is the same story, and the same moral might be pointed in each case. And then, as we write this, we learn from the *Daily Telegraph* that by the increase of the rates by 28 per cent. from April 1, "considerable disgust has been aroused in New York!"

A SAPIENT correspondent of a Newcastle journal says:—"The National Telephone Co.'s staff in 1905, 19,050; Post Office telephone staff in 1920, 44,500. Think of it! It takes 44,500 Post Office clerks to do the work that 19,050 National clerks did, and did better." There were 427,000 subscribers' stations in 1905, and 990,000 in 1920. Does the writer of the letter really think that to serve 427,000 involves only the same work as to serve 990,000? The proportion of staff to stations is almost exactly the same in the two periods.

WE learn from the *Telegraph and Telephone Age* there are twenty-one telegraph companies operating in the United States with a total pole line of 241,012 miles and 1,888,793 miles of wire. More than 155,000,000 messages are transmitted a year. For the convenience of customers 28,965 offices are scattered over the country. A total of 39,600 employees receive salaries amounting to nearly \$40,000,000 annually.

WE learn from the *Electrical Review* that the Dominion of Canada acquired at the beginning of this year the telegraphic systems of the Great North Western, the Grand Trunk, Grand Trunk Pacific, Canadian Northern, Inter-Colonial Railway and Commercial Companies, in addition to a certain number of smaller companies. These form a State telegraphic system which will be one of the largest in existence. The United States probably remains the only country with a large telegraphic development where the system is under private control.

SIR ANDREW OGILVIE, the late Second Secretary, gave a lecture on March 4 to the Society of Civil Servants on "The Administration of State Telephones." The Postmaster-General took the chair, and we noticed a representative gathering of the chief officials of the Post Office amongst the audience.

Probably no greater authority on the subject than Sir Andrew, with his long administrative experience of State Telephones, could have been selected. He explained the difficulties the Post Office had had to contend with, its achievements during the War, and its redoubled energies since. He was easily able to demonstrate that the rise in telephone charges was due to the enormous increase in costs.

CORRESPONDENCE.

WIRELESS TELEPHONY.

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

SIR,—I note that in the review on Mr. J. Poole's new work on Telephony, Telephony and Wireless, the reviewer casts doubt on the quantity of speech transmitted by the radio-telephonic apparatus. Has the reviewer heard the speech transmitted by the apparatus in use at Chelmsford?

Some few months since information was received at Preston, Lancs., that on a certain Sunday at 11 a.m. speech would be commenced from Chelmsford to a station in Sweden. We got our apparatus in order and tested everything thoroughly in readiness for the event. Ship stations could be heard well on 300 metre wave lengths. These were varied for different stations of known length. Liverpool came in with a bark resembling that of a retriever dog and then we waited until we got the well-known "Hullo." It may not have been a correct expression but there could be no doubt of the volume and distinctness. As a telephone man with over 25 years' experience of trunk working I say that I have never heard a message over a trunk circuit 200 miles in length more clearly defined than on that occasion. We were working with an aerial under the scheduled length and with a change-over switch, bringing in as an alternative an inside aerial of 100 yards of ordinary bell wire wound loosely on a tripod suspended from the ceiling about 10 feet from the floor and heard with very little deterioration when compared with the outside aerial.

The apparatus was almost entirely, home-made, with the exception of the valves and receivers. The results with such crude equipment led me to conclude that there was a future for this method and I am anxiously awaiting the results of experiments with the introduction of those thermionic valves into the existing trunk circuits which I understand is in progress. From my experience of these valves I am led to expect much improvement in the trunk service of the Department at very little increased cost.

S. J. PHARO,

Late Chairman Wireless Section Preston Scientific Society.
Preston, Feb. 21, 1921.

STUDIES IN WHITLEYISM.*

By F. C. Cook (*Accountant General's Department*).

BEFORE we enter seriously upon our studies this evening, will you bear with me while I make a few preliminary observations. We must, I think, seek to build up some kind of background if we are to see more fully, at a later stage, the central features of the picture. We are dealing with an institution, an organisation having, by successive decrees of Parliament, a larger scope, and necessarily greater complexity, than individual enterprises; the statutes are the work chiefly of trained lawyers. The British Civil Service has been silent; its very silence and power have evoked the interest of foreign Governments. Doubtless the public services of other countries have influenced the frame-work of our own, but the Civil Service Commissioners are alone able to disclose the changes made as the result of external investigations. We will take note of the principle of nomination which so long obtained before it was succeeded by the "open door." "Gentlemen" must henceforth reveal that they possessed the intellectual qualifications scheduled by the Commissioners, and would use them in the best interests of public business. Possibly for a time some gentlemen continued to begin the real work of the day when they left their offices; a change was, however, inevitable. The name of Charles Lamb is beloved; but we cannot place his name on a level with Roosevelt as a public official (taking an American example to avoid difficulty).

The principle of the "open door" of competition (though Ruskin deplored the method) carried with it the germ of division of labour. Adam Smith's utilitarian ideas may or may not have seized the minds of those whose statesmanship was unfolded in expansive Civil Service schemes, but gradually there emerged the plan of Administrative Grades (and ratios of appointments), grades whose intellectual inspiration was almost entirely derived from Oxford, Cambridge, or St. Andrews, and whose spiritual leader was Jowett of Balliol. Departmental grades for specialised appointments, and "Treasury" grades, for duties more or less common to the whole Service. I hope no one will imagine I speak ungraciously of the older Universities: those homes of learning have touched one's deepest feelings, and though some criticise freely, one can always mention Cecil Rhodes as a great lover of Oxford. To return to our review—each group had an environment, a life of its own. The Civil Service was one, but after men met in the halls of examination they appeared to drift apart, and, as individuals, to lose their identity in the immensity of their departments. The Commissioners removed their names from the successful lists; not until long years had elapsed did the names of any individuals appear in the Press—even the Civil Service Press—unless an Officer was placed in the front rank of public servants at the outset of his career.

While the majority of public departments developed on normal lines, Post Office administration rapidly spread in all directions; its staff was chiefly departmental; it had groups scattered throughout the United Kingdom and some districts grew more rapidly than others. The open door into this special service was more or less accepted for many years, but difficulties about the blind alley led to a policy of shutting the doors, or some of them, sharply at about the age of 14-15.

The Committee on National expenditure tell us the Statesmen at the Treasury strove even during the War to control all the duties of public departments with a staff of 33, and the Civil Service Cabinet would have limited its membership to that number had not pressure been brought to bear upon it.

The growing army of Post Office servants led to the formation of a more or less collective opinion which expressed itself at times in a demand for departmental or parliamentary enquiries. Outside this sphere of personnel the Civil Service as a whole, remained undisturbed except in 1876, 1890 and 1912-14. Only in these years had any comprehensive investigations been carried out. The Orders in Council did provide for periodical enquiries, but it did not follow that such should be invariably general re-organisations. The initiative came, ordinarily, from each department according to the expansion of business.

The creation of new departments led to subsidiary policies. The new departments took advantage of a side track method of finding a legitimate opening for public school boys who were unable, for one reason or another, to pass on to the Universities, *i.e.*, Oxford and Cambridge, not the new Universities, because their men had practically no chance of securing a place in the higher examinations.

Two other noteworthy expressions must have their place, *viz.*, (1) the "Model Employer"—the exact date of its introduction I have not traced—but some years ago I sought to tabulate the factors of the environment of the public servant as compared with external corporations, and came to the conclusion there was no doubt that the Civil Service did lead the way in regard to favourable conditions; and it would be an interesting study to see what leeway has been made up in commercial circles during the past, shall we say, 10 or 15 years. (2) "Scientific Organisation" was used infrequently respecting the public service; in fact only within the last three or four years has it had a prominent place in an official report: it is now much to the front.

Having found a place for the foregoing features one is led to ask two or three questions about the widest aspects of our subject. Was there anything to mar harmonious development? Why should there be? Was anything unexpressed? Was there any group consciousness? If so, was it on healthy lines? Was it for progress; for the efficiency of the individual, of the group,

of the whole public service? Was the spirit of Science—with a capital "S"—exercising a leaven throughout the country. Let us simply ascribe it to a consciousness of environment, and leave it at that.

Here we can conveniently make contact with the economic philosophy of a North Country leader of business, who is also a prominent Member of Parliament. The Right Hon. J. H. Whitley, Chairman of Committees and Deputy Speaker, voiced an idea for the benefit of industrial undertakings, in the interests of all concerned; those who were the captains of industry, and those whose co-operation (as a class) was required for the fulfilment of contracts. Contracts were increasing in size, involved ransacking the earth's surface to find raw materials, and required the conveyance of machinery to distant parts of the world, the War showing that greater enterprises were possible than in pre-war days.

To me it is unfortunate that the Whitley idea should have obtained publicity under the ægis of grievances. Many "Wants," to employ the word of the political economist, are known, but wants are not necessarily grievances; the scientist is ever seeking to meet "wants." No reflections will be entered upon regarding grievances. The fact is stated, and if such was warranted let it suffice to be recorded that grievances existed because the highest officers had so many duties to perform that some aspects of organisation, relating to the personnel, were unprovided for in the establishment of public departments.

When Whitleyism had become an acknowledged fact in the Administrative and Legal Departments of the Civil Service, following its inauguration on the July 3, 1919, when the Chairman and Vice-Chairman of the National Whitley Council urged every one, irrespective of rank and title, to become a member of an "association"—City Guilds had been in existence for centuries and possess historic halls for their places of gathering—the effect of the complete acceptance of group consciousness was bound to extend to the more responsible members of the public service, who would necessarily, though not in hostility to one another, have a dual function to perform, sometimes to sit on the official side, and sometimes on the staff side, or be represented by a lower Staff nominee. I see no objection to the arrangement. The highest individuals in the legal, medical and engineering world find no difficulty in belonging to incorporated societies.

The pace was forced by rapidly issued reports on public departments, by the insertion of these documents of "scientific organisation," by the co-ordinated report of the Machinery of Government, by the immediate action of the Treasury in setting up a comprehensive system of Establishment Officers (and, by the way, establishment matters were regarded for years more or less as domestic, and less weighty than the conduct of normal business), and by an entirely new view of personnel, recognised henceforth not as classes, grades, numbers and scales of pay, but as individuals contributing their personal share to the well-being of the whole fabric.

What should be the shape of this post-war, externally introduced idea of Whitleyism? How could it be fitted in when there was on the official side doubt as to its desirability? Surely Whitleyism should not have in its vanguard grievances, especially as the very mention of such would, or might, affect the feelings of a vast number so far undisturbed.

The minds that were set to explore this wonderful conception of the Right Hon. J. H. Whitley became absorbed in their work, and the Service watched the collaboration with fervent interest. The Official side had all the historical past; the staff concentrated upon the new conditions which the victory in the great war had brought within the range of possibility. The Civil Service had not failed the nation, and through their representatives they placed in the forefront of their recommendations the continued efficiency and further development of the public service. The report did, however, create an atmosphere, a living interest, which was not present in previous re-organisation proposals. Moreover, the report was at once the property of the whole Civil Service, the decision arrived at having an importance, actual or implied, to every individual, from the highest to the lowest, and by whatever classification he might be known. Though the analogy cannot be sustained, the framing of the American Constitution by many men with conflicting interests (and after all not in the behalf of a large population—the total was about 2½ millions) was a prodigious and difficult task (*vide* the Federalist of those days) and the reconstitution of the British Civil Service with its hundred and one associations, with its scientific, legal, engineering and medical groups, without mentioning the educational groups, was by no means an ignoble task, especially as we are conscious of the beginnings of further developments by the appointment of an International Civil Service under the authority of the League of Nations.

In the midst of their negotiations the national representatives came up against a difficulty—at least so far as the Civil Service was concerned—and decided to press it to a conclusion. They declared for the attitude that the employed should have the right to choose as their representatives delegates who were engaged wholly in the interests of the public servant and beyond the control of the Administrative authorities, and outside the jurisdiction of the House of Commons. Except when these delegates were taking part in a Conference with the official representatives of the State they would be employed in a private building, perhaps far removed from the Department where their members were working. The case of the Staff could doubtless be prepared better on the lines of advice being sought from counsel, but the extent to which this external assistance can normally be granted, would appear to be that of grievances or the presentation of the reasoned views of the staff respecting the conditions of their service, and similar considerations. The idea that officials outside should come more closely, as time passed, into the machinery of organisation is surely beyond the limit of scientific organisation. The idea has, however, apparently found acceptance elsewhere, and entrance

*Paper read before the London Telephone and Telegraph Society.

into the public service may eventually have further developments not unlike the control of departments, devolving upon ministers who are connected with the political bodies of the House of Commons. The recent appointment of a well-known Labour leader to the public service is a case in point. The *Administrative and Legal Departments* having, under the first *Reconstructive Report* (doubtless to be followed by other schemes), provided the approved methods of entry into the Civil Service, the ultimate expectancy would be that the service itself should be able to grapple with all its own difficulties.

The Right Hon. J. H. Whitley admitted, recently, his scheme had within it the idea that collaboration between the representatives of groups and those who held authority would lead to the discovery of latent productive power. Consequently, the more developed the joint principle was realised the greater would be the gain to the organisation. The joint working would also resolve itself into equality of contact with the responsible authorities by each representative whatever might be his status. This was conceded in the composition of the National Whitley Council.

The ideal relations between Employer and Employed, particularly if the delegates are drawn from every group (the doors of entry into the Civil Service being many, admit of various types of representatives) predestines closer and closer co-operation of all concerned, until the whole should move harmoniously towards the same objective, the same levels of thought, the same understanding of public business.

The full significance of the permeation of the Civil Service by Whitleyism is scarcely discernible; it is a new force. On the face of it the first *Reconstructive Report* contains much that was embodied in the views expressed by those who drew up the recommendations of the Royal Commission in 1912-14: fundamentally the report is not the same, one reason being that no external business organisers had any part in the negotiations. Much of the nomenclature and many details are differently described; but a study of the re-organisation suggests familiarity with earlier data. Arising from the Agreement there is the possibility of truer comparative conceptions of the technical, scientific professional groups, affording a vision of the whole Civil Service, something beyond the impression created by a study of the Regulations of the Civil Service Commissioners, and the annual reports of that body.

The National Whitley Council completed its first report, and immediately proceeded to take up the next stages of its investigations. Unlike references to Special Committees, prescribed, limited, the Council has apparently power to consider any questions, temporary or permanent, affecting the Service. When its members began to turn their attention to other subjects the Departmental and "Office" Councils were set up, and new bodies of individuals commenced work on the divisional aspects of the Whitley idea.

Ideas of parochialism and even provincialism receded, and national opinion, or as at the first remarked, group consciousness generally, took their place. Individuals, who had spent years of their career in obscure rooms, in subground floors, in old buildings, awakened to a new interest in official life, and the enthusiasm of the delegates spread to them. Such a document as *Scientific Business Management* issued by the Ministry of Reconstruction added to the new impulse; it recommended that senior Officers and higher than these should encourage the staff by occasional tours of the Office; other useful suggestions were included in the recommendations.

The Whitley idea found favour beyond the shores of Great Britain, and the reports from the Dominions and Colonies indicate that Civil Servants of the Empire are watching developments in the Homeland.

A central feature of the scheme is *group* function, and *individual* growth. Each group must contribute to the organisation its quota, expressed in hours if you will, but certainly in intensity and standard. We are frequently told that the "Varsity man subscribes to the plan that he shall give six hours' hard reading daily, apart from auxiliary preparation. The Imperial College of Science, understood to be one of the most go-ahead institutions, adheres to this scheme. The problem is how to arrange that each group shall fulfil its own functions, not for a period of three or four years, but for life. But the higher the rank the more variable must be the duration of public duty in times of emergency. I must pass on, however, to the more important function of training—due preparation for the enlarging duties of the public servant where the individual has not obtained expert experience before admittance to the Service. For the first time it has been placed on record, partly interpreted, for the most part uninterpreted, that Administrative functions are specialised, professional, and quasi-professional.

Even the Administrative candidates must submit themselves to a special preparation for their future responsibilities. They are given, on entry, the status of a Cadet Corps, and the recent establishment of an Army College of Administration affords at least an illustration of the changes taking place in the highest circles, and the Cadets, like the training grade of the Executive groups, will presumably have a specially drawn up scheme.

It is hardly appropriate for me to conjecture what either the Administrative or Executive scheme will be. Conceivably, groups who have had specialised courses, theoretical and applied, will not be outside forms of preparation for the particular divisions of public service to which they are assigned. The National Whitley Council has promised to give proper attention to technical, scientific, and other groups, through the Agency of Grade Committees (the precise arrangement will be referred to shortly). The fact that every group is working within the region of Public Administration, each member of the Civil Service must take cognizance, varying much in degree, of three central principles which operate everywhere, viz., Administrative Law, Finance, and organisation in its broadest aspects. The change in the syllabus of the Examination for the Administrative Grade, or rather the complete liberty of choice permitted provided that a full university Honours Course

has been followed, has led critics of the scheme to favour in the days to come the London B.Sc. (Econ) Course, which will not only provide the desired mental training before entry into the Public Service, but go a long way to enable the student to have Administrative preparation (and doubtless the Executive will have similar privileges) in advance of actual performance of public duty.

In this connexion I have seen it advocated in an official report that due preparation for a public career may include, so useful in these days when the League of Nations calls to all to work together for the peace of the World, residence abroad for comparative studies and personal contact with Administrations of other Countries. This is in harmony with Mr. Whitley's objective of conciliation, because the Civil Services of civilised states may mean much to conciliation between one another, and a common interest in the welfare of their citizens.

Lord Eustace Percy mentions this subject over and over again in his work on the "Responsibilities of the League of Nations."

Twenty years ago an eminent scientist pointed out that functions of Administration required a specially trained staff, a new professional class, and whatever be the precise scope of the professional training the outcome must be the possession of an international outlook, a cosmopolitan spirit with freedom of thought, and a type of character referred to in the Royal Commissioners' Report of 1914, viz., resourcefulness, judgment, common sense, readiness.

In 1921 we have advanced a further stage, and added to the conception of public business the commercial idea, or partially so, of business organisation. Sir Herbert Morgan for one, is not anxious that the public servant should become a business man, but granted that the training, within the Service as well as outside, is on right lines, I urge that the Civil Service should be able to produce men embodying all that is best in business organisation, and that on a large scale: I take it the training will lead to business excellence whatever the past may have wanted in this respect; the introduction of commercial balance sheets side by side with the other requirements of administration substantiates the view. But business organisation being a subject coming within the syllabus of economics and commerce should acquire a meaning equally applicable to Public Administration, or "Scientific Administration" (to use the phrase of a well-known Captain of Industry), of private enterprise, and afford a common standard of judgment.

The application of business principles to the Civil Service, to Administration, must not, however, take precedence of or stand in wrong relations with the business: while the delegates of Whitley Associations were, and continue to be, engaged in intermittent negotiations the government of the Country proceeds. To mention only the five Peace Treaties, India, Trade, Education, the Communications of the Empire (compare the recent deputations to the Postmaster-General and his replies)—all these, and these samples from the interests of some sixty departments—seem to be great, fill the imagination when viewed in comparison with the efforts to invent a formula to fix the pay of a group. On the other hand, the perfect equipment, training, and strength of will of the units of the Army and Navy produced the victory of the War, but perfect organisation included instant readiness to take from stock pairs of boot laces, without which the men could not march. The two conceptions have a mutual bearing. And for great affairs of State, when one has reached the heart of them, the brilliant idea (the Whitley scheme specifically mentions ideas) of an unknown Civil Servant may materially contribute to the solution of an entanglement, apparently insoluble.

It may be that some day, and I am not sure that the milestone has not already been passed, the scientific mind will turn its attention to the *practice of business*, and the so-called "practical" mind will be matched with and outclassed by the resistless energy and pertinacity of the scientist. The men who have wrested the secrets of light, sound, heat, the dust of the earth, the constituents of the air, will not be daunted by the greatness of world business organisations. Here I am thinking of the pure scientist.

Sooner or later the public service will feel the influence of these scientific movements—so enormously strengthened during the War—and I may add the Whitley scheme appears to contemplate the absorption of the new forces—the outcome of which must mean changes fundamental in nature, and some of such a constitutional character that the relations of the centre to the circumstance, to the outlying parts of the area under survey and control, will perhaps be a microcosm of what is taking place in the larger world of affairs and particularly the British Empire. The threefold Whitley plan of National, Departmental, and Office Councils contains within it possibilities of forces acting and reacting one upon the other, and what it will mean ten years hence no man can tell.

When Professor Marshall sent forth his monumental book on principles of economics the scientific spirit in other than the world of natural science was immediately revealed, but its due importance was not, except in specialised circles of the Civil Service, fully realised nor its intrusion warmly welcomed by those whose outlook was more or less entirely literary. But this is not so now.

The title of my paper forbids the exploration of the functions of the Civil Service apart from the aspect of Whitleyism, and the annexation of the Whitley scheme by Administration. Those who desire to pursue the subject and see how many new responsibilities have fallen upon the shoulders of officers of the State, should search Hansard about the end of the Sessions of Parliament for so short a period as, say, the last four years, tabulate the regulations for annulling, superseding the powers created by the War, and take out from those records of public affairs the new statutes of first class

importance. The Irish Act of 1920 alone will cause much work in Administrative and other circles.

The apprehension of the whole as well as its parts, like the survey of a leading newspaper, with its Reparation Agreement at Paris on Jan. 28 on one page, and parochial matter on another, has, in these days to be accompanied by three mental attitudes—intense inventiveness to reduce expense, great concentration to produce rapid accomplishment to please the public, and earnest consideration of plans to dovetail into, e.g., the P.O. system, still other activities. I think the members of this Society have had experience, not once only, but many times, of the necessity for taking up all three attitudes at one and the same time.

The chosen delegates have had, in addition to these varied intellectual operations, almost unceasing work after hours to study the basic problems of reconstruction; studies which, in many instances, were entirely new and unexplored, but which were performed with, I submit, dignity and fidelity to the staff.

The decisions of the Departmental Whitley Councils are less simple. They are without prejudice to:—

- (a) the overriding authority of Parliament and the responsibility of the Head of the Department as such;
- (b) the responsibility of the staff side to its constituent bodies;
- (c) the authority of the National Council as the only Whitley Joint Body competent to deal with general questions.

Agreements are to reach the proper executive authority without delay; but with the infinite number of ideas conceived by an awakened Civil Service, the formation of generic principles would appear to be a difficult procedure, and when the principles or would-be principles, have been set down in writing the parties cannot invariably agree, the more so when a decision means an immediate outlay of public money. The ideas may have been novel to both sides, and time is needed to see the true bearing of a question to the Civil Service Administrative law already passed.

Where the problem remains unsolved, or, more exactly, disagreement is the result of negotiations, reference may be made to the Civil Service Arbitration Board, and their adjudication sought. I gather that the constitution of the Court rests on the same foundations as an ordinary Court of Arbitration. This course fits in with English methods of selecting an umpire, but it requires the admission that both sides will abide by the judgment of the Court, unless fresh evidence can be produced to warrant the reconstruction of a case which has so far been negatived. Already the Court of Arbitration has made many awards.

We have now had under observation the main lines of movement of the new Whitley scheme; we have watched the delegates at work; we have seen their intensity of thought, their sincerity, the spread of the influence of the idea everywhere; while every part of the machinery, every condition of the "Group," of the individual, is preparing the new régime to supersede the Victorian régime, and all is being transformed by "Business as usual," or "not as usual" as the Bishop of London once said.

By stages Whitleyism tends to a complete confederation. The Civil Service is one; Whitleyism seems destined to produce unity of group consciousness; a kind of Civil Service parliament, with specially selected nominees of Associations.

Should the idea of a Civil Service Parliament be realised the representatives of so many thousands of men (and their families) and the single women, will have, besides the performance of their public duties which do not tend to become less in importance, a responsibility never known to a public servant—the joint responsibility of fulfilling a public duty and a kind of parliamentary duty after official hours—and wise leadership, great ability and impartiality will be essentials of their character. Of course, many men in public life carry varied responsibilities upon their shoulders. Was not Lord Rhondda director of some thirty business enterprises?—but so far the Civil Servant has not had a great sphere of activity and high responsibility outside the duties of his Office.

But will Whitleyism be a permanent factor? Will it spend its force? Can we go back? What will be the fashion of the new regime? These, and kindred questions presented themselves for answer, and while they remained in suspense it has been announced that the final report of the Committee on the organisation of the Civil Service was received by the National Council on Friday, Jan. 28, the details of which will probably have been discussed before this paper is read before the Society. The Council have agreed to set up the following Committees (1) A standing Committee to examine and report from time to time on any question of general principle not covered by the recommendations of the interim report of the Re-organisation Committee, which may emerge in the course of applying the revised scheme of re-organisation throughout the Civil Service. (2) A series of Committees to consider classes of professional, technical and scientific Civil Servants—I alluded to them at the beginning of the address. (3) A special Committee to elucidate the conditions and the consequence of those conditions, which constitutionally underlie the application of the Whitley procedure to the Civil Service. And further the National Staff side issued to the press on the 1st instant, their decision to assist the staff sides of Departmental Whitley Councils to correlate their aims and activities, and, for the co-ordination of the work and policy of the Staff sides of the Departmental Councils with those of the National Staff side. The complete scheme which is of far reaching importance is as follows:—

- (a) Regular meetings to be convened by the National Staff side;
 - (1) Meetings of representatives of the Staff Sides of Departmental Councils, and (2) meetings of secretaries of the Staff Sides of

Departmental Councils. The members of the National Staff Side will participate in the meetings, and the chairman or vice-chairman will preside.

- (b) The secretarial work involved, staff and accommodation to be provided by the National Staff Side. The National Staff Side to appoint an additional officer to take charge of the scheme under the National Staff Side's direction.
- (c) The existing means of interchange of information to be improved by the receipt of full records of the proceedings of Departmental Whitley Councils; and a circular to be issued once a month containing extracts from those proceedings, together with such information as may be available concerning the work of the National Council or otherwise of general interest.
- (d) The Staff Side of the National Council to meet the expenses of the scheme, other than subsistence and travelling expenses.

The decisions and arrangements do not preclude the idea of possible complete confederation of the hundred and one organisations, to be followed by the continued expression of external, and therefore unfettered opinion, as distinguished from the internal co-operation between the official and staff sides as set forth in the several constitutions. But the responsibility of the directive control will correspondingly increase, and the rights of minorities must be honourably safeguarded.

There is one noteworthy omission from the "objects" and "functions" of the Whitley Scheme. Normally the subject would not be stated between parties who introduced "grievances" into their weighty document. I mean economy. The expression efficiency is in the text, and all round efficiency must produce economy—and increasing economy. The words of Lord Weir, spoken on Jan. 28 last, are helpful here. He said:—

"True industrial prosperity can only exist when the product is technically of the very highest character, when that product is produced by the highest development of process and method, wherein labour is utilised according to the grade of its skill and capacity and remunerated on a scale commensurate with a very high standard of living, and on the other hand, with a price for the product which gives a reasonable return to capital, and which enables the purchaser to operate that product on an economic basis, and finally, a system of taxation which has regard to the economic possibilities of the industry, and permits of the carrying on of a reasonable amount of social reform. That is my definition of efficiency."

"We have got to get down costs. . . . Let us concentrate at first on process, method and technique. Let us rid our industrial costs of the inefficiencies and disabilities which are included in these costs. They hold much greater possibilities than any mere wages reduction holds, and we are not meeting our responsibilities as captains of industry until we have adequately tackled what I may call the inanimate end of cost production."

The expression economy is sometimes loosely employed by the practical mind, whereas the quotations which I have just read convey a much more comprehensive meaning. There is a danger that the practical economist may be prejudiced against research. He may enter the research students' laboratory, and unappreciative of the experiments in hand, of the delicate instruments around, of the patience required, and of the ultimate possibilities of the work, may regard the "expense" as representing something unremunerative, and a charge not to be incurred in his own organisation. Such an individual does not know the value of the Bessmer discovery, nor for example, the construction of such an instrument as a saccharimeter. As this audience is fully aware, the discoveries in the world of radio-telegraphy are so numerous, and the struggle to bring pure science into the service of man so unflinchingly pursued that radio-telegraphy must shortly become—and universally—an auxiliary to land and submarine telegraphy.

Here then is the problem of economy. On the one hand the detached idea of the discontinuance of an old practice to reduce cost—and rightly so—on the other the constant study of every feature of business in relation to the objective of the organisation, and the encouragement given to the research department, notwithstanding the outlay, provided the department is in the care of the highest type of trained expert.

Two extracts from the report of the Privy Council for Scientific and Industrial Research, 1919-20, may not be out of place:—

The Encouragement of Individual Research Workers.

In the light of what has been said we need make no apology for placing this subject in the forefront of our remarks. Endless emphasis has been laid both in this country and abroad upon the necessity of organisation in the application of science both to the needs of industry and to the national administration. One of the most obvious lessons of the war for peoples like our own, whose organisation is weak, was that rapid progress in the use of science with a view to defence or to increased production is not to be expected in any country which depends simply upon the undirected genius of its people. "The extraordinary rapidity with which scientific developments were made in the war was unquestionably due first to the forming of highly competent research groups and second to the establishment of effective channels for the co-operation of these groups."

The Radio Research Board.

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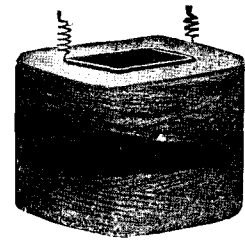
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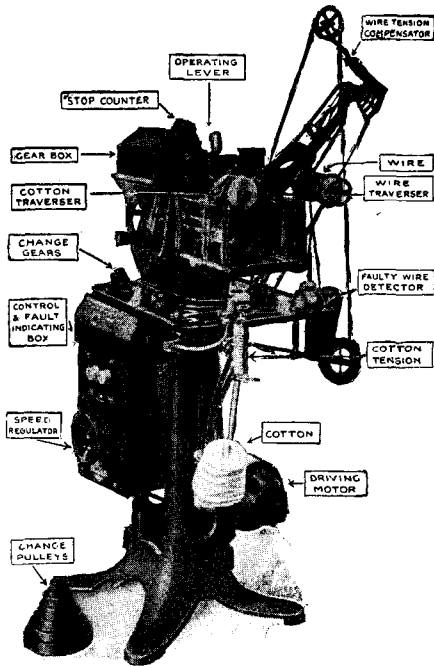
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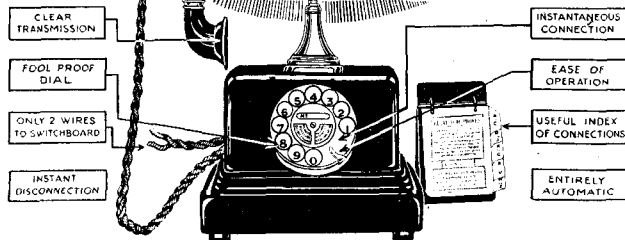
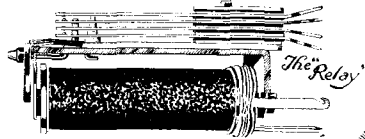


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waves, atmospheric, directional wireless, and thermionic valves respectively. For each of these branches of investigation a sub-committee has been formed consisting of men well versed in the theoretical and practical aspects of the subject, who will advise the Board on the research work needed and analyse the results obtained. It is hoped that this work will be carried out not only in the Government establishments but also in universities and other institutions, the authorities concerned having in many cases stated their willingness to co-operate with the Board so far as their resources allow. The Department will be in a position to supply a certain amount of wireless telegraphy apparatus to investigators who may be appointed to undertake work for the Board. . . . The primary object of the Radio Research Board and its sub-committees is thus to provide a convenient channel by which the results of scientific research undertaken on a basis of pure physics at universities and similar institutions may be made readily accessible for application to the experiments in designing apparatus which could be carried out mainly in the Wireless laboratories of the Government Departments interested."

The responsibility of adopting ideas, applying new methods, incurring expense for research must, of course, rest with the organisers, but the point I wish to press is the difference between "practical" economy simply, and the slower but certain effect of scientific work ensuring much larger reductions in "Cost."

Conciliation is another feature, the core of Whitleyism. It presents difficulties to my mind; it seems to force the admission that there has been antagonism, that the greater percentage on the Staff Side has at least dwelt in "unfriendly relations," to use a term of diplomacy; that the spirit of adventure has not existed, a common objective attractive to each and all has not appeared on the horizon. Perhaps Mr. Whitley, who knows the House of Commons so well, attached a different meaning to his plan of conciliation; he may have had the impression created by constant debates conducted by "Gentlemen," or controlled by rules which compelled gentlemanly demeanour, that the two sides of his Councils would necessarily debate the ideas submitted on the agenda for the day, and that the conciliation should represent common approval of principles or ideas, independent of any suggestion that the two parties themselves were in open hostility, were wanting in goodwill. My recollections of the proceedings of the National Whitley Council pointed to most heated discussions at the first, but when all had settled down to their work the conferences were most amicably conducted.

Agreement by the present generation of Civil Servants was the first business of the National Council. The Councillors did not stop there; when they signed their report they had provided for the future—for those who should pass in under the revised schemes of Education prepared by Mr. Fisher. They contemplated re-opening the former competitive system, subject possibly to a new selective—possibly a psychological method. This has been overshadowed by the imperative need to help those who risked all in the interests of the Nation, and part of the reconstruction, the development of Whitleyism the efficiency mentioned by Lord Weir, must include conjoint work between the existing Civil Service and those who have not had the atmosphere of the Service about them from their youth, perhaps a fortunate circumstance, seeing that we are concerned with post-war considerations, not pre-war.

Looking back on the negotiations, the discussions, the consultations, some critics appear to be depressed. Many men are rather tired of the problems which have come up for re-study and solution. Possibly the newly imposed duty on the official side has added to responsibilities already sufficient, and overstrain has been the outcome. By degrees, however, I believe that collaboration will yield lasting and good results, and both sides will appreciate points of view which were not attractive a few years ago. The "Employer" will be among the employed. The "employed" will have developed a confidence and freedom to enable him to take on higher functions, as the Whitley report anticipates. Gradually the "paper" constitutions will be lost in the realisation of the factors intended to be usual in public life. We hope it may be so. Better that the Service hope than doubt. Better that a newly organised Civil Service start afresh, and whatever may be the losses, from the passing of the old régime, there will be in the new régime much that will be a distinct advance to the personnel who will produce better results. Some will agree that Whitleyism has, on the other hand, brightened the present and the future by what it has already conceded to the Staff. Agreed that the Service has benefited like other groups of the community: I feel my special duty is to consider the Whitley idea from its wider standpoints, and show that it has negatives and positives, and that while the career of the Civil Service is more clearly defined, that career is also to be accompanied by the new psychology of Mr. John Lee.

But will the career be tinged and inspired throughout by the loftiness of the appeal to the imagination, public duty and service? Will there be that perfectness of training that the servant will be consolidated in his public character, and his environment sustain him in a high degree of efficiency? Will there be a common standard of leadership, and I lay great stress on leadership, constantly realised, drawing towards higher attainments? Will every man's gifts or peculiar bent find its proper sphere? Will the Civil Service Parliament have a place in the interests of the public servant after he is released from his daily duties? Or will he add to his services after hours other voluntary civic duties recommended by earnest men? One of Mr. Whitley's desires (so he told me when we talked with him about his schemes) is to compel employer and employed to meet other than in the office; true progress, he thinks, will be made when men on either side do not live in a narrow world, like many Victorians, however successful the highest in rank may have been, but enter into the best of the social life of the times. The combination of interests will be for the welfare of all. The expression of this opinion in no wise detracts from the views referred to earlier.

The gradual change in the organisation of public duties will ensure that proper functions will be allotted to responsible Officers, the highest Officers, and it will not be so frequently remarked that whereas one part of a Department is overborne with excessive duties, another part is privileged to enjoy comparative quiet. Division of labour, labour-saving devices, and a host of other productions of the Whitley Scheme will permit the great machinery of public administration to adjust itself readily to the demands of the moment. This happily accomplished, the life and interest of the public servant will be something different from the past, will almost unconsciously lead to much more business being conducted than at present by the same group of individuals, and withal the physical strength and intellectual power remain, because suitable environment will be ensured under the new conjoint action of Whitleyism. I cannot enter into the material reward for sustained effort. Humanity is wonderful, mysterious—life; and Whitleyism, the new force operating in the Civil Service should have a quickening impulse to life in public departments, but when all is said the influence of reward as well as the fulfilment of duty must be a factor in the new régime, and if that new régime is to call forth all that is best in a man throughout his career.

I fear I have sketched this paper primarily from the standpoint of the Administrative aspects of Whitleyism. Our members are more intimately concerned with Departmental Councils—Engineering, Technical, etc., but the ideas I have expressed are, I think, to be found more or less in all Whitley Constitution.

We have a scheme proposed for the industrial world (so called), applied to an old régime, a great institution, an institution which in spite of criticism, has made the Government of the country to be admired by other great states—a scheme introduced in the midst of conflicting thoughts, of a deeply moved nation, of the after effects of a crime against humanity, of the consciousness of a generation in the space of six years, of almost daily potions of deflation and inflation—a scheme launched in an era when the scientific spirit is everywhere, when the school and university curricula are undergoing rapid change, when many ex-service men have returned to find no opening for times of peace—and lastly, but not least, when the Treasury has added to its staff and appointed its representatives in every department to regulate the working of the new idea. What it will produce I cannot say.

I have but attempted to place on record some of the impressions which I have received from the study of Whitleyism since its inception. I am conscious I have not presented them worthily to the honourable Telegraph and Telephone Society. The preparation of the address has, moreover, been subject to many interruptions, many calls upon one's time to attend to matters arising out of Whitley problems. At the moment there are infinite details of the establishment of the new machinery which compelled a process of selection—and not an easy one—of material. The one all-absorbing, outstanding question to me has been the place of the Civil Service in the eyes of all other Administrations. Criticised it may be, faults found here and there, slow emergence into the full light of day admitted, still I venture to submit that on the whole, whether retarded in its true development by considerations beyond the control of the Service, whether the right professional spirit has or has not been always exhibited, whether professional training calculated to meet the changeable conditions of public affairs, has been found wanting, whether the Civil Service has preferred to live, or necessarily has lived, unknown by the world at large, but now has come forward ready to mingle in the midst of national interests. I submit again, the Service under Whitleyism has declared in its Constitution to each and all it may concern, that it desires to stand well as a public institution working wholeheartedly, impartially, efficiently for the good of all.

In closing my address I beg permission to quote the final paragraph of the first Reconstruction report, viz:—

Such then are the proposals, that we commend to the National Council; but we desire, in conclusion, to emphasise the truth that forms are lifeless things without the spirit that animate them, and that no rules or regulations have any value apart from the broad and sympathetic treatment with which they should be handled and interpreted. Administration is at least as much a matter of heart as of brain. Throughout our deliberations we have striven to promote what we conceive to be the best interests equally of the State and of the Civil Service, we have endeavoured to remedy what has appeared to us to be defective while, at the same time, not impairing what experience has shown to be good; and in all that we have proposed we have kept steadily in view the ideal of an efficient and contented Public Service."

LONDON TELEPHONE SERVICE NOTES.

THE Controller attended the King's Levee at St. James's Palace on March 7.

It has not been the fortune of many connected with the Telephone Service either under private or National administration to be classified with the Saints of old. Our Controller is probably unique in having had this distinction conferred upon him. It happened in the course of a debate at one of the meetings of the City Corporation when a speaker claimed for him a likeness with St. Simeon Stylites. St. Simeon, as of course everyone ought to know, was a Syrian monk in the fifth century, who spent many years of his life on the top of a pillar over 70 feet high and only four feet square, which he caused to be erected in Antioch. He spent thirty years on top of that pillar in meditation and preaching, and ultimately died thereon. Antioch was the Syrian capital and became notorious for its wealth and luxury and

for the turbulence of its inhabitants. St. Simeon's endeavour was doubtless to make converts of the wealthy and luxurious inhabitants of Antioch by the example of an abstemious life and by preaching. We are not told what measure of success he achieved, but we may reasonably assume that he met with much resistance where he touched the pockets of the wealthy, and there is little doubt that he received small reward in this world. The high office of Controller of the London Telephone Service was likened to St. Simeon's pillar, but more close is the resemblance between our City and the ancient capital of Syria as regards wealth and luxury and in turbulence as we have experienced it in matters telephonic. Our modern St. Simeon is engaged in an endeavour to convert certain magnates to the view that the claim for a larger financial contribution from them is just, and he must be abstemious for, as the speaker said, his job is worth three times the stipend attaching to it. The comparison appears to be more complimentary than disparaging, and although our chief has been referred to in many and various terms on sundry occasions we doubt whether he has previously been likened to a saint.

Telephone and Telegraph Society.

Mr. Cook's paper, "Studies in Whitleyism," read before the Telephone and Telegraph Society invoked some keen discussion. Mr. Lee's contribution was greatly appreciated. The subject is one which can be approached from several points of view, and time prevented the saying of much that could be said on the matter.

Monday, April 18, is a date to be remembered. Mr. R. P. Crum, who was one of the party which recently visited the United States, will on that date read before the Telephone and Telegraph Society a paper entitled "Some features of the American Telephone System." The meeting will be held at 5.30 p.m. in the Great Hall, River Plate House, Finsbury Circus. Members of the London Telephonists' Society will be welcomed.

Telephonists' Society.

There is little doubt that the success which attended the last meeting of the London Telephonists' Society will ensure a large audience if a similar programme is arranged next year. Miss Dalley's prize paper in the essay competition was accorded an enthusiastic reception, clearly supporting the decision of the judges in awarding it a prize. The main feature of the meeting was the Elocution Competition in which eleven members of the Society took part. The task consisted of the repetition of certain standard operating expressions heard by the audience, who were the judges, through loud speaking telephone equipment kindly installed for the occasion by the Western Electric Company. The five prize winners were:—

Miss J. E. Graves, Operating School; Miss E. J. Turner, Mayfair Exchange; Miss A. J. Franklin, North Exchange; Miss K. E. Clarke, North Exchange; Miss L. E. Mason, Western Exchange.

Mr. Preston presented the prizes and made a very encouraging speech.

The session has been a very successful one. It closed with a record membership, and members will look forward to next session under the presidency of Mr. M. C. Pink.

Swimming.

The several swimming clubs formed at the exchanges in the London Telephone Area have banded themselves into an Association to be called "The London Telephone Service Swimming Association." The Controller has consented to become the first President of the Association.

New Exchange Work.

The past month has seen the opening of a new exchange known as Langham and also the completion of a new switchboard at Redhill. The opening of Langham was effected very successfully on March 5. Its nucleus was 1,240 subscribers from Mayfair Exchange. It commences with 236 outgoing and 260 incoming junctions and 19A and 10B positions working; 13,640 pink pegs were used for the Mayfair multiple in pegging the lines of the transferred subscribers. Two hours after the transfer there were no known internal exchange faults, and as a result of the speaking and signalling tests the engineers had in hand only two cases of faint bells at subscribers' premises and eight line faults. The result was highly satisfactory to both the engineering and traffic staffs.

New magneto equipment has been installed at Redhill, replacing the installation which has done useful work for the past 18 years. The new equipment comprises 5A and 2B positions and has capacity for a total of 540 subscribers. There are 419 existing subscribers and the working junctions number 71. It is accommodated in the same building but not in the old switchroom.

Langham Choral Society.

In the rendering of Mendelssohn's "Elijah" at the Queen's Hall on Feb. 18 the Society achieved a great success. The Press references are highly complimentary and they encourage the Society to go forward with confidence in undertaking still more difficult works. There was an increased demand from the public for tickets, which is an indication of the good reputation the choir is establishing. The hall was full and the financial success of the venture is assured.

By the time these notes are in print the Society will have filled a special engagement at the Royal Albert Hall, and no doubt will have added still further to its laurels.

The last performance by the Society this season will take place at the Queen's Hall on May 10.

Mayfair Exchange.

The spacious ball room of Australia House was the scene of much gaiety and enjoyment on the occasion of the Mayfair Exchange dance. The excellent floor accommodated about 250 dancers, whose steps were accompanied by the syncopations and harmonies of Leonard Coombs' Bon Accord Band. The programme, though quite modern, was sufficiently varied to cater for the tastes and abilities of all. A novel feature was afforded by the coloured lime-light effects, which lent a dazzling appearance to some of the waltzes. The whole evening was as happy as the jovial M.C.—Mr. W. Dempsey, to whom the thanks of all concerned are due. The memories of the dance have called for a repetition, and we can confidently say that Australia House will soon be the scene of another such gathering.

Park Exchange.

Kind hearts are the gardens,
Kind thoughts are the roots;
Kind words are the blossoms,
Kind deeds are the fruits.

The above quotation is very symbolic, and indeed true, of a very delightful party given by the staff to 212 poor children at St. Stephen's Schools, Bayswater. The whole of the cost was defrayed from funds collected by the staff, and they are to be congratulated on the excellence of entertainment given, and the amount of cheerful, willing help they individually gave, in waiting upon, and amusing their small guests. To those tiny children from the poorest of homes, and surroundings, the pleasant schoolroom, with its prettily decorated teatables, filled with good things to eat, its toys and gifts, and smiling hostesses, must indeed have seemed a glimpse into fairyland. One felt the pity of it, that such an experience could not come more frequently. After tea, games were played and popular choruses sung with much fervour of tiny enthusiastic voices. These were followed by an excellent entertainment of just the items most loved by kiddies—the daintiest of fairies in the person of Miss Irene Burville danced, then followed two clowns and a conjuror, and finally a real Punch and Judy Show. The few hours sped by all too quickly, and as the small guests reluctantly bade adieu, each was presented with a toy, a bag containing sweets and fruit, and a new penny. To most of the girls, the toy given was a doll, which had been daintily dressed by members of the Staff, and which gave the greatest joy to the delighted recipients. To see the unutterable Mother love shine down from tiny pinched faces upon those dollies, must indeed have been full repayment to the donors for all their kindness in providing the gifts.

Regent Exchange.

Australia House presented a pretty and animated scene, and when Regent held high revel and "tripped the light fantastic toe." Although fancy dress was optional, prizes were awarded, and many quaint and ingenious costumes were to be seen. It was a merry and successful occasion, and the girls are eagerly looking forward to the next.

The staff had a delightful surprise on Saturday, Feb. 5, when their Gifford House *protégés* turned the tables by inviting them to a sumptuous tea and very enjoyable concert, as a mark of their keen appreciation of the efforts made by Regent on their behalf during the past eighteen months. The expenses were defrayed entirely by the men, and the matron and nurses made gracious attendants, who anticipated every want of their guests. In a speech by one of the men it was explained that this entertainment had been devised as a means of conveying to Regent how greatly the men valued the attentions of those who had given them so much happiness.

Tilbury Exchange.

The Queen's Hotel, Grays, Essex, was the venue of a very successful evening of dance and song arranged by the staff. The presence of Mr. C. J. Welch, the Section Superintendent, and of Mr. C. Roberts, of the District Office, was greatly appreciated.

LONDON ENGINEERING DISTRICT NOTES.

ONE hundred and ninety-eight members of the staff from the Headquarters and Sectional Offices were present at the tenth annual clerical supper held at the Bridge House Hotel, London, S.E.1, on Tuesday, March 1. Mr. A. E. Cooke, the Principal Clerk, presided, and was supported by Mr. F. Freeman in the Vice-Chair. The Superintending Engineer, Mr. A. Moir, O.B.E., was "the guest of the evening." Mr. Cooke in the course of his remarks welcomed the presence of Mr. Heath and other visitors. He touched upon the subject of re-organisation, and expressed the hope that the Post Office proposals would soon be published and would be entirely satisfactory to all concerned. He complimented the clerical staff on the manner in which they performed their duties, and stated that the report of the recent Audit had been entirely satisfactory.

In proposing the toast "the Guest of the Evening," Mr. Cooke spoke of the good feeling which existed between the Superintending Engineer and the Senior Supervising Clerical Officers, and made special mention of the successful manner in which Mr. Moir had organised the London Engineering District, which now has a staff of nearly 6,000.

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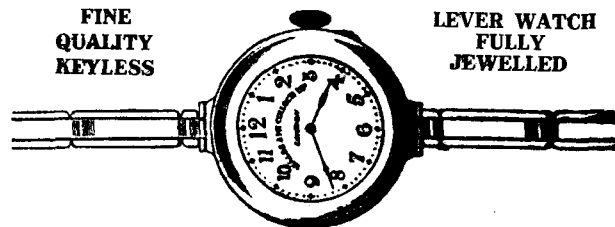
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Replying, Mr. Moir said that on the occasion of their tenth annual supper, he was glad to be able to assure them that during the decade just completed they had not been standing still. On the contrary, by persistent effort, they had greatly improved the maintenance of the engineering plant. This, he stated, was as much due to clerical as to engineering efficiency. He regretted that delay had taken place in applying the improved reconstruction rates to some of the classes, but he had no doubt that their patience would shortly be rewarded. Mr. Moir announced that Mr. Heath, who had a wonderful topographical knowledge of London, had promised to write an article showing that Denman Street was situated in the area surrounding Shakespeare's South London Theatre. From this the staff would be able to recognise, as they took their walks abroad, when they were treading upon Shakespearian ground. In conclusion, he thanked them most sincerely for the honour they had done him by inviting him there as their guest and for the way in which they had responded to the toast so gracefully proposed by Mr. Cooke.

As on former occasions a very creditable musical programme, all the items of which were contributed by members of the staff, followed the supper. Mr. J. W. Kimber, the musical director, was assisted by Messrs. S. L. Bickerton, E. W. Casserley, T. A. Claydon, C. W. Cornwell, S. C. Edser, A. W. Edwards, C. A. Edwards, J. J. Gerke, H. Gilbert, E. F. Griffiths, Chas. Harris, A. E. Spears, G. H. Stanbridge, H. H. Thorne, A. A. Turner and the L.E.D. Orchestra, led by Mr. H. W. Gardener; Mr. H. Curtis was at the piano. Mr. Freeman proposed a vote of thanks to the artistes and the committee who had organised a most enjoyable and successful evening, and the proceedings terminated with the singing of "Auld Lang Syne."

I.P.O.E.E. Meeting.

On March 7 there was a gathering of the Clans at the Institution of Post Office Electrical Engineers to hear a paper on the Relay Automatic System by Mr. Dipple, of the Engineer-in-Chief's Telephone Section. A paper on Auto-Telephony always attracts a large audience, and on this occasion, not only were there present several colleagues from other branches of the Service, but also several representatives from the firms who make a speciality of manufacturing telephone equipment. It is probably generally known that Col. C. B. Clay, one time Metropolitan Superintendent of the National Telephone Co., is General Manager of the Relay Automatic Co., and it was noted with pleasure that he was in the hall.

To describe an automatic system of telephony in such a way as to ensure the audience gaining a clear understanding of its general principles is by no means an easy task, but Mr. Dipple succeeded very well. He very wisely limited the explanation of circuit diagrams to a few main features.

The Relay Automatic Co., is equipping an exchange with their system at Fleetwood, and in due course the Department will have data which will enable the merits of this system to be gauged when compared with other systems. It certainly has some very promising features, the chief of which is, that practically the whole of its functions are carried out by means of relays, the mechanical appliances used in other systems being non-existent. Although the application of the system to public exchange work is comparatively new, its use for private installations has shown that it can be relied upon to do all that is required of it with very little skilled attention.

Another New Telephone Exchange.

Soon after the Armistice it was seen that there would be considerable delay before any of the new exchange buildings could be completed and equipped with plant. This delay was inevitable and is a direct outcome of the War, and the consequent shortage of materials and labour of the right kind. The only way to meet the need for exchange plant appeared to be to erect a number of exchanges of a temporary nature and to carry out the work by the local engineering staff. The first of these exchanges was opened at Clerkenwell by the transfer and conversion of the Air Ministry P.B.X. from the Hotel Cecil. The second one was provided by using some second-hand sections of the No. 9 exchange type to relieve Battersea, and was called Latchmere. The third was formed by adapting some No. 9 P.B.X. type boards and installing them in a 60-ft. Army hut at Stratford, and so providing the Broadway Exchange. The fourth was opened on March 4. It is equipped for 2,000 lines, and is of the No. 10 C.B. type (40 volt). It is housed on the roof of the Western District Post Office. This building was originally so constructed as to permit of another floor being added if required, so that it was only necessary to provide walls and a roof, the floor being sufficiently strong to carry the weight of a 34 position switchboard with main frame, power plant, &c. Although the exchange is a temporary one the workmanship throughout is of the highest order.

Only those who have actually taken part in an exchange transfer will fully appreciate the careful planning and organisation that is necessary in order to ensure that a new exchange shall be handed over to the Traffic staff as a going concern free from faults. The new exchange which is named "Langham" is a relief exchange to Mayfair, and arrangements were made to divert from Mayfair approximately 1,240 subscribers' lines and to provide the necessary junctions and a proportion of spare wires to allow for growth. In order to do this it was necessary to make many thousands of wire diversions and to connect the new exchange to the existing cable system by a new cable route. Cable bearers were also provided in a light well extending from the basement to the top floor and for this purpose it was necessary to use travelling cradles.

The new wires were "teed" to those which were working on Mayfair Exchange, and precautions were taken to protect these tees during the transfer operations. Subsequent to the transfer the Mayfair portion was cut away and

the joints made permanent. The operations were carried through without a hitch. The whole of the external and internal work was carried out by the L.E.D. staff, and all concerned deserved the commendation which they received from the Superintending Engineer. Further relief will be given to the Mayfair Exchange Area when the Grosvenor Exchange, also of the No. 10 C.B. type is opened in a few months' time.

* * *

New Toll Exchange.

Good progress is being made in the laying of underground along Ludgate Hill. This work is in connexion with the Toll Exchange which is now being installed in a building in Norwich Street, off Fetter Lane.

Apropos of this, the following was overheard on the top of a 'bus passing St. Paul's Cathedral, recently:—

CHILD: "Why are they digging such a big trench here, Daddy?"
FATHER: "The Cathedral is giving way and they are underpinning it."

British Industries Fair, White City, Shepherd's Bush.

This Exhibition, which was held during the week ending March 5, involved a considerable amount of work by the Department's local Engineering staff. Provision had to be made at short notice for 300 separate exchange lines. In addition a switchboard for the Board of Trade with 13 extensions radiating to different parts of the building was installed. Four of the direct exchange lines in the Gallery of the Exhibition also were provided with extensions to the main halls. It is interesting to note that the work of wiring the Exhibition was completed and ready for use on Feb. 19 in 20 working days, and in spite of the fact that the cables had to be fastened to the roof girders and in other difficult positions, no mishap of any kind occurred. Nearly one and a half miles of cable was run in the Exhibition on steels and suspenders attached to the roof girders. Other interesting figures as are follows:—

No. of Exhibitors' stalls in the gallery ...	...	540
No. of Exhibitors' stalls in the main building ...	...	560
No. of direct exchange lines ...	...	280
No. of call offices... ..	...	12

Denman Chess Club.

The attendance of members continues to be very good and interest in the Tournament and "Knock-out" competition has been well sustained. The finalists for the latter are Messrs. Gardiner and Francis.

On the 2nd inst., a match was played between teams selected by Mr. Freeman and Mr. Cornwell. The result was a win for Mr. Cornwell's team by 6 to 4.

A "Lightning" match will be played on the 16th inst. Players must move when the bell rings, every half-minute, or forfeit the game.

PERSONALIA.

LONDON TELEPHONE SERVICE.

- Miss L. M. BLAKESLEY has been promoted Supervisor at Hampstead Exchange.
- Miss A. F. BERRIDGE has been promoted Assistant Supervisor, Class II, Hampstead Exchange.
- Miss E. M. KITE has been promoted Assistant Supervisor, Class II, East Exchange.
- Miss D. J. THWAITES has been promoted Assistant Supervisor, Class II, Hampstead Exchange.
- Miss A. M. J. TAYLOR has been promoted Assistant Supervisor, Class II, Paddington Exchange.
- Miss M. E. TAYLOR has been promoted Assistant Supervisor, Class II, Regent Exchange.
- Miss E. L. ROSS has been promoted Assistant Supervisor, Class II, Holborn Exchange.
- Miss K. MIDLANE has been promoted Assistant Supervisor, Class II, City Exchange.
- Miss A. E. ANDREWS has been promoted Assistant Supervisor, Class II, Trunks Exchange.
- Miss E. E. RANSLEY has been promoted Assistant Supervisor, Class II, Avenue Exchange.

The following resignations have taken place on account of marriage:—

- Miss J. A. BENNETT, Assistant Supervisor, Class II, Sydenham Exchange.
- Miss E. ADAMS, Telephonist, East Exchange.
- Miss D. T. DICK, Telephonist, London Wall Exchange.
- Miss F. L. GATES, Telephonist, Trunk Exchange.
- Miss M. KENNEDY, Telephonist, Avenue Exchange.
- Miss A. C. E. RANDALL, Telephonist, Trunk Exchange.
- Miss E. H. THOMPSON, Telephonist, Tilbury Exchange.
- Miss A. M. WEBSTER, Telephonist, City Exchange.
- Miss E. A. WHEELER, Telephonist, Museum Exchange.