

Post Office Telecommunications Journal

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and the administration of telecommunications.*

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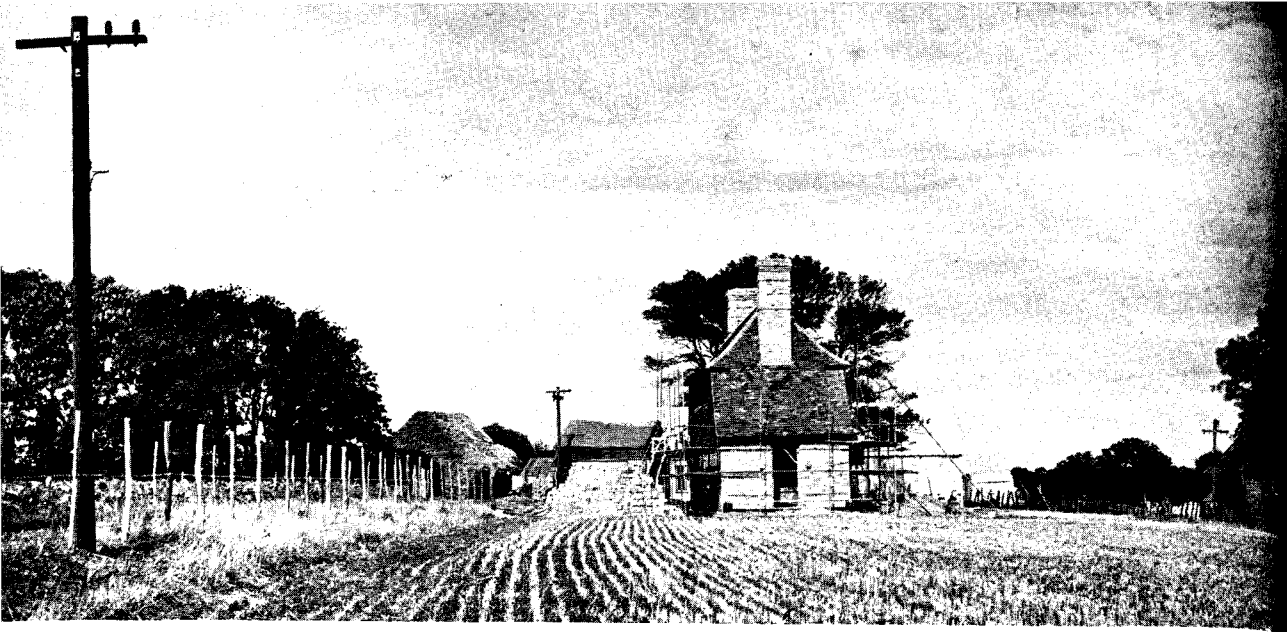
VOL. 2. NOVEMBER, 1949. NO. 1.

Comment

WE DESCRIBE IN THE PAGES OF THIS ISSUE THE completion of the work of installing a telephone for Farmer Harold Hawkins of Wildage Farm, Stelling Minnis, near Canterbury in Kent. This telephone, Stelling Minnis 216, has special significance as the 5,000,000th telephone to be added to the Post Office system. As Farmer Hawkins jovially pointed out, the telephone is the first public utility service to reach the farm, thus breaking down for all time its mediaeval seclusion. Farming has been done at this ancient spot since the days of Queen Elizabeth, and before; but with the telephone it will now be farming with a difference.

In March, 1939, a year of fateful memory, the system had 3,235,498 telephones. The number of telephones fitted since the war, two and a quarter millions, (resulting in a net increase of 1,100,000) shows that the rate of provision has far outstripped the pre-war achievement. When the difficulty of getting supplies is taken into consideration, this performance becomes doubly creditable.

The Postmaster General's greeting to the engineering workmen was more than just a tribute to their work on the particular job. It was a symbol of his recognition and admiration of the fine accomplishment of all their colleagues in the Post Office telephone enterprise throughout the post-war years. In that enterprise and development, the extension of the telephone service to the remote parts of the countryside and to the farming industry generally has taken a most important place. It is here that the Post Office has striven to further the prosperity of a great national industry.



The subscriber's pole route from the farm to the nearest existing pole route

who had planned and executed every phase of this splendid development, he stressed that they had played a worthy part in the spectacular progress of agriculture in this country during the last few years. Within the memory of many present, life in the country fifty years ago was epitomised by the horse-drawn plough and farm wagon, the oil lamp and the well, the interminable hand processes of sowing and harvesting, and remoteness from the amenities of the towns. Farming had become to-day a vital and major industry. It had seen the introduction of many ingenious mechanical devices which helped to speed and improve the productivity of the land. Motor cars and motor buses linked town and village by frequent services. Electric lighting and

power and water services were in all but the most inaccessible places. In this transformed countryside, the telephone to-day played as great a part as the tractor and the harvester. Not only was it one of those modern social services which helped materially to break down isolation and to make life in the country more attractive; it was of inestimable value in enabling the farmer to conduct efficiently the business of his farm. The rate of increase of telephones in the countryside was, in fact, a measure of the countryman's prosperity, and so in this grand old corner of England, where Roman fought Briton, where Dane and Saxon met and where Augustine preached; in this rich land of orchard and hop garden, of oast house and farmyard, the

Mr. Hawkins' temporary home on the site



Wildage Farm under reconstruction



Mr. Hawkins speaking: "The telephone is the first public utility service to reach the farm"

Post Office had come to instal this symbol of modern life—the telephone.

On presenting the telephone, Mr. Paling continued, "I am confident that the telephone will prove its worth in connection with your enterprise in the production and marketing of food, and I hope that your family will enjoy to the full the social advantages of being 'on the 'phone'. If there is any friend or relative with whom you would like to speak, I invite you to do so and, on this occasion, at Post Office expense."

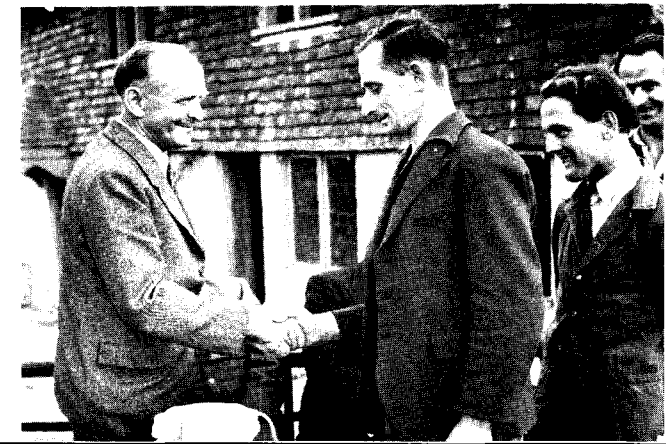
Mr. Hawkins, in reply, said that it was a great honour for him to be the recipient of this telephone, although he had had to wait three years for it. He realised, however, what great difficulties the Post Office was up against. The telephone service had, in return, the honour of being the first utility service to reach the farm, and he was glad to pay tribute to the men who had worked on the job.

Mr. Everist gave some interesting particulars about Stelling Minnis. People had difficulty in finding Stelling Minnis. It had been described as remote, isolated and God-forsaken but, in reality, it had great historical connections. It was almost an unknown village, but it was recorded in the Domesday Book as having been sold for 36s. od., plus one serf, and Hasted's History of Kent had described it as a rough and rude place as were also its inhabitants; and the

ceremony had now placed it well and truly on the map. The word "Minnis" meant common, and Stelling Minnis had its own laws. The ancient rights of the 120 inhabitants included the privilege of driving their sheep, bullocks and horses over the Minnis and across the main roads. He recalled that Wellington's troops, prepared to resist invasion, were once quartered on the Minnis.

The Mayor of Canterbury, proposing a vote of thanks to Mr. Paling, said that he was proud to have taken part in the ceremony. In Canterbury they were very proud of Mr. Scarborough who, with his staff, was doing a great job in the Area.

The Postmaster General thanking engineering workmen for their work on the installation of the five millionth telephone





From left to right: D. F. HAMILTON, A.M.I.E.E., Area Engineer; J. PRESCOTT, Area Engineer; MAJOR E. B. M. BEAUMONT, B.Sc., A.M.I.E.E., Area Engineer; J. E. YOUNG, A.M.I.E.E., Area Engineer; J. F. McDONALD, Telephone Manager; H. JEFFS, Assistant Telephone Manager; B. WATERS, Chief Clerk; S. A. T. PAYNE, Chief Traffic Superintendent; C. G. DANN, Chief Sales Superintendent.

LONDON TELECOMMUNICATIONS REGION, CENTRE AREA

The Area is rich in history and covers ten square miles. It includes the West End and Whitehall districts of London, and extends from the City of London boundary in the East, to Kensington Gardens in the West, from St. Pancras in the North, to the Thames boundary in the South. Among the important establishments served are the Royal Palaces, the Houses of Parliament, Headquarters of the Fighting Services, most of the other Government Departments and the Metropolitan Police at Scotland Yard. These are served by some 200 Private Branch Exchanges employing an operating staff of about 1,500. Also served by the Area are a number of important foreign Embassies, all the Northern railway termini, Theatreland, Clubland, large stores, business houses, and leading hotels of world repute. The Area contains 18 automatic exchanges with a total of 105,648 exchange lines and 316,978 stations. It maintains nearly a 1,000,000 miles of underground, and 612 miles of overhead, wire. In addition, there is the Central Directory Enquiry Bureau serving the whole of the London Telecommunications Region. Approximately 7,000,000 calls are originated per week within the Area. The staff numbers more than 7,000, of whom 2,593 are engineering and 3,000 operating.

BRIGHTON TELEPHONE AREA

Mention of Brighton suggests at once happy holidays, and although the Administrative Telephone Area, which covers 750 square miles of the County of Sussex, includes many of the most favoured residential towns and villages on the South Coast, its past and more recent history and activity reveal it to be much more than a playground. During the War, the Area played a vital role in providing and maintaining key military telecommunications. Post-war years brought an unprecedented demand for telephone facilities for re-settlement, and for establishing new light industries throughout Sussex. 51 per cent. of the subscribers are now on the "Business" tariff. There are 85 exchanges, of which 51 are automatic. The 100,000th telephone was installed last month. Staff, excluding day and night operating forces, comprises 1,387 men and women, of whom 80 per cent. are employed in the engineering and traffic grades, and 20 per cent. on sales and accounting. The Area watchword is "Progress".

From left to right: G. S. NEALE, Senior Sales Superintendent; F. N. CHARLES, A.M.I.E.E., Area Engineer (Planning and Works); G. EDWARD, O.B.E., Telephone Manager; L. V. GARROOD, Chief Clerk; D. C. BLAIR, A.M.I.E.E., Area Engineer (Installation and Maintenance); W. A. STRIPP, Acting Chief Traffic Superintendent.



Still Going Ahead



The following article gives a survey of the difficulties and achievements of the year 1948-49. Despite the acute shortages of plant and equipment, telephone service was extended to many newcomers, and much was done to improve the quality of the telegraph and telephone services. In addition, foundations have been laid for long-term schemes of trunk mechanisation and automatic telegraph switching.



AT MARCH 31, 1948, THE POST OFFICE telephone network consisted of 2,835,000 exchange lines and 4,653,000 telephone stations, including 64,000 shared service stations. The waiting list of applicants for telephone service had risen to 445,000 while only 9.9 per cent. of the total exchange capacity of 3,208,000 lines was spare and, out of a total of 5,809 exchanges, 1,666 were completely full. In the local cable distribution system, the pre-war 34 per cent. margin of spare pairs through to exchanges had fallen to 24 per cent., while no spare wires whatsoever existed at 139,000 of the 111,000 cable distribution points in the country.

1. THE TELEPHONE SERVICE IN 1948-49

In most respects, the adverse factors present in 1947-48 continued to operate in 1948-49 and, although there was some falling off in the previous year's unprecedented rate of demand for service, this was not sufficient to affect the general situation. Adequate relief to the telephone exchanges or to underground plant proved impossible and, owing to the acute national shortage, building work for the Post Office remained restricted. Raw material and production problems hampered supplies. Rather more civil engineering labour on local duct-laying enabled some arrears to be overtaken, and a number of works to be prepared for cabling in due course. In general, however, the provision of service became even more difficult and much more costly in both labour and materials.

The Engineering Programme.—Because of the acute need for economy in capital expenditure, manpower and essential materials, the scope of the engineering programme of works

to be completed had to be fitted into a restricted national programme. Only essential works could be put in hand. The intake of equipment and cables from the telecommunications industry had to be reduced both for financial reasons and in order to encourage exports. Although expenditure during 1948-49 was actually higher than in the previous year, much of the increase was due to rising prices, and less additional plant became available than had been originally envisaged.

Stores.—Despite individual shortages and some lack of balance in supplies, the overall stores position improved during the year. For example, outstanding orders from Telephone Managers to the Supplies Department were reduced by 50 per cent., and the number of items for which demand exceeded supply was reduced by 25 per cent. Progress with the installation of street cabinets and pillars (designed to provide cable cross-connections and thus to give flexibility in the local line network) had previously been hindered by slow deliveries but, by the end of the year, increasing supplies were coming to hand so that this very necessary work could be pressed ahead. Switchboard cable, except for certain sizes used mainly in repeater stations, also became available in much greater quantities.

While special steps were taken to increase the rate of manufacture of scarce items on the one hand, the production of certain other items was adjusted to ensure that excessive stocks were not accumulated. The need to economise in the use of controlled materials led to experiments for the introduction of a type of cable with a thin lead sheath enclosed in a protective plastic covering (Polythene). Three junction-type cables of this construction have been laid in

different parts of the country and 50 miles of a smaller type, suitable for laying direct in the ground, are being tried out in rural areas. These cables will, if successful, replace overhead wiring and so reduce the total pole requirements for farmers' and other similar lines.

Equipment.*—The building shortage impeded the normal programme for major exchange conversions to automatic working, but 40 of the larger urban exchanges, with a total capacity of 39,500 lines, were nevertheless converted. A further 126 existing large urban exchanges were extended by 85,300 lines. In addition, 184 new small automatic exchanges were opened and a considerable number in rural areas were extended.

Apart from the new automatic equipment brought into service during the year, the year saw the installation of plant for larger, long-term, conversion schemes. These schemes mainly affect the large cities, and extensive programmes of work are in hand in Edinburgh, Glasgow, Liverpool, Aberdeen and Cardiff.

TYPICAL FIGURES SHEWING PROGRESS THROUGH THE YEARS 1938-49

March 31st	Total Number of Stations	Total Number of Exchange Lines	Additional Telephones provided per annum (excluding transfers)	Total Number of Shared Service Subscribers	Percentage of Spare Pairs at Distribution Points	Percentage of Spare Exchange Plant
1938	3,050,000	1,930,000	395,500	172	33.6	9.8
1939	3,235,000	2,047,000	377,900	134	33.4	12.0
1940	3,339,000	2,061,000	410,100	117	35.0	17.0 (estimated)
1941	3,311,000	1,971,000	404,300	107	37.0	22.0 (estimated)
1942	3,316,000	1,994,000	451,200	205	38.0	24.0
1943	3,536,000	2,085,000	423,600	593	35.0	23.0
1944	3,764,000	2,179,000	400,200	1,547	33.0	22.0
1945	3,889,000	2,229,000	370,900	2,997	33.0	20.0
1946	3,937,000	2,336,000	428,400	5,252	29.0	17.0
1947	4,319,000	2,636,000	727,700	15,777	26.0	11.2
1948	4,653,000	2,836,000	607,100	62,962	24.0	9.9
1949	4,919,000	2,952,000	569,600	131,886	24.0	11.2

The volume of outstanding orders for exchange equipment increased during the year, thus reflecting Post Office co-operation with the equipment manufacturers. For, by restriction of Post Office demands, diversion of the maximum proportion of production to export orders was made possible.

By the end of the year, the equipment situation shewed a slight overall improvement, the total exchange capacity having been extended to 3,379,000 lines.

*Where "lines" are quoted in this section, this relates to multiple capacity.

Local Line Plant.—Expansion of the local underground distribution system was hindered mainly by shortage of cable supplies; in general, duct work proceeded well ahead of associated cabling, and was assisted by a relaxation in the relative labour control. In addition to about 1,000 Post Office men engaged on minor duct-laying works, some 2,200 contractors' men were employed on major duct schemes, and this staff, between them, completed 1,100, 790 of which were required for local cables. During the year, the subscribers' cable network was increased from 4,306,000 to 4,457,000 lines, but these were taken into use so rapidly that the percentage of spare lines actually showed a decrease, falling from 24 to 23.8 over the year. At the end of 1948, 140,000 cable distribution points, out of a total of 426,000, were still without any spare wires.

Against such a background, the results achieved, though much below those desired, were good. By the end of March, 1949, 2,952,000 exchange lines (including 66,000 lines each having two subscribers) were connected, while the

number of telephone stations had risen to 4,919,000—a net increase of 117,000 subscribers and 266,000 stations during the year. The true measure of the actual work done is, however, better shown by the gross figures of demands met. From this aspect, 305,000 new subscribers (including "sharing" subscribers) were given service, while a total of 570,000 new telephones was installed (66 per cent. of these for business applicants)—a rate which, although lower than 1947-48, is nevertheless appreciably higher than the peak pre-war year 1937-38. In the same period, 3,100 more public telephone

kiosks were brought into service, while telephone service was given to an additional 12,500 farmers, most of whom were located such a distance from available plant that connection involved considerable construction work.

Demand for telephone service continued, however, to exceed supply so that at March 31, 1949, the waiting list of applicants for exchange service had risen to 510,000 (excluding 51,000 more in course of provision). With the increasing amount of work required to provide each line, the continuing financial restrictions, and the difficult plant situation, it seems doubtful whether the present rate of supply can be maintained in 1949-50.

2. BETTER SERVICE

Whilst the amount of construction work had to be limited, wartime arrears of maintenance, particularly in automatic exchanges, were tackled. There are already signs that improvements are resulting, particularly at director automatic exchanges (which serve 30 per cent. of the telephone subscribers). For example, of the calls at these exchanges which fail to mature at the first attempt, only 7.2 per cent. can now be attributed to causes within Post Office control, as compared with 9 per cent. in 1945 and with 8 per cent. before the war. Automatic calls affected by plant faults are only 7.4 per cent. as compared with 9.2 per cent. in 1945, and 7 per cent. pre-war. Broadly, therefore, the efficiency of these exchanges is back to the pre-war standard. Not quite the same progress has yet been made at non-director automatic exchanges, which serve 25 per cent. of the telephone subscribers, although here again there has been some improvement.

On the operating side, service efficiency depends on the quality of the operating staff, and this in turn on the recruitment, retention and training of this staff. The history of the year is encouraging in this sphere. There was an increase in the proportion of established to total telephonist force. This means an increase in the number of telephonists with a potential permanent interest in the service. In April, 1948, out of a telephonist force of 45,450, only about half were established. In April, 1949, out of a total of 45,860, about 60 per cent. were established officers. A parallel trend towards the ideal of stabilisation in staff employed is

shown by a reduction in wastage, that is, the loss of staff from the service for various reasons. An indication of this is shown in the numbers of telephonists undergoing preliminary or initial training. In November, 1947, 7.9 per cent. of the staff were attending such courses, while in November, 1948, the percentage was only 4.9.

STAFF TOTALS

March 31st	Total Telephonist Staff	Temporary Telephonist Staff
1938	27,981	4,021
1939	27,622	3,417
1940	28,526	5,288
1941	33,274	11,288
1942	34,466	13,655
1943	35,599	16,381
1944	35,798	16,691
1945	38,730	20,341
1946	43,214	25,056
1947	45,841	27,189
1948	48,212	25,098
1949	48,244	20,385

Effective training itself is fundamental to staff efficiency and during the year, 57.5 per cent. of provincial telephonist recruits were trained in schools at which the curriculum and methods of (and facilities for) training are laid down by Headquarters; these are known as Wing schools. A further 17.3 per cent. were trained in centralised schools (but without Wing equipment). The reduction in wastage means a smaller number of new recruits to be trained, and this should allow a much larger percentage of recruits to receive full Wing training next year. In London (with the exception of staff for the London Trunk Exchange) all recruits were trained at schools using Wing methods, although practice equipment was not available at all schools.

As might be expected, this improved staff and training situation has steadily improved the quality of service; for example, the long and short distance trunk services, which deteriorated during the war, are now shewing considerable improvement, and operational speeds and the percentage of calls completed on demand now compare favourably with pre-war.

Trunk and Toll Lines. The total trunk and toll traffic in 1948-49 amounted to 226,000,000 calls. During the year, a further 1,034 circuits were added to the long distance network which now operates over 15,562 circuits.

Among the more important additions or improvements to the main trunk cable network was the conversion of the London-Derby,

Derby-Manchester and Birmingham-Derby 12-channel carrier systems to 24-channel working. A new carrier system was also brought into service between London and Derby, and a further group of 60 circuits was added to the London-Birmingham coaxial system. Work was carried out on the Birmingham-Kidderminster-Old Boston coaxial system to increase its capacity to 600 channels and this, together with the initial equipping of the Bristol-Kidderminster coaxial cable, will shortly afford much relief on trunk routes between South West England and South Wales on the one hand, and the Midlands and the North on the other. Special mention should perhaps be made of the progress made on the new London-Birmingham television cable which, it is hoped, will be ready for service by mid 1950. Television to the Midlands will be opened in December this year by means of a Post Office radio link.

TOTALS OF TRUNK AND TOLL CALLS AND CIRCUITS

March 31st	Total Trunk and Toll Calls	Total Trunk and Toll Circuits
1938	106 millions	6,131
1939	112 ..	6,770
1940	117 ..	6,220
1941	118 ..	6,400
1942	134 ..	6,715
1943	161 ..	7,676
1944	181 ..	8,173
1945	189 ..	9,430
1946	193 ..	11,882
1947	205 ..	13,333
1948	217 ..	14,528
1949	226 ..	15,562

Submarine Lines.—The trunk service over submarine cable links has also been extended. Additional equipment on the existing carrier systems enabled the trunk routes between Great Britain and the Channel Islands to be supplemented by seven additional circuits, and by radio to Alderney. Preparatory work has been carried out for laying two new submarine cables between Great Britain and Northern Ireland which, when completed, will nearly double the available channels on this route. A further 12 channels have been opened up on the second of the recently laid cables to the Irish Republic.

3. TELEPHONE PLANT DEVELOPMENTS

Trunk and Toll Mechanisation.—Good progress has been made on the plans for mechanis-

ation. Although a proportion of trunk traffic is already completed automatically, the broad outline of a scheme for complete trunk and toll mechanisation has now been agreed. This scheme, which will extend long distance operator-dialling to all trunk centres, will be introduced in stages over a ten-year period, starting with the opening of the London trunk automatic exchange in 1953-54. This will be followed by conversion of the large provincial trunk centres. Progress of the work will, of course, be influenced by the availability of buildings, but preliminary enquiries indicate that sufficient accommodation is already available at some of the most important trunk centres.

During the year, a Working Party considered and made recommendations on the physical characteristics of a new cordless switchboard, on switchroom layout, facilities and so on, and the necessary technical design work is now proceeding.

The possibility that it might ultimately be desired to permit subscribers to dial their own trunk calls has been borne in mind, and care has been exercised to ensure that the requirements for any such scheme are not prejudiced by the present proposals for operator-dialling.

The plans to enable non-director exchange subscribers to dial calls up to 15 miles (with appropriate metering) are going ahead, and service was opened at the first exchange—Enniskillen—in January, 1949. In director exchange areas, dialling by subscribers to exchanges on the fringe of the director area was, until recently, only on a small scale, but a scheme has been designed to widen the scope of this facility. The service has already been opened at a number of director exchanges in London, and will be introduced in others shortly.

“999” Service.*—The emergency “999” service, which has been in operation in most of the large automatic areas for some time, has proved so effective that its extension to other areas is under active consideration. At present, some 80 per cent. of the total automatic subscribers already have access to the service. Plans have now been made for “999” facilities to be extended to many of the smaller automatic exchanges, although this may take some time. Unfortunately, at a very few small automatic

exchanges, arrangements cannot be made to route a “999” call to an operator, and in these cases “Number unobtainable” tone will be received by a caller dialling “999”.

Shared Service.—Hitherto, it has been impossible to record, separately, the number of dialled calls made by each shared-service subscriber, and this has been a drawback to shared service at automatic exchanges. The number of shared-service subscribers is increasing rapidly, and to improve the service, while at the same time removing a potential source of complaint, apparatus has been designed (and successfully tested) to provide separate metering of dialled calls from each subscriber. So far, two calling equipments would still be necessary, but field trials of an equipment which, while having two meters, will only require one calling equipment, will begin shortly.

Mobile Automatic Exchanges.—For many years the Post Office has used mobile 100-line unit automatic exchanges to give temporary service in emergencies, but the limitation of size, and the lack of through-switching facilities for dependent exchanges, restricted the scope of application. A larger model with 200-line equipment and tandem through-switching facilities has been designed, and the first exchange of this type is now in use.

Mechanical Trunk Fee Accounting.—A comprehensive experiment has been carried out at Canterbury with punched-card equipment, which is designed to substitute mechanical processes for a large volume of ticket sorting and accounting previously performed by hand. Subscribers in the Area prefer the new accounts produced by this system to those previously provided. A comparative economic study, in the light of which the future of the new system will be decided, has been made.

Mobile Radiotelephone Service.—A public radiotelephone service, designed to provide a link between the inland telephone network and tugboats and other small craft operating in the River Thames, had reached final testing stages by the end of the period under review, and has since been opened. Initially, service is restricted to the London Toll Area.

Telephone Exchange Staffing.—In order to obtain an up-to-date assessment of the average operating time involved in the handling of trunk and toll calls, as a preliminary to a comprehensive review of telephone exchange staffing standards, over 50,000 timed observations have been taken at exchanges in London and the Provinces, and a similar time study of “enquiry” operating work is also in hand. The considerable volume of data collected is now being summarised and tabulated by punched-card machinery at Post Office Headquarters.

As an integral part of the present studies, a fresh examination of the complex relationship between operator load and “time to answer” at different types and sizes of exchange, has been undertaken, so that the new standards may be related more closely to the grades of service which it is desired to achieve. Apart from its immediate importance in assessing new operating standards, this review has also produced useful information for planning purposes, particularly as regards loads for trunk mechanisation and cordless switchboard working.

4. TELEGRAPH SERVICE

Manual Teleprinter Switching.—During the year, further expansion of telegraph voice frequency working took place; 29 new voice frequency systems were provided, bringing the total up to 383, while the number of working public and private channels was increased to 3,602. With manual-switching and improved operating technique, the overall time between handing in and receipt at the delivery office has shewn a steady improvement, and has been reduced to about 28 minutes as compared with 20 minutes pre-war. Unfortunately, accuracy in transmission has not regained pre-war standard, but there has been a marked improvement compared with recent years.

The manual-switching scheme was further extended during 1948-49. 76 additional telegraph offices were connected to the system making a total of 181. These developments rendered necessary the installation of a new switchboard at the North London Ring Centre to relieve the Central Telegraph Office switchboard.

Special Events.—The forwarding of overseas traffic from many special events held throughout

*Our readers are referred to the article on the 999 service on page 88 of the Journal (Vol. 1, No. 3).

the country, has been made both quicker and more economical by the transmission over the teleprinter manual-switching network of the traffic direct to the main London stations of Cable and Wireless Limited. The extension of this scheme for the disposal of normal overseas traffic handed in at Post Offices is also under active consideration.

Automatic Teleprinter Switching.—The initial installations for the automatic teleprinter switching scheme at Birmingham and London North should be completed by the end of 1949, while specifications for the nine switching centres to be installed under Stage II of the automatic scheme have also been issued to the contractors. Supplies of the new type of teleprinter (Teleprinter No. 11B) have begun, and delivery of a total of 350 machines, required for the initial scheme, will be completed by about the end of the year. Programmes for linking telegraph offices to the new network are being prepared, the aim being to convert the bulk of the offices (about 800) within the next five years. The preparation of the operating procedure and kindred matters are in hand, and instructions on automatic switching have been included in the Supervising Officers' training courses.

The Telex Service.—Development work has continued preparatory to the opening of a new Telex system. The design of the manual switchboards with which the new Telex system is to be opened has been completed. A new teleprinter table of modern style is being designed for subscribers' use on the network.

Phonograms.—Equipment is being installed to enable phonogram calls to be automatically connected in the order in which they arrive. If all operators are busy, the equipment is designed to queue the calls and distribute them in their turn to operators as they become free. The first call-queueing equipment was brought into use at Newcastle in July last.

Facsimile Apparatus.—A further development of facsimile apparatus for forwarding telegrams from small offices has been suggested. Suitable equipment, if produced at reasonable

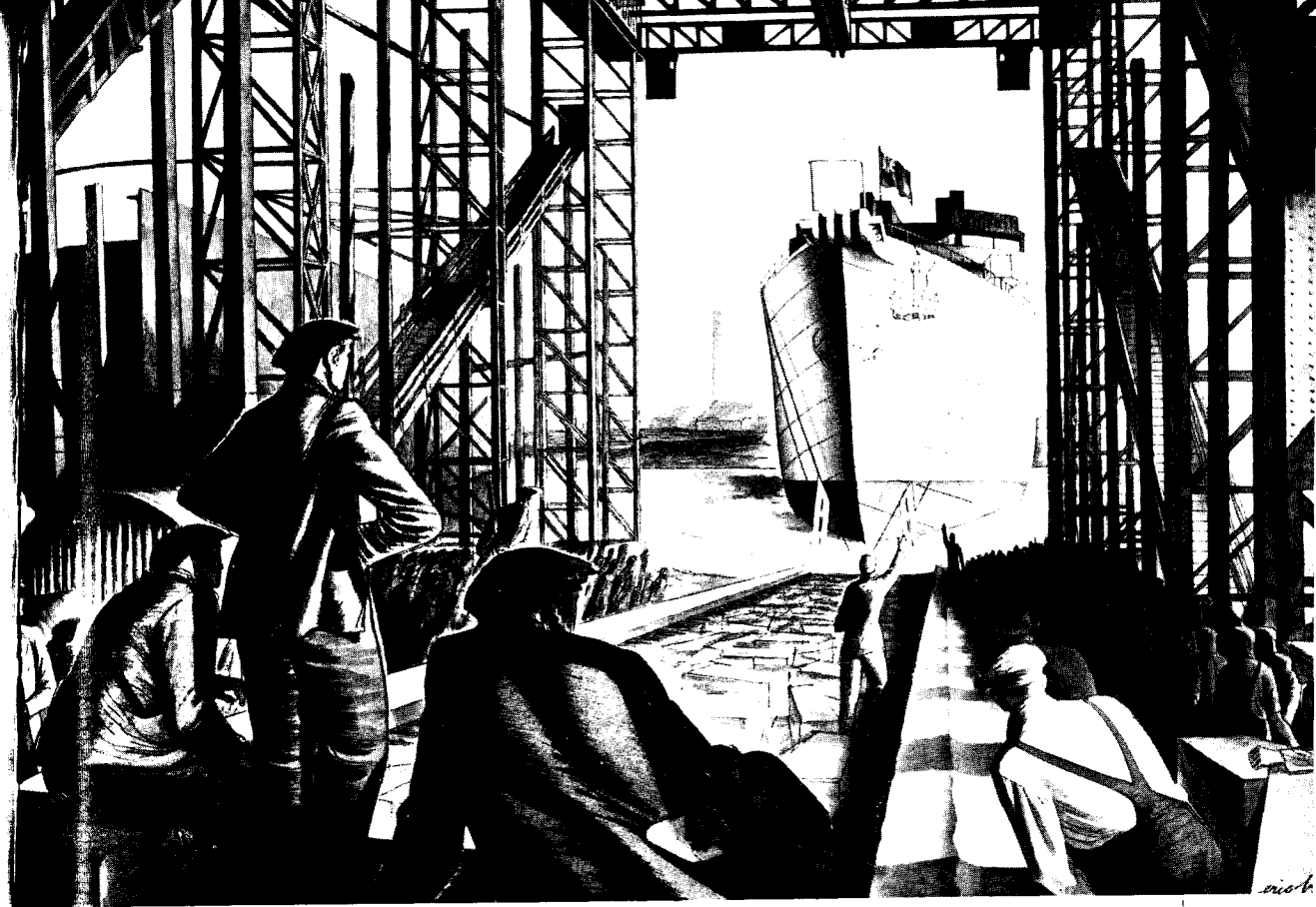
cost, would obviate the present uneconomic provision of highly-skilled operating staff at small offices for teleprinter working; alternatively, the apparatus might replace the inefficient method of telephoning telegrams, which is very liable to phonetic errors.

Private Teleprinter Services.—During the year, about 120 long distance private teleprinter circuits were provided for commercial renters but, in order to build up an emergency reserve of teleprinter machines, it became necessary to place an embargo on the provision of new circuits. This caused a few months' delay in providing new circuits. Some relatively large private teleprinter networks were completed during the year; in particular, a broadcast network for the Metropolitan Police at Scotland Yard (97 stations), teleprinter networks (14 long distance circuits in each case) for the Ministry of Food and the newly-constituted British Electricity Authority. The West Riding Police and the Durham Police have ordered networks for alternative telephone teleprinter broadcast networks with 24 and 11 outstations respectively. A similar type of installation (nine outstations) has also been completed for the Berkshire County Police.

Telegraph Staffing.—The staffing of telegraph offices—apart from those in London—has presented no real difficulty during the year. A more serious problem has been that of adjusting establishments to the decline in telegraph traffic, as staffing costs represent a relatively high proportion of telegraph expenditure. A more convenient means of adjusting staff to traffic is now being formulated for larger offices, while the possibility of more economical staffing of smaller offices is also being explored.

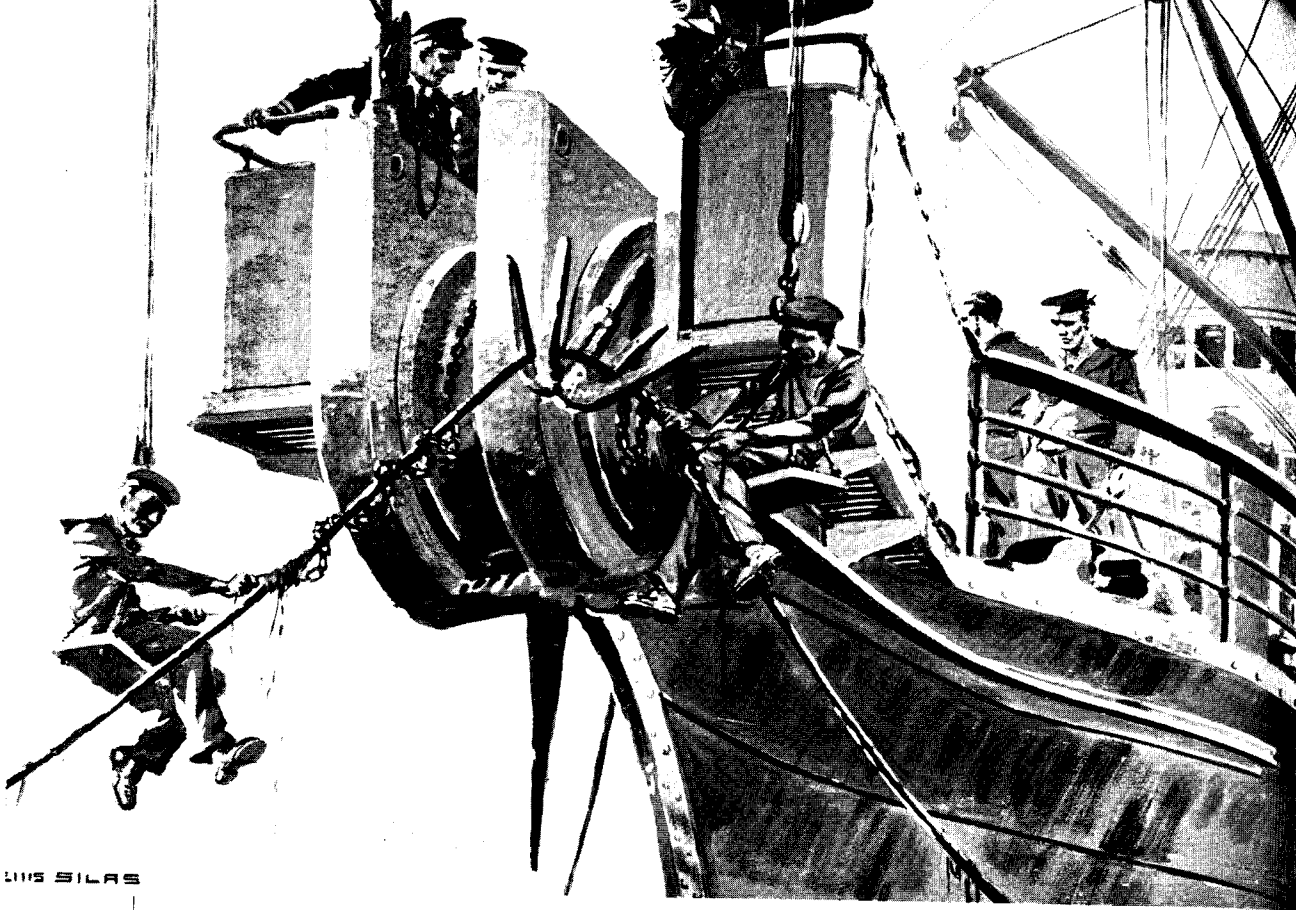
Training of Staff.—There has been a large turnover of staff during the year, partly due to regrading arising out of the reallocation of duties. This, together with the abolition of the Girl Probationer grade, has resulted in a considerable increase in the volume of telegraph training. In order to cope with these developments, the training curriculum has been rearranged and condensed to a shorter period for the more promising pupils. Training courses have also been organised for

(Continued on page 21)



ERIC FRASER'S IMPRESSION OF THE LAUNCHING OF THE POST OFFICE CABLE SHIP "MONARCH"

The launching of the new *Monarch* took place on August 9, 1945. 475 feet in length and with a gross tonnage of 8,050, the *Monarch* is the largest cable-laying and cable repair ship in the world. She has a speed of 14½ knots and, when on cable-laying work, carries a total complement of 140. In her design, lay-out and extensive machinery equipment, many improvements, such as the driving of the cable machinery, winches and windlass by electric power, are included to produce the highest standard of efficiency. The equipment of the *Monarch* is complete in every detail, special attention having been paid to navigation, welfare and crew comfort. There were two previous *Monarchs*, both of which were sunk by mines—one during the 1914-18 War and the other during the recent World War.



ELLIS SILAS

AN IMPRESSION BY ELLIS SILAS OF POST OFFICE

SUBMARINE CABLE REPAIR OPERATIONS

Since 1870, when the British Post Office entered the submarine cable business, it has built up one of the biggest cable-laying and repairing organisations in the world. It now maintains four cable ships, the largest of which is the *Monarch*. For cable repair work in home waters, the Post Office has three ships of about 1,500 tons gross—the *Iris*, *Ariel* and *Alert*. These three vessels are capable of undertaking repairs in depths of 1,500 fathoms. They carry about 600 tons of cable. A breakdown in a submarine cable means that one of the cable ships must put to sea and repair the fault with the least possible delay. The Post Office cable ships are kept busy throughout the year, not only on the laying and maintenance of Post Office cables, but also on work for cable companies and other administrations. The picture is designed to show one of the unique features of the cable ships—the bow sheaves.

Not a Penny Wasted

by N. T. Wright, Contracts Department



The Post Office Supplies Department is called upon to deal with junk as well as new stores and supplies. Profitable disposal of scrap and surpluses needs careful watch in the markets. In many instances extraction of valuable metals, before sales, proves well worth while.



DURING THE YEAR ENDED MARCH 31, 1949, the value of sales arranged by the Disposal Negotiating Section of the Contracts Department amounted to more than £2 million. These sales fell into two distinct categories (a) scrap metals and condemned stores from Post Office stocks, and (b) surplus telecommunications stores from all Government sources, but chiefly from War Office Depôts. The former, accounting for just over £1,300,000 of the total received, consisted mainly of scrap metals in the form of used cable, lead ingots and copper wire from cable melted in the Supplies Department Depôts, lead seals from mail bags, battery plates, platinum contacts, wire from overhead lines and so on, as well as scrap canvas mail bags, old uniforms, waste string and paper, and miscellaneous items of condemned equipment. Sales of these materials were formerly handled by the Accounts Section of the Supplies Department, but the work was transferred to Contracts

Department on its formation in 1941. The condemned stores include a wide variety of equipment now surplus to Army, Navy and Air Force requirements. Some are valuable and complicated sets of apparatus packed ready for despatch to the tropics; others are used field telephones and switchboards which have travelled under Army conditions over half of Europe. The sale of this equipment was undertaken in 1945 when the Post Office was designated the Disposal Authority for telecommunications equipment and the work will presumably come to an end when surplus stocks have been liquidated. As yet, there is no indication when this will be. Substantial quantities of equipment have been put up for disposal in the past few weeks and, in the past year, considerable quantities of stores from Post Office stocks have been offered for disposal under similar procedure.

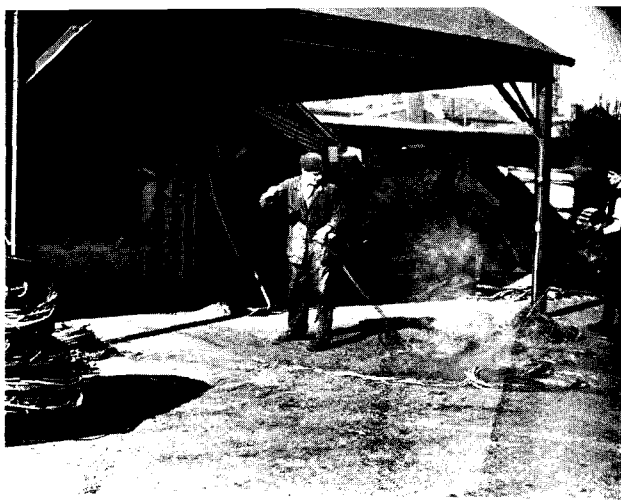
Although the procedure for disposal of worn-out Army telephones and other items of com-

Feeding the melting pot with scrap cable





Drawing out red-hot copper wire from the melting pot



parable value is closely similar to that for some items of condemned Post Office equipment, the main items in the two categories call for entirely different treatment. Scrap and condemned stores are normally sold by competitive tendering and, in theory, nothing could be easier than to invite a batch of tenders for the material, put a red ring round the highest price, and issue a formal contract. In practice, however, there are many pitfalls to trap the unwary and many refinements which can be introduced to ensure that the Department gets a good price.

The first item of importance is the description of the material. Requests for sales to be arranged are received from the Supplies Department, Telephone Managers, Head Postmasters and the Engineering Department, and give details of the goods or material concerned. Additional information is obtained, as required, and in the case of the chief Supplies Department sales, a representative of the Contracts Department visits the Dépôts to ensure that the material is offered for sale in the most suitable way, and to obtain first-hand information as to its quality and value. From the information obtained, a description of the material or item is given in the form of tender. The description must be attractive or no one will trouble to tender, and it must be reasonably accurate or it may result in a claim for adjustment in price and will, in any event, damage the Department's reputation.

The materials for sale, or representative samples, are always made available for inspection by

tenderers, but over a period of years the description and classification of some of the materials have been standardised, with the result that many firms are willing to quote without inspecting them. This is a matter of some importance, as some materials cannot be described in adequate detail, and the value of others cannot be assessed by means of a visual inspection.

Scrap Metal

Selection from a competitive list is another matter of importance, since similar types of scrap metal are often sold at frequent intervals, sometimes two or three times in the same week, and there are many links between the regular merchants. Any merchant who has 100 per cent. success with a batch of tenders knows at once that his offers are high and is quick to reduce them. Unless keen competition is maintained, therefore, the Department may soon suffer substantial losses. Every encouragement is, accordingly, given to new firms.

When tenders have been obtained, it is necessary to consider, as alternatives to accepting the highest price quoted, whether it would be financially advantageous (a) to transfer the material for sale from another Dépôt, (b) to defer sale to a later date in the hope that market conditions may improve, or (c) to break up the material into component parts or scrap metals for sale as such.

These are not purely theoretical questions. Substantial profits have been made in each

category. Increases in price of up to £20 per ton have been obtained by transferring material from London to Birmingham; the sale of material for which £97,304 was offered in the summer of 1948 was deferred for a few months and resulted in a profit of £12,612. Unsatisfactory offers for 400 tons of cable, surplus to the capacity of the Department's melting pots, were recently declined. Arrangements were made for the cable to be melted down by a contractor and the sale of the proceeds resulted in a profit of approximately 60 per cent. over the best original offer. All these decisions have to be made in a very limited space of time. Merchants expect a contract to be issued the day after tenders are opened and a stream of enquiries is received from the time any important tender is due until a decision is reached. One reason is that merchants who have made bids for a substantial quantity of metal may need to reserve all their available financial resources against a possible purchase. On the other hand, if they are committed to supply the material, they must look elsewhere to make other purchases as soon as they know their tenders are not successful. On more general grounds, since every price accepted for scrap metal has a bearing on the market price, merchants are anxious to get a decision as quickly as possible purely for information as to price levels. The market price is never static, and the only way to avoid withdrawal or amendment of tenders is to settle the matter with the least possible delay.

Fluctuating Market Conditions Must Be Watched

A study of market conditions is, of course, an essential part of sales work in so far as scrap metals are concerned. Trade journals, results of tenders, home and overseas markets are carefully watched. Research has been carried out with a view to arranging, as far as is administratively possible, that sales are held at the most suitable times.

Studies of market conditions are chiefly of importance in connection with the long-term metal contracts. These are placed quarterly for the main lead items and at six-monthly intervals for the main copper items, and against such contract, purchasers cannot quote firm prices owing to the risk of market fluctuations. Until the current year, prices were fixed by means of a specified deduction from the maximum control price but, when the relationship between scrap prices and maximum prices was destroyed in the early months of this year, a new arrangement had to be devised. Recently, the bulk of the contracts has been operated on the basis of fixed prices for limited periods. Some prices have been revised at weekly, and others at monthly, intervals.

Earlier in the year, it was comparatively easy to negotiate new prices as they were falling, and it was a case of the purchasers proposing reductions which we could either accept or reject. More recently, prices have been rising and it has been a case not merely of asking for a rise,

Running molten lead into ingots





but of asking for a rise of £ "x" per ton. It is not easy to determine "x" . . . particularly in the first hour of work on Monday morning! There is no standard Bible to refer to. One can only examine the evidence available and form an opinion, often in the light of past experience, as to what may be a reasonable figure. The evidence of trade journals on the point is, always to some extent, conflicting, and if one quotes the "Metal Bulletin" to a scrap metal merchant one may get a rude answer.

This is the most distinctive feature of scrap metal sales work. Decisions must often be taken when one is, to some extent, in the dark and without adequate information, and always in the knowledge that, within a matter of days, the correct answer will be quite obvious—as also will the extent of profit or loss on the transaction.

Surplus Stores

Sales of surplus stores are generally dealt with on somewhat different lines. Whereas scrap metals come up in a steady flow in grades of fairly standard qualities, there may be only one lot of a particular line of surplus stores or, as in the case of field telephones, supplies may be declared surplus in widely-varying quantities at irregular intervals. In either case the supply is likely to be very much in excess of the peace-time rate of demand.

Under the terms of the Government White Paper on Disposals Procedure, the stores are due to be offered, in the first instance, to the makers or to the trade association which represents them. Initially the makers purchased large quantities of transmission equipment at negotiated prices for the export trade. Other substantial sales, also at negotiated prices, were made to U.N.R.R.A., and to various European countries which were anxious to obtain equipment to restore their communications. The balance was sold by competitive tender, and the Department soon built up a list of tenderers who were prepared to purchase all kinds of surplus telecommunications stores.

Overseas Customers

Since the end of 1947, however, purchases by the makers and European countries, with the exception of Poland who at that time still had an unexpended balance under the Anglo-Polish Financial Agreement, have been negligible.

Moreover, most of the merchants, who were formerly prepared to quote against competitive tenders, had either found more attractive bargains in the Ministry of Supply auction sales or had already got hold of as much equipment as they could conveniently handle. It was, therefore, necessary to try new methods, and efforts were made to interest overseas firms and the Commonwealth Governments in the stores available for disposal. The success of these efforts may be judged by the fact that of £766,335 realised during the twelve months ended March 31, 1949, £587,475 was on overseas sales to over twenty different countries.

Virtually, all overseas sales are negotiated on the basis of prices quoted by the Department. The fixing of these prices is one of the most interesting aspects of the work, as it is not regulated by any fixed procedure other than the general intention to obtain the best possible price. The chief factors to be borne in mind are that the equipment must be disposed of and that someone who has a use for it will pay far more than a merchant who intends to re-sell. With experience, it is possible to fix prices for items varying from American teletype equipment to lengths of submarine cable. Occasionally one may have to bargain in the style of the Eastern bazaar, but the Commonwealth countries are usually prepared to pay a reasonable price when they want the stores.

The problems arising in competitive tenders are quite as difficult as those in non-competitive sales. In one recent case, the highest offer for 69 equipments, each of which had cost over £2,000 to produce, was 2s. 6d. each. The difficulty in such cases is that some means of disposal must be found and, as the equipments mentioned were held in the Ordnance Depot at Donnington and weighed 15 cwt. each, there was a danger that it might be uneconomical not to accept the price of 2s. 6d.

Profitable Break-Up

There is scope for endless enquiry in such cases and one of the difficulties is to ensure that one does not spend £10 of staff time in getting an increase of £5 in the selling price. On the other hand, the little extra effort which results in the finding of a purchaser who has a use for the equipment pays enormous dividends. If the equipment consists of sizeable pieces of



Kingsland Green Depot, London, melting plant

non-ferrous metals or includes gold or platinum contacts, it can be broken up in one of H.M. Prisons and the materials sold for scrap. If it is packed in substantial wooden boxes, it can often be sold as much for the value of the packing as for the value of the equipment. But if it does not fall into either of these categories, and no one has a use for it, it may have to be disposed of as refuse.

Included in the category of surplus stores are those items in the Post Office main stocks which are temporarily in excess of requirements. The Contracts Department was asked to sell them, preferably for the export trade, provided prices approximating to the replacement value could be obtained. Notwithstanding the desire for exports of telecommunications stores, the purchase of these items by manufacturers has been negligible. Many of the items are of old design, in second-hand condition or unsuitable for use in the tropics. Nevertheless, a considerable number of sales has been made, the total value to the end of August being £52,000.

Sales Negotiations

Whereas scrap metal sales are completed with a minimum loss of time, negotiations for sales of

surplus stores may suffer some delay, particularly in the case of distant countries. The representatives of these countries in London offices have to refer cases back to their home administrations and seem to have limited powers in regard to negotiation of prices. The representative of one country, for instance, had to get the authority of the Head of his State before completing a transaction, while sales with another country seemed to require the blessing of its Embassy, the Posts, Telegraphs and Telephones Administration, as well as a visit from an engineer to inspect the stores. Delays in dealing with another country were even worse, as the power to give decisions seemed to be in the hands of a man in his country's capital who had several weeks' arrears on his table. When the last sale was negotiated with them, early in 1948, the technique adopted was for their Purchasing Mission to send a letter by Air Mail and to follow it up with a telegram seven days later asking for a reply. Letters not followed up by telegrams apparently did not receive attention. One of the most interesting comments on delays, however, came from a business man from one of the Commonwealth countries. When we mentioned the difficulties we encountered in negotiating sales with a purchasing organisation sent out by his home country he said:—"You

will never do business with them. They are civil servants". If he ever realised that we were also civil servants, his opinions may perhaps have been modified, as we sold him over £20,000 worth of equipment within the next three days.

It will be seen that on all the various kinds of sales work there is endless scope for new methods and new ideas. New methods introduced last year have already shown dividends amounting, at a conservative estimate, to over £200,000. This does not mean that experience is at a discount. The question "What did we do last time?" is asked as frequently in the Contracts Department as anywhere else, and compre-

hensive records are kept with a view to ensuring that useful information is not lost. Even when, as often happens, there is no "last time", some helpful information can always be gained from a study of previous similar cases. In any event, a new idea or a new method is of little use until it is demonstrated to have greater possibilities than the old one.

This brief account will serve to show that sales work is not without complexity. The fact that sales totalling over £2 million per annum have helped towards the balancing of the national accounts is, after all, a substantial contribution in itself, and may be quoted as a measure of a useful job of work done.

STILL GOING AHEAD

(Continued from page 12)

supervising officers although, initially, these will be restricted to telegraph supervising officers in instrument rooms.

Delivery of Telegrams.—The abolition of the Boy Messenger grade has now been virtually completed. Telegrams are delivered mainly by young postmen who also perform some postal work wherever composite duties can be arranged. There has, however, been some difficulty in recruiting suitable men. Increased wages costs and manpower limitations have resulted in an appreciable expansion of motor cycle delivery. 98 offices, with a total of about 620 machines, now use motor cycle delivery; in 1939 there were only 40 offices, with 273 machines. Auto-cycles and 125 cc. light motor cycles are now being tried out on delivery work; early reports shew only limited scope for the auto-cycle, but it is probable that the 125 cc. motor cycle will be adopted as standard for telegraph delivery work.

5. THE FUTURE

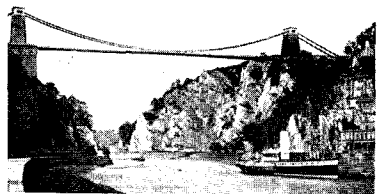
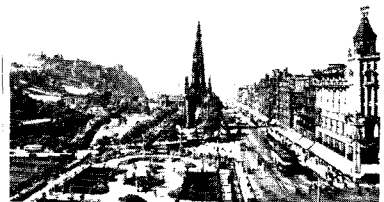
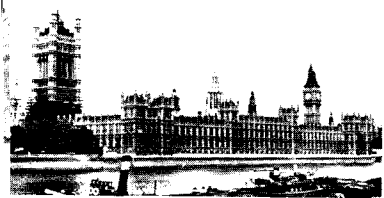
The Post Office programme of Capital Investment, 1949-52, envisaged a large increase in

engineering workmen in 1949 with lesser increases in later years; but it has since been found necessary to reduce the initial increase in staff to fit into available recruitment and training resources. Accordingly, in December, with the object of ensuring a more even expansion of the engineering force over the period, some modifications were made in the original programme, although its essential structure remained unaltered. It was, however, realised that, with the even greater restrictions which these changes imposed, the earlier hope of holding the waiting list might not now be realised. The Post Office efforts during the difficult period ahead will consequently be based on a continuance of the present policy of giving emphasis to *essential needs* and, so far as limited resources will permit, of extending kiosk and party-line service to provide a service over the widest possible field.

6. TRIBUTE

It remains to pay a tribute to the staff concerned. The achievements of the year have only been made possible by their sustained efforts—sometimes under most difficult conditions.

TELEPHONES IN CITIES AND TOWNS OF GREAT BRITAIN AND NORTHERN IRELAND

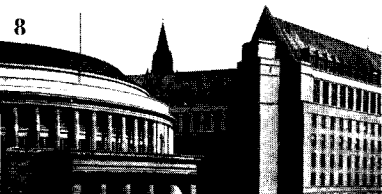


City or Town	Year	Population	Telephones	Telephones per 100 population
1 LONDON (City and Administrative County)	1929	figures not available		
	1939	4,028,000	717,468	17.8
	1949	3,374,000	819,670	24.3
2 GREATER LONDON (City and Metropolitan Police Districts)	1929	7,570,000	626,714	8.3
	1939	9,487,000	1,183,942	12.5
	1949	8,350,000	1,470,507	17.6
3 EDINBURGH	1929	428,000	25,556	6.0
	1939	465,000	47,066	10.1
	1949	490,000	70,918	14.5
4 LEICESTER	1929	figures not available		
	1939	244,000	20,502	8.4
	1949	282,000	30,180	10.7
5 BRISTOL	1929	400,000	16,858	4.2
	1939	450,000	31,376	7.0
	1949	455,000	47,672	10.5
6 LEEDS	1929	492,000	19,982	4.1
	1939	568,000	36,825	6.5
	1949	581,000	58,072	10.0
7 BRADFORD	1929	320,000	16,992	5.3
	1939	328,000	24,376	7.4
	1949	289,000	28,490	9.9
8 MANCHESTER (including Ashton-under-Lyne, Longford, Oldham, Salford and Stockport)	1929	1,075,000	58,157	5.4
	1939	1,262,000	79,866	6.3
	1949	1,265,000	124,500	9.8
9 NOTTINGHAM	1929	299,000	14,023	4.7
	1939	339,000	24,573	7.2
	1949	427,000	41,260	9.7
10 BIRMINGHAM (including Smethwick, W. Bromwich & Oldbury)	1929	1,090,000	46,855	4.3
	1939	1,259,000	79,847	6.3
	1949	1,292,000	115,930	9.0

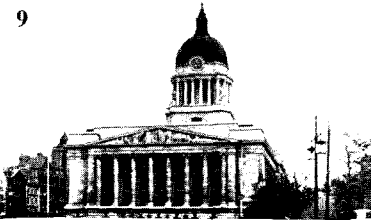
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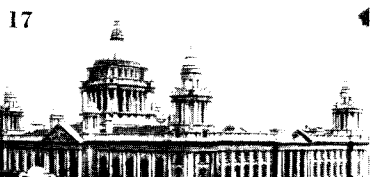
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City or Town	Year	Population	Telephones	Telephones per 100 population
11 CARDIFF	1929	figures not available		
	1939	220,000	17,662	8.0
	1949	248,000	22,098	8.9
12 GLASGOW	1929	1,141,000	52,757	4.6
	1939	1,150,000	72,359	6.3
	1949	1,217,000	105,331	8.7
13 NEWCASTLE-ON-TYNE (including Jarrow)	1929	467,000	17,507	3.7
	1939	482,000	28,167	5.8
	1949	521,000	42,860	8.2
14 SHEFFIELD	1929	500,000	17,406	3.5
	1939	522,000	28,776	5.5
	1949	512,000	41,801	8.2
15 LIVERPOOL (including Birkenhead, Bootle, Crosby & Wallasey)	1929	1,133,000	53,328	4.7
	1939	1,249,000	79,228	6.3
	1949	1,429,000	114,453	8.0
16 COVENTRY	1929	figures not available		
	1939	figures not available		
	1949	252,000	20,000	7.9
17 BELFAST	1929	423,000	14,329	3.4
	1939	415,000	23,336	5.6
	1949	453,000	34,200	7.5
18 PORTSMOUTH	*1929	287,000	6,499	2.3
	1939	302,000	13,303	4.4
	1949	216,000	14,866	6.9
19 STOKE-ON-TRENT	*1929	296,000	6,075	2.1
	1939	330,000	11,090	3.4
	1949	275,000	14,337	5.2

* Basis of comparison in some doubt.

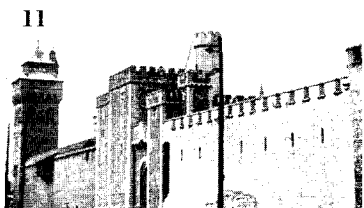
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Mechanisation or Service?

by R. F. Bradburn

North Eastern Region

The Customer—Right or Wrong?

DURING WORLD WAR II, OWING TO THE shortage of manpower, there was a very definite tendency towards cutting down the services afforded to customers and making the latter do as much of the work as possible. We had, for example, the suspension of deliveries of groceries and other goods; the introduction of the "help yourself" services at canteens. Important in its long-term implications was the change of attitude on the part of shop assistants and other public servants from the pre-war working rule that the customer was always right, to one which assumed that the customer more often than not was in the wrong. Due probably to the continuing shortage of consumer goods, this attitude still persists four years after the end of the war, although a change of heart is evident in the few fields where supply outruns the demand. At the moment in the telephone field, demand still outruns supply but, in spite of the present huge waiting list, this state of affairs will not last for ever. It behoves us, therefore, as public servants, to examine whether the Post Office telephone service, in spite of its high ideals, has become, perhaps unconsciously, slightly infected with this selfish and narrow outlook.

The Policy of Mechanisation

A question such as this raises issues far too numerous to discuss in the length of a single article. I propose therefore to leave tele-

phonists, supervisors, engineers and clerical staffs to answer from their own points of view and, instead, to concentrate on one matter of high policy, namely, mechanisation of the telephone service, which has far-reaching implications for each individual subscriber. Subscribers on Unit Automatic Exchanges (U.A.X.) can already obtain access to subscribers on other automatic exchanges within a radius of 15 miles, that is, up to the fourth fee call, by dialling suitable numerical codes preceding the required number. Charging of the call is effected automatically by multi-metering, a system by which the exchange machinery is made to record (meter) calls up to, and including, the fourth fee call as 1, 2, 3 or 4-unit calls, depending upon the distance between the two exchanges. In the operating field, the need for incoming telephonists has been cut down appreciably by the extension of dialling facilities over trunk and junction routes, a major factor in this connection being the introduction of two-frequency dialling, a system which permits operators to dial direct over long-distance trunk circuits connecting the main trunk (zone) centres.

Active consideration is also being given to full trunk dialling by operators, introduction of cordless boards to replace the multiple type of board and, as a more remote possibility, a uniform national numbering scheme with the ultimate object of enabling subscribers to dial, automatically, any other exchange in the country.

So far—so good, or is it? Occasionally it does us good to stand back as it were and try to take a detached and impartial view of the developments associated with our own work. This is, of course, a very difficult demand; but it is one which we must obey if we are not to be swept along by the train of events and have our judgment consequently impaired. What have we gained so far from mechanisation?

Doubts and Examples

On directly-dialled calls to exchanges within the same system, everyone would agree this has been very successful, but on calls which are not frequently made by the individual, it is questionable whether our success has been as complete as we occasionally imagine. For example, I travel daily on a bus route which runs from Leeds to Pudsey. Pudsey subscribers must dial a single-digit code to obtain access to the Leeds system, whilst in the reverse direction, Leeds subscribers dial a 3-digit code to obtain connection with Pudsey. Throughout the whole of the bus route, the area is almost continuously built up. At the exchange boundary there is, of course, no clear-cut mark telling a subscriber that he has passed from the area served by the Leeds system to that served by Pudsey. On more than one occasion I have heard heated criticism of the Post Office telephone service from either the bus conductor or passengers. To give one particular example, a bus broke down near the exchange boundary, the conductor walked along to the nearest kiosk, which happened to be in the Pudsey exchange area, and tried to ring his main office. As is somewhat more usual than we are prone to admit, the caller did not consult the dialling instructions and, consequently, attempted to dial direct the 5-digit number required. After obtaining the same wrong number on several occasions, he came away disgusted with the telephone service (and not, of course, with himself). He had completely failed to grasp that he had to dial a single-digit code to obtain access to the Leeds system before dialling the required subscriber's number. In this particular case he walked back to the next kiosk, which happened to be connected to the Leeds system and, of course, obtained connection immediately. This example demonstrates that the occasional caller is liable to omit reading the dialling instructions.

I sometimes wonder whether we make sufficient allowance for this type of failure or fully appreciate how involved our dialling instructions have become. For example, a call between two adjacent exchanges can necessitate the dialling of as many as ten digits by the subscriber.

So far as the effects of multi-metering and subscriber-dialling to the 15-mile range from Unit Automatic Exchanges (U.A.X's) are concerned, some years ago some rather interesting figures were obtained at two particular exchanges. These are not necessarily complete, or even typical, but they are indicative of the failure to use, to the maximum extent, the dialling facilities already available. An examination was made of completed tickets in respect of U.A.X. subscribers with tandem-dialling facilities through two auto-manual exchanges with the following results:—

	Exchange A	Exchange B
Number of calls mis-routed via "O" level,		
(a) detected and turned back by operators ..	510	247
(b) undetected and completed by operators ..	560	
Number of toll calls proper to "O" level ..	4,886	1,513
Number of demand calls proper to "O" level ..	792	269

These failures at (a) and (b) are difficult to observe for it is obviously impracticable for an operator on any auto-manual board serving a large number of U.A.X's to remember whether a particular call is proper to be dialled direct or not. Reference to the Visible Index File for each call between two standard U.A.X's, each of which has a junction route to the auto-manual exchange, would be an insufferable drag on operating. Whilst these instances may not be conclusive in themselves, they seem to point to the need for some research into the reactions and capabilities, or even willingness, of both subscribers and members of the general public to assimilate and act upon our present somewhat complicated dialling instructions.

As regards two-frequency dialling by operators, the position is far from good. Initially there was a very high percentage of calls mis-routed via "O" and, even now, the percentage is not wholly satisfactory, especially when we remember that the users of this system are fully-

trained and experienced operators. The national percentage of "no tone—no reply" cases is of the order of 10 per cent. whilst approximately 13—14 per cent. of incoming calls over two-frequency dialling routes are affected by plant faults. Whatever the causes of these poor figures may be, they do not point to the full benefits of mechanisation being received. They also raise in my mind a most serious point. When two-frequency dialling was first being introduced, I can remember the over-optimistic estimates which were made of the saving of incoming positions at Zone Centres. Our experience in this connection should be a useful warning to us not to over-estimate the benefits accruing from any future mechanisation.

Multi-metering

To turn to multi-metering. For non-director areas, as anyone intimately associated with this work is aware, route multi-metering is being introduced instead of full multi-metering. Route multi-metering is a simple form of giving multi-metering facilities to a large proportion of the traffic. In this connection I believe it was forecast that 95 per cent. of the traffic proper to be multi-metered should be capable of being handled by the route multi-metering equipment. Unfortunately, in certain systems there are different call charges for satellites in the same non-director network—charges which, incidentally, are very difficult to unify in some instances—and, in these cases, the restrictions which have to be imposed on the introduction of multi-metering may be most serious. In one particular case coming to notice, a satellite exchange took the main exchange name and charges, another satellite exchange had its own individual name and charges and they were both accommodated on the same first-selector level. It was impracticable to give multi-metering facilities from another non-director system within multi-metering range, owing to the difficulty of subscribers discriminating between calls to the exchange taking the main exchange name and charges and other main exchange subscribers on different selector levels. The full multi-metering scheme originally envisaged for the main exchange system estimated a saving of 12 positions for subscribers' multi-metering and 4 positions at the nearby non-director area. With the restrictions mentioned above, the

estimated savings could only be about nine and a half and two and a half positions (and, incidentally, these may not allow fully for subscribers mis-routing traffic via the manual board instead of dialling direct). Furthermore, to introduce this change would have involved clearing a first-selector level thus necessitating some thousands of number changes and the exclusion from the central automatic area of certain exchanges already in the system. This again may be a somewhat exceptional case, but it lends point to the previous suggestions that the benefits of mechanisation should not be over-estimated and the effect on subscribers of the application of national policy should be carefully considered in each individual case.

Trunk Dialling

Little experience has been gained so far of operator trunk dialling over more than one link, except at one or two Zone Centres where a modified system giving access by group centre operators to two-frequency dialling routes at Zone Centres is in force. In these cases, after a few teething troubles, the results are found to be as good as on the direct two-frequency dialling routes from the Zone Centres. The scheme at present under consideration for operator trunk dialling is most ambitious and, obviously, one well worthy of detailed consideration. But, in view of the foregoing arguments, I feel compelled to sound a warning note against over-optimism in our estimates of position savings. We should make adequate allowance for the delays in introduction of the savings which are inevitable when a new scheme of this size is being introduced.

Sites and Accommodation

Just recently I have completed a tour of the major exchanges in my region in company with Headquarters officers. At more than one exchange the remark has been passed that we should increase the size of the available site and make it large enough for all time. My reaction, quite naturally enough, was that the present procedure should adequately provide for this to happen in normal course, but, as everyone experienced in equipment and accommodation work will admit, we fail times without number most lamentably. The size of the site to be obtained and the area of the initial building are

determined by the site and accommodation data furnished by the Telephone Manager. These in turn are based mainly on the subscribers' development figures, the subscribers' calling rates, trunk growth factors and, last but not least, the directives given by Headquarters regarding the method of preparation of the data, the benefits, to be obtained from mechanisation and the amount of assistance traffic which will come up to the manual board. Some serious thought is necessary to determine which of these factors cause the under-provision, and I am sure the Editor would welcome views on the point. The standard percentages used in exchange designs to estimate the traffic requiring assistance at the auto-manual board seem to be inadequate, especially as on two-frequency dialling routes, where generally only a direct route operated by trained telephonists is involved, the percentage of calls subject to faults or service difficulties exceeds these standard percentages. If we over-estimate the benefits of mechanisation and are unduly optimistic regarding the dates by which these benefits might materialise, we are likely to be caught short on switchboard positions, especially at the intermediate maximum conditions.

Public Reaction

So much for the difficulties within the Department. What about the reactions of the general public? As already mentioned we have perhaps over-complicated the subscribers' dialling instructions. These are not presented to the subscriber in the best possible manner. Operating procedure for calls within a limited numbering scheme is understood easily by subscribers, but to ask a subscriber to dial 6702 207311 to speak to his golf club house, which may be served by an adjacent exchange, obviously goes beyond a joke. The total of such calls is not great; but as some of the present developments are concerned with the extension of automation to these infrequent calls, it is pertinent to question whether the necessarily complicated (to the subscriber) dialling instructions involved do in fact fully achieve their object. We are probably expecting the subscriber to do too much.

Is our present policy leading us, perhaps unwittingly, towards a "British Restaurant

help yourself" service, where the quality of service depends unduly on the ability and willingness of the subscriber to consult, understand and act upon somewhat lengthy operating instructions? I would be the last to decry the magnificent record of technical development and improved facilities offered by the British Post Office telephone service to its customers during the past two decades. Let us not forget, however, that so far the automatic apparatus has taken over the easier operating tasks and, that in now asking it to deal with the more complicated calls, we may be reaching the stage when the advantages from the departmental point of view are blinding us to the disadvantages and complexities from the subscriber's point of view.

Simplify! Simplify! A Challenge

My object in writing this article is to stimulate critical thought on our modern developments; in particular, looking at the problem from the aspect of the customers we serve. Others in closer touch with the public than I am may have views or solutions to offer but, personally, I feel there is a crying need for us to simplify the telephone service. For example, the dialling instructions ought, in my view, to be omitted from the preface to the directory—I am positive that a subscriber rarely consults the preface after the telephone has been installed for more than two or three weeks. The pre-war decision to provide code-dialling instructions in the drawers of the telephone instrument should be implemented without further delay. As a further simplification, cannot some expert devise a system of lettered codes based on exchange names, to replace the awkward numerical codes now being used for calls outside the local system? Again, could we not have a uniform charge up to 15 miles, thus avoiding on the one hand the need for expensive multi-metering equipment (with its attendant increased requirements for both engineering accommodation and staff) and on the other the snags which have occurred in certain instances in attempting to introduce route multi-metering? Recent statistics shew the average value of all calls in the 15-mile range is one and a half units, which surely indicates this problem could have been covered when the surcharge on local calls was recently increased.

I.T.U. Conference, Paris, 1949



THE ADMINISTRATIVE TELEGRAPH AND TELEPHONE Conference of the International Telecommunication Union was held in Paris from May 18 until August 5, 1949. Its chief objects were to revise the International Telegraph and Telephone Regulations which were last revised at the Cairo Conference in 1938, and to secure for the new Regulations the approval of all the countries which are Members of the Union, as is required under the terms of the revised International Telecommunication Convention signed in 1947 at Atlantic City and now in force. Many countries had made important reservations to the Cairo Regulations; and the United States, Canada and some other countries did not sign them.

The Conference was attended by representatives of no less than 67 countries, in addition to observers from the United Nations, other Specialised Agencies and certain countries which are not Members of the Union. Of all the visiting delegations, that of the United States was the largest; it consisted of 36 persons, nearly all of whom were present throughout the whole period of the Conference. The next largest delegation was our own; it consisted "on paper" of 18 representatives, but it was arranged that different people should attend and depart according to the requirements of the work, and apart from short periods of "over-lap", the maximum number of United Kingdom delegates in Paris at any one time was 14.

Four languages were used; by the turning of a knob the English-speaking delegates secured

amplification of speeches made in English and translations into English of speeches made in French, Spanish or Russian. This system of simultaneous translation has been used at international conferences for several years and, with the increased experience of speakers and translators, it now works well; it requires from the speakers a style of short sentences with a fairly long pause at each full stop, in order to give the interpreters time to catch up. The secretarial arrangements were very satisfactory and the accommodation excellent.

The Conference was organised in eight committees, one of which (on Reservations) held only a single meeting. From time to time Plenary Assemblies took place to review and confirm the work of the committees; but the more important of the committees attracted just as many people—and, in fact, much the same people—as the Plenary Assemblies. The Chairmen of most of the committees were chosen from the smaller nations and this procedure, adopted for the first time, proved most successful.

In the course of revising the Telegraph Regulations the Conference secured three important achievements. In the first place, a new rate-structure for telegrams to or from places outside Europe was achieved by a process of "unification" and by the abolition of the "deferred" rate; in the second place, Canada and the United States signed the Telegraph Regulations for the first time, although with many reservations on the part of the United States; in the third place, the

United Kingdom, which was among the countries which made important reservations in 1938, now found itself able to sign the Regulations without any reservations.

The "unification" proposals affect only telegrams to or from places outside Europe and were sponsored by the United States. In brief, they set up a single (intermediate) rate for ordinary and for code extra-European telegrams: such a single rate has been in force for many years within Europe. The deferred rate, now 50 per cent. of the rate for ordinary extra-European telegrams, is abolished; the rate for extra-European letter-telegrams is to be half the new rate for ordinary telegrams instead of one-third of the old higher rate, and the standard of service of letter-telegrams to the more distant destinations is to be improved. The target date for these changes is July 1, 1950. Their effect on the users and providers of the services is very hard to ascertain in advance; much depends on how far deferred telegrams will go "upstairs" into the full-rate category or "downstairs" into the letter-telegram category.

The signing of the International Telegraph Regulations by Canada and the United States, and their signature by the United Kingdom without reservation, are encouraging signs for the prospects of developing international collaboration in this field. These results could not have been secured without the tolerant and accommodating attitude which was displayed by the other countries.

The International Telephone Regulations have, in the past, only applied to Europe, and it was

decided to continue this limitation for the present, with the modification that the definition of the "European régime" for this purpose was extended to include all the countries on the Mediterranean seaboard. The regulation of extra-European telephone services—that is, in practice, mainly radiotelephone, as distinct from cable services—was left, as hitherto, to individual arrangement between the countries concerned, subject to the very valuable co-ordination and standardisation which is secured by the work of the International Telephone and Radio Consultative Committees. The Telephone Consultative Committee was, however, asked by the Paris Conference to study the question whether, and if so how far, regulations for inter-continental radiotelephone services are desirable, and the question of establishing such regulations will come up for further consideration at the next Administrative Conference, which is due to be held in Buenos Aires in 1952.

The (European) Telephone Regulations of Cairo were brought up to date and extended to cover modern practice. In particular:—

(a) The articles dealing with the Unit Charge and the fixing of Monetary Equivalents were reworded in line with the relative articles in the Telegraph Regulations and made less rigorous, thereby removing the need for the United Kingdom to renew the reservations it had made in the Cairo Regulations.

(b) In compliance with the Atlantic City Convention, a new type of call—the Distress call—concerning the safety of life at sea or in the air was introduced, and given absolute priority over

I.T.U. CONFERENCE, PARIS, 1949

Entrance to the Grand Palais, where the Conference was held



all other classes of call.

(c) A number of articles based on delay methods of working, and which were holding up the introduction of demand working on the European services, were deleted or modified.

Requests were received from the United Nations, U.N.E.S.C.O., the International Chamber of Commerce and the International Federation of Newspaper Editors for special facilities, such as priority, reduced rates for Press calls and so on, which the Conference was unable to concede. It was considered that special facilities would not be required if sufficient circuits were provided to give a rapid service, and the Conference con-

sequently passed a resolution recommending all telephone Administrations and private operating agencies to expedite, within their financial resources, the execution of the general programme of telephone interconnection between European countries, which envisaged the laying of new modern high-speed telephone cables of the carrier and coaxial types.

The arrangements made by the French Government for the work of the conference and the entertainment of the delegates were admirable. The delegates carried back with them the pleasantest recollections of French hospitality and the amenities of Paris.

Telephone Attachments

by F. Bucknell, Inland Telecommunications Department



In our August issue under the heading "Let me suggest to the Post Office that it should . . .", we dealt with a few suggestions designed to improve telephone kiosks and call offices. In this article, our contributor deals with the problem of attachments intended to increase the utility of the telephone instrument.



FOR MANY YEARS THE TELEPHONE INSTRUMENT has been the target of aspiring inventors who have worked diligently to produce devices to fix to it, or to associate with it, or to find ways by which the telephone could be harnessed to existing devices.

The Post Office has always refused to sanction the use of any attachments that might adversely affect the transmission or reception of telephone speech, be harmful to subscribers or Post Office apparatus, or add to operating or other service difficulties. For this reason, the agreement forbids the attachment of any unauthorised device to a telephone line and subscribers are asked, in the preface to the telephone directory, to find out from the local Telephone Manager whether an attachment has been approved before buying it.

However, the Department has recognised that there is some scope for the use of certain attachments, and has itself, for instance, designed and perfected a larger dial for use by people with

defective sight. After careful testing of samples or models submitted by the sponsors, it may authorise some of them, subject to a number of conditions.

Among these approved attachments are certain fire and burglar alarms which, when operated, either dial an appropriate exchange or emergency code or, on manual exchanges, call the operator. A gramophone record is then set in motion to convey a suitable message to the fire or police station.

Permission has also been given to a number of firms to attach recording devices to subscribers' lines with the object of recording telephone conversations for subsequent reproduction. The approval in these cases is subject to conditions designed to avoid damage or injury that might result from the application of any excess voltages to the telephone line, and the safeguards are embodied in the agreements negotiated with the companies.

Another, less well known, device which has

received official approval is the audible water level indicator for indicating the level of water in reservoirs and so on. In response to a telephone call, the apparatus at the reservoir is switched on automatically, and it then announces the actual water level to the caller either by means of a gramophone record or by code signals.

Certain small devices approved for actual fitment to the telephone instrument include extending arms for holding candlestick type telephones, cord-winding devices designed to prevent kinking of telephone cords, and deaf aid amplifiers. The Post Office takes no part in marketing any of these sponsored attachments; indeed, it stipulates that no reference may be made to the Postmaster General's assent in any publicity literature.

These, then, are the devices which the Post Office has been able to approve, but there are many more which could not be authorised, in particular, those designed to hold the telephone handset during conversation so that both the subscriber's hands are free.

Many of these contrivances involve fixing the handset to an arm or clip, and the main objection to this type of attachment is that the subscriber might forget to restore the handset at the end of the conversation or, where this was to be done mechanically, that the apparatus would not effectively terminate the call. In either event, the result would be that where outgoing calls were concerned, the lines of both the calling and called subscribers would remain "engaged". A further objection is the difficulty, which would increase with the length of a call, of holding the head in the correct position relative to the ear-piece and mouthpiece so that reception and transmission of speech would not be impaired. This latter objection applies with even more force to some of the other gadgets intended for the same purpose and designed to hold the handset on the shoulder and against the ear and mouth by pressure from the head. In addition, these latter devices give rise to the danger that the instrument might be damaged through the subscriber unconsciously relaxing the pressure, and allowing the handset to fall from his shoulder. From time to time, devices have been brought to the notice of the Post Office for announcing the absence of the called subscriber by requesting the caller—by means of a mechanically-produced voice—to dictate a message which would be recorded automatically by a recording machine. No devices of this type have so far been

approved, for the problems associated with them are many. For one thing, on automatic exchanges, the called subscriber's meter would be actuated when the connection was set up, and the subscriber would be charged for the call whether or not the caller decided to dictate a message. In addition, there might be difficulty on calls set up by a person other than the one who wished to speak (for example, by a private branch exchange operator.) Confusion might arise, also, on wrong number calls to such a device if the caller did not appreciate that he had been connected to a wrong number and proceeded to dictate a message.



Another suggestion put forward aims at cricumventing burglars who, before breaking in, telephone the prospective "crib" to find out whether the tenants are at home, and, of course, clear the line immediately if there is an answer. The suggested device incorporates a gramophone record carrying a subscriber's number, and the idea is that, when the subscriber leaves his house unoccupied, he will connect the device to his line. It would then announce the number in response to any incoming call: in this way, would-be burglars were expected to assume that someone was at home! The ingenious person who submitted this invention apparently overlooked the infuriating effect on genuine callers

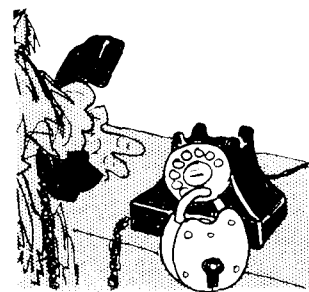
who endeavoured to converse with the robot. Nor is it to be supposed that an enterprising burglar would be so easily deceived. Although



it might at first deter some intending marauders, they would soon get to know of the invention and would easily discover, by its obviously mechanical responses, its existence on a called number. In fact, the device would advertise that the coast was clear.

Many suggestions have been received for locking the dial on subscribers' telephones to prevent unauthorised use. The devices proposed have generally consisted of some sort of metal cap locked on to the dial to prevent it being operated. They have been rejected mainly on the ground that the telephone should be speedily available for use at all times, and in cases of emergency

the loss or misplacement of the key might have serious consequences. A subscriber will often find that he can satisfactorily avoid any loss from unauthorised use of his telephone by renting a multi-coin box.



Other rejected suggestions have included muffling telephone bells in case of illness, labels for listing often-used numbers, local lighting attachments and so on.

The functional design and the first-rate performance of the present handset are the result of many years of study and research, and the Post Office sees that attachments shall not in any way impair its efficiency. The Post Office will continue to examine proposed attachments which are offered, but inventors must not expect them to be authorised if they offend in this or in any other of the ways which I have described.

Books Received

AERIALS FOR METRE AND DECIMETRE WAVELENGTHS: by R. A. Smith; Cambridge University Press, 18s. 214 pages and Index.

One of a series of monographs dealing with advances in radio technique during the war to be published by the Syndics of the Cambridge University Press. This volume, largely interesting to radio engineers, does not profess to be a comprehensive description of the great variety of aerial systems used for short-wave radio applications, but a judicious selection is made of a few applications as illustrating general principles.

B.B.C. ANNUAL REPORT AND ACCOUNTS. (CMD. 7779.) Stationery Office, 9d.

As we go to Press, copies of the Annual Report and Accounts of the B.B.C. as presented to Parliament by the Postmaster General have been published. The Report gives a succinct account of all B.B.C. activities and a survey of its finances. The gross income from the sales of broadcast licences amounted to £11,820,365, of which the net income receivable by the Corporation was £9,444,472, an increase of £517,109 on the previous year. Revenue expenditure amounted to £7,980,568 of which £839,685 related to the television service. Of the total £7,980,568, 55.69 per cent. was expended on programmes (artists, speakers, orchestras, royalties, performing rights, salaries, wages and so on); 25.54 per cent. on engineering (telecommunications, power, lighting and transport); 7.22 per cent. on premises; 5.61 per cent. on regional and area establishments; 3.86 per cent. on management and central services; and 2.08 per cent. on pension schemes, benevolent fund and governors' fees.

Tests with a High Voltage Power Line

by P. B. Frost, B.Sc (Eng.), M.I.E.E., Engineering Department



Power wires must cross telephone wires somewhere. Here is an article describing some experiments designed to show what consequences to the telephone system might follow a fracture of a crossing power line.



CONSIDERABLE PUBLIC INTEREST HAS been shown in some tests which were carried out recently to determine the effect of dropping a live high voltage power wire on to a specially isolated Post Office overhead telephone line.

The reports in the press were not very comprehensive, and readers of the Journal would no doubt like to hear more about the tests and how the results affect present practice in the Telephone Areas. Where overhead telephone lines are crossed by high voltage power lines, the telephone wires are either put underground or a cradle guard is erected between the power and telephone wires to ensure that, if a power wire fractures, the live wire is caught in the cradle guard and cannot possibly touch the telephone wires. The expense of this guarding usually falls on the power authority and, since the breakage of a power conductor does not often occur, the power authorities have urged that the cradle guard or undergrounding is unnecessary.

The Post Office Engineering Department, therefore, agreed to make tests to determine the effect of such a contact.

The tests were made in the Bedford Area in collaboration with the Eastern Electricity Board. A telephone route, comprising 12 wires of 70, 150 and 200 lbs. per mile and an aerial cable, was isolated from the public network, and standard items of subscribers' apparatus, including Private Branch Exchanges, were installed in a hut at one end of the route, while typical exchange equipment was installed in a hut at the other end. Standard methods of cabling were employed, and the usual lightning protectors were fitted. The power line was arranged to cross over the telephone route at right-angles and the power wire, a stranded copper wire of 0.1 square inches cross-sectional area, was released at one end to fall on to the telephone wires.

The tests were made with various durations of power current from 0.7 to 2.9 seconds, and

Fig. 1. Power conductor falling and arcing to upper telephone wires. Test 3

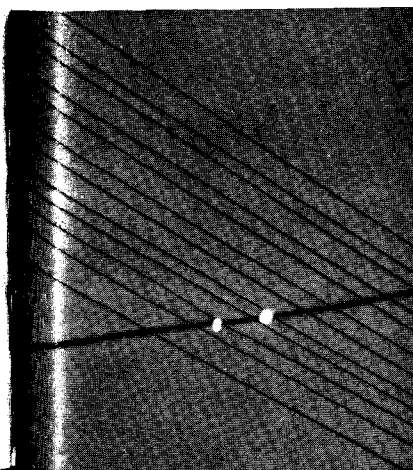


Fig. 2. Power conductor arcing and telephone wires breaking and arcing to each other. Test 3



Fig. 3. Arcing between telephone wire and arcing with power conductor. Test 3

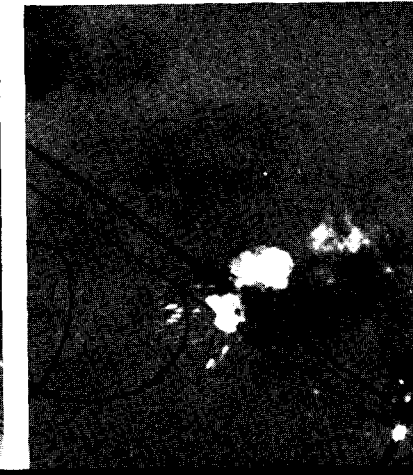




Fig. 4. Lead-in cable burst at exchange end. Test 1

cathode ray apparatus was used to record the current in the power line (roughly 900 amps) and the voltages which resulted in the telephone wires (up to 5,000 volts). A high-speed camera photographed the power wire as it made contact with the telephone wires. In the first test, only one 70 lb. wire was broken as the aerial cable carried the power current to earth. For the second test, the 70 lb. wires and the aerial cable were removed, and in this test only one 150 lb. wire was broken. In the third test, the longer duration of 2.9 seconds of power current caused all the 12 telephone wires to be broken down.

Figures 1, 2 and 3 show the power conductor arcing to the telephone wires in Test 3. These photographs are extracts from the high-speed film, and the clear blue sky produces a dark background which accentuates the arcing. In each test the lead-in cables burst, as shown in figure 4, and broke down, reducing the damage

to exchange equipment although, as figure 5 shows, considerable discharge occurred on the lightning protectors and fuses of the exchanges. This photograph indicates a considerable fire risk. At those subscribers' telephones which were connected by overhead drop wire, the discharge on the protectors was very severe. Figure 6 shows a protector which set fire to the wooden hut. Fortunately the flames were easily extinguished.

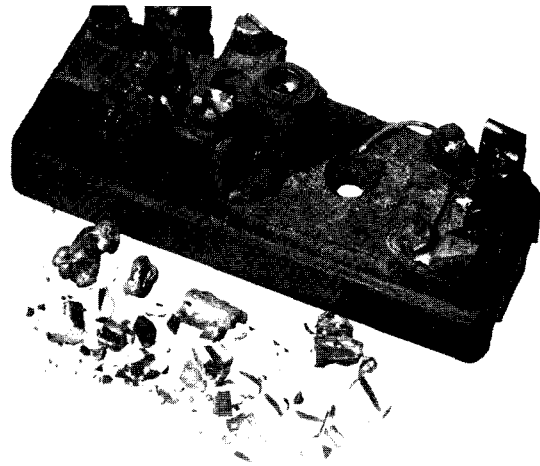


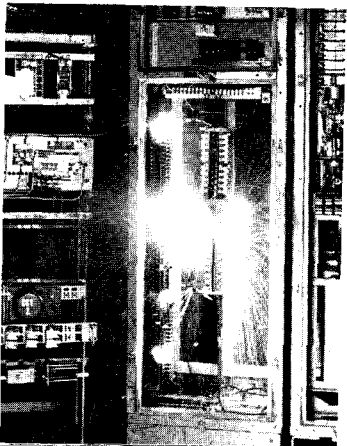
Fig. 6. Subscriber's damaged protector unit after Test 3

At the subscriber's end in Test 1, a flash-over occurred between the impulsing spring contact of a telephone dial and the metal finger plate which was earthed through a 2,000 ohm resistor. The latter was intended to simulate a man dialling, and the current through the 2,000 ohm resistor exceeded 0.5 amps which is estimated to be a fatal value to 99 per cent of individuals.

In Test No. 3, the voltage on the Post Office wires exceeded 5,000 volts and this caused breakdown of the protective spark gaps on the cathode ray oscilloscope, which suffered a heavy discharge and caught fire. This led to breakdown of the record and no voltages were measured after the first 1.25 seconds of this test.

The tests showed that, if the precautions now taken were dispensed with, and if a live high voltage conductor fell on to a telephone route of overhead wires, it would cause great danger of electric shock to subscribers and to linemen working on the route. The damage to lead-in cables and protectors might well cause isolation of adjacent telephone exchanges. No relaxations will be made in the present guarding between power lines and telephones lines as a result of the tests, but further tests, in collaboration with the British Electricity Authority, are intended. The film of the dropping conductor tests has been lent to the Conference of the Union Internationale des Producteurs et Distributeurs d'Énergie Électrique in Brussels, and is being shown at various local centre meetings of the Institution of Post Office Electrical Engineers this session.

Fig. 5. Flashes from fuse mountings and protectors at exchange end. Test 2



International Radio Conference.—The spate of international radio conferences continues. The Administrative Radio Conference for Region 2, held in Washington, has recently completed its work. Administrations in Region 2 (the Americas) were given the task of compiling—after consultation, where appropriate, with neighbouring Administrations with a view to avoiding interference—lists of frequency assignments, in accordance with the Frequency Allocation Table agreed at Atlantic City, for their stations requiring to use frequencies below 3,900 kilocycles per second. The lists are to be submitted for approval to the Special Administrative Radio Conference due to take place in Geneva in September, 1950. Corresponding conferences for Regions 1 (Europe and Africa) and 3 (Australasia) have recently been held concurrently in Geneva. The Second Session of the International Administrative Aeronautical Radio Conference opened in Geneva on August 1, 1949, with a similar task in its special field.

Installation Payments Waived.—Contributions amounting to £9,576 in respect of 649 telephone kiosks provided in rural areas under the Tercentenary of the Post Office Scheme have been waived as a result of the introduction, on April 1, 1949, of a new scheme for the allocation of rural kiosks.

Under the Tercentenary Scheme, a rural kiosk was provided against the payment, usually by the Parish council, of an annual contribution of £4 for five years. Under the new scheme, an

annual quota of kiosks is allocated to each county, and the places where they will be installed is decided in the light of recommendations of the County Branch of the Rural District Councils' Association. Contributions to the cost of installation are no longer required.

★ ★ ★

Telecommunication Talks with the United States and Commonwealth Governments.—

At the request of the United States Government, a meeting was held in London immediately after the Paris Conference to revise the Bermuda Agreement of 1945 (published as Cmd. 6818). The Bermuda Agreement was signed by representatives of the U.S.A., the United Kingdom, Canada, Australia, New Zealand, South Africa, India and Southern Rhodesia. All these countries were represented at the London meeting and, in addition, Pakistan and Ceylon. The representatives present at the meeting recommended to their Governments the terms of a revised Agreement. This provides for a higher ceiling rate for telegrams between the U.S.A. and countries of the British Commonwealth. The actual rates to be charged to the public within the new ceiling for telegrams outgoing from each country will, however, be settled by the Government of that country, subject to notification to all the others.

There is no present intention to raise any rates so far as this country is concerned. The decisions of the International Telegraph and Telephone Conference recently held in Paris, which are at present under consideration, will

involve, however, world-wide changes (from July, 1950) in the classification of International telegrams to all destinations outside Europe.

★ ★ ★

Shared Service.—There are now 160,000 shared service subscribers.

A campaign is being undertaken in Ilford to encourage existing telephone subscribers to accept shared service to enable some of the 1,273 waiting applicants to get on the telephone. Already 196 are on shared service.

★ ★ ★

Wireless Telegraphy.—In 1904, Parliament, by passing the Wireless Telegraphy Act of that year, gave the Postmaster General power to control the use of wireless telegraphy in this country and on British ships. It was a provisional measure enacted for a period of only two years because its sponsors felt that it might require amendment when more became known of the capabilities of the new method of communication.

No one could then have foreseen how the new science would develop but it is greatly to the credit of those who drafted the 1904 Act that, with two minor Acts passed subsequently to supplement it, it has served its purpose as the basis of the wireless telegraphy administration of this country until now. It was re-enacted for a further period of three years after 1906. Every year since, it has been kept in the Statute Book by its inclusion in the Expiring Laws Continuance Bill.

Its days are numbered however. The Wireless Telegraphy Act of 1949, which recently received the Royal Assent, will "take over" later, and then the old Act can pass into history. The new legislation brings up to date, extends and makes permanent the law relating to Wireless Telegraphy and will give the Postmaster General power to deal with the new problems he meets in his capacity of "Policeman of the Ether", in ensuring that all who use wireless telegraphy—which includes wireless telephony, radar broadcasting and television—can do so with the minimum of difficulty.

★ ★ ★

Misleading Advertisements.—The Post Office has sometimes been embarrassed by the kind of advertisement of house property or business for

sale or rent which mentions, as an added attraction, that there is a telephone connected. It has been pointed out to agents, auctioneers and surveyors dealing with house property that there is no guarantee that a new occupier of premises will be able to retain the telephone if it is already connected. Many newspapers have agreed to see that references to telephones in this kind of advertisement shall, as far as practicable, be deleted before publication.

★ ★ ★

New Radiotelephone Services.—After the escape of H.M.S. *Amethyst* from the Yangtze river, the B.B.C. broadcast a telephone conversation between Lt. Cmdr. Kerans, D.S.O., at Hong Kong and his wife in London. This conversation was carried over the newly-opened telephone service between this country and the Colony.

The Post Office, in co-operation with Cable & Wireless Ltd.—who operate the radio station at the distant end—had been endeavouring for some time to establish radiotelephone communication with Hong Kong, but owing to transmitter difficulties at the distant point, a direct service had not proved practicable. In view of current events in the Far East it was deemed desirable that the service should be opened as soon as possible and it was decided that an attempt should be made to obtain communication by using the Cable & Wireless radio station at Colombo (Ceylon) as a relay point. The tests proved satisfactory and the service was opened for public business on July 4 this year.

The Hong Kong transmitter is to be replaced in the near future by more powerful equipment which will enable a direct service to be operated with the United Kingdom; but the existing service is nevertheless quite satisfactory and arrangements for its extension to countries on the Continent of Europe are now in hand.

Another new radiotelephone service was opened on June 7, 1949, between the United Kingdom and Bahrain in the Persian Gulf. This service has proved to be of great value to the commercial interests on the island, and the original schedule of one hour daily has proved to be inadequate. The hours during which the service is available have been increased, and it has now been found possible to extend the service to the U.S.A. and Canada via London.

Further extensions to European countries and to the Commonwealth are planned.

★ ★ ★

French Forest Fires.—The whole of the Post Office Long Distance telephone staff in London, who are in daily touch with France, were so moved by the death and destruction caused by the Bordeaux forest fires that they spontaneously decided to make a collection to help the French Relief Fund.

The idea of helping the French Relief Fund first arose amongst the operators on the Continental switchboard. As soon as the news spread around, the men and women in other parts of the Long Distance telephone service expressed a wish to join in, with the result that the day and night staffs contributed to the fund.

Members of the staff volunteered to organise the collection, and the Treasury was approached so that the contribution could be passed to the French people with the least possible delay.

The Mayor of Bordeaux asked that all donors should be thanked on behalf of the recipients and ends his letter:—

"The many marks of solidarity that I have received from all parts of England following the catastrophe can only strengthen the ties that unite our two countries."

A Treasury official has also received a tribute from a French friend living in Marseilles who writes:—

"I saw in the papers that the telephone operators of the English Post Office took up a collection on behalf of the homeless. I don't know these ladies, and since I can't say 'thank you' to them, I say it to you for them, with all my heart, from all us French people."

★ ★ ★

Broadcasting Committee.—The Broadcasting Committee, under the chairmanship of the Right Honourable the Lord Beveridge, K.C.B., F.B.A., which was set up early this year by the Lord President of the Council and the Postmaster General, held its first meeting to hear oral evidence in the middle of October. These meetings are held in private at the Committee's offices, 1, Chester Street, London, S.W.1. The Committee has received a considerable response to its earlier request for representations and these are all being carefully examined. As the field is very wide and large numbers of suggestions have been made, it will not be

possible for the Committee to meet personally all the organisations and individuals who have written asking to give evidence. It will, however, still welcome representations or suggestions sent in writing to the address given above on any matters falling within its terms of reference. These are:—

"To consider the constitution, control, finance and other general aspects of the sound and television broadcasting services of the United Kingdom (excluding those aspects of the overseas services for which the B.B.C. are not responsible) and to advise on the conditions under which these services and wire broadcasting should be conducted after December 31, 1951."

★ ★ ★

Everyman's Telephone.—The big demand for private telephone installations, which cannot be satisfied because of restrictions on manpower and materials, makes the provision of kiosks a matter of special importance, and the Post Office is doing its best so far as resources allow to instal as many as possible.

During the first six months of 1949, the Post Office installed 1,474 new telephone kiosks, making a total of 41,978 kiosks in service throughout the country. Of the new kiosks, 912 were in urban districts and 562 in rural districts. In addition, 290 obsolete kiosks were replaced.

★ ★ ★

Experiment at Newcastle.—A new type of automatic equipment, designed by the Post Office Engineering Department and recently installed at Newcastle, ensures that every telephone call made to Newcastle "Telegrams", is dealt with in strict rotation.

Under the normal procedure, when a telephone subscriber calls "Telegram", his call lights a lamp on the phonogram switchboard. Any one of a number of operators may answer the call and it may happen that when several calls are waiting to be answered, an operator, on becoming free, may not answer the calling lamp which has been alight the longest.

The new automatic equipment avoids such a possibility. A call made to the Phonogram Room is connected automatically to a disengaged operator, but if all operators happen to be busy calls are stored as they arrive. When an operator becomes free, she takes up the call which was the first to be stored. Similarly,

other waiting calls are taken up in their proper turn as other operators become available. During the period that a caller is waiting for his turn, a ringing tone is heard, and this continues until an operator is ready to receive the telegram. It is important therefore that once a caller hears a ringing tone, he should not hang up and make a further call, because if he does do so, he may lose his place in the queue.

Usually there are sufficient operators on duty to ensure that even if a large number of calls is received in any short space of time, each one can be dealt with quite quickly. Owing to the uncontrollable incidence of telegraph traffic, however, it is inevitable that an odd occasion may arise when the calls to "Telegrams" are well beyond the scope of the operators. Rather than keep a caller holding on for an unduly long period during one of these exceptional rushes, busy tone is returned, and when this happens the caller will *not* be connected however long he waits, so he must hang up and try again a few minutes later.

The installation at Newcastle represents yet another step in the automatization of the telecommunication services. If this experiment proves to be as successful in improving the phonogram service as first observations suggest, a long-term programme of installing this automatic type of equipment at the larger offices in the country will be initiated.

* * *

Radiolympia.—In his speech at the opening of the Exhibition on September 28, 1949, the Rt. Hon. Herbert Morrison, M.P., Lord President of the Council, outlined a plan for developing the B.B.C.'s television service and bringing it within reach of about 80 per cent. of the population of the United Kingdom by the end of 1954.

The 999 emergency telephone service was an outstanding Post Office feature at Radiolympia. The public saw how the 999 service worked by following the progress of a 999 call to the particular service required—Fire, Police or Ambulance. When they had seen how such calls were handled at Post Office telephone exchanges, officers from the Fire, Police and Ambulance explained how their respective services deal with these emergency calls. The Post Office display illustrated the immense contribution made by the Department to the development of the public telecommunications

services. One section of the exhibit reproduced a Post Office Coast Radio Station and visitors were shown how distress calls from ships at sea are treated. These Post Office Coast Stations maintain constant radio communication with the coast-wise shipping and the fishing fleets around the British Isles. Another section showed the improvement in the quality of wireless reception to be obtained by the use of a good aerial and by the suppression of interference from outside electrical sources. An Interference Information Bureau was also provided. Other Post Office exhibits featured the new type of radio link for the exchange of telegraph traffic by outlying islands; the recently inaugurated Thames Radio Service by which ordinary telephone subscribers in the London Toll Area can be put into direct contact with suitably-equipped ships in the Thames; and the part played by the Post Office in television. It is estimated that the stand was visited by 200,000 people.

* * *

Slender Clues.—A German lady from Hamburg on a visit to this country recently enquired at a small post office in North Wales whether she could consult the London Telephone Directory. She explained that she wished to trace an uncle of whom she had had no news for several years. She believed that he was now a naturalised British subject and resided somewhere in the London district. She gave his German name but said that he had changed this on taking British nationality. The only additional information she could supply was that before the war her uncle was a journalist.

The enquiry was passed to the local telephone exchange and within twenty minutes the new name and address of the uncle, now at Watford, was supplied to the grateful visitor.

Fortunately, such requests as these, which take a deal of time, are relatively infrequent.

* * *

Teleprinter Carriage Travel.—When this country introduced teleprinter working on its internal circuits, a standard of 70 characters per line was adopted. Other countries, which introduced teleprinter working internally, settled their own standards and came to use machines whose length of line varied by a few characters. International communication by teleprinter was subsequently introduced but standardisation of carriage travel was not suggested until 1934,

when the Prague meeting of the International Telegraph Consultative Committee (C.C.I.T.) considered a proposal to adopt a 69-character line. This proposal, although accepted at the 1936 meeting of the C.C.I.T., was not generally implemented prior to the war, but at the Committee's first post-war meeting in 1948, it was re-tabled and again accepted.

No general difficulty has been brought to notice in working from this country to the 69-character machines now widely used on the Continent, but it is likely that overprinting does in fact occur, and the Post Office is therefore modifying its machines. Subscribers will not be inconvenienced during the alterations.

* * *

First Telephone.—It is interesting to recall, in connection with the installation of the five-millionth telephone in the United Kingdom on September 7, 1949, that it was in July, 1877, when Sir William Preece, F.R.S. (then Mr. W. H. Preece) of the new Post Office Engineering Department, brought a pair of Bell telephone instruments from America. Professor Alexander Graham Bell (a Scotsman by birth) had patented his invention in America on February 14, 1876.

* * *

Telephone Directories.—The Enquiry Officers at London's Chief Post Office in King Edward Street deal with many curious enquiries. A recent one came from a lady who asked for twelve old London directories. She explained that she wanted them for her garden party at which a strong man would tear them up! The four sections of the London telephone directory contain 822,982 entries on 3,584 pages, and weigh 11 lb. 9 oz. The complete issue of the four current sections totals 4,300,000 volumes and weighs approximately 5,560 tons.

The compilation, printing and distribution of these directories require a vast organisation. The preparation of the London telephone directory is one of the largest jobs in the world. The efficiency of the telephone service depends on the accuracy and completeness of this work. The paper shortage makes the collection of old directories for re-pulping a matter of great importance.

* * *

"Delightful Directories."—"One Government department with a great sense of visual responsi-

bility is the Post Office. The recent telephone directories are superior in appearance to any others in Europe. Bright and decorative in colour, they are well printed and well designed, free from fussy detail and easily distinguishable." (Bernard Denvir in *The Leader*, August 20, 1949.)

* * *

Experiment.—The use of radio links instead of physical lines for providing local circuits in remote districts is being tried by means of low-powered transmitters, operating on high frequencies. Such links cannot be used so well in mountainous areas, because hills or mountains interfere with transmission, but there is likely to be a field for improving the telephone service between islands and the mainland. An experiment is being carried out now at Caldy Island, off the Welsh coast.

* * *

Wireless Valve Inventor.—November 29, 1949, is the birth centenary of Sir John Ambrose Fleming, diode rectifier valve inventor. He first came to telecommunications in 1880 as the United Telephone Company (London) scientific advisor.

* * *

Tribute.—A visitor from Christchurch, New Zealand, on holiday in London, has written to the General Post Office in the following terms:—"I would very much like to thank one of your operators for being so very kind and considerate when I made a telephone call today. I have had a good deal of experience in telephones and I have never had an operator who was so helpful when I was making a call to Watford."

The operator at the Mayfair Exchange has been traced and shown the New Zealander's letter of appreciation. She has been commended and thanked for her assistance.

* * *

Police Street Telephone Pillars.—In future, all police street telephone pillars throughout the country will be painted azure blue. This is the standard colour which has now been adopted following consultations between the Post Office, which is responsible for the maintenance of the pillars, the County Councils' Association, and the Association of Municipal Corporations.

As police street telephone pillars fulfil a public service, it is desirable that they should all be of an easily recognisable colour. The use of a single colour will also enable the Post Office to simplify arrangements for buying and storing the paint.

Hitherto, police telephone pillars throughout the country have been painted in various colours—red, blue, blue and white, green and white, and possibly other colours. Azure blue, the new standard colour, is that in use in the Metropolitan Police District.

★ ★ ★
Mr. H. Townshend, C.B.—Mr. H. Townshend, Director of Overseas Telecommunications, has been appointed Assistant Secretary General of the International Telecommunication Union and will take up that post in Geneva on January 1, 1950.

Mr. R. J. P. Harvey, C.B.—We welcome to the Chairmanship of the Editorial Board Mr. R. J. P. Harvey, C.B., formerly Regional Director, Home Counties Region, who has been appointed Director of Inland Telecommunications in succession to Mr. B. L. Barnett, C.B., M.C.

Mr. W. Tansley. Mr. W. Tansley has succeeded Mr. R. Harvey as Regional Representative, North Western Region.

TO THE EDITOR

Dear Sir,

Mr. Wyles in his article in the April issue "Let me suggest to the Post Office that it should . . ." discusses some of the pitfalls which lie in the way of the member of the public who offers suggestions for the better running of the Telephone Service.

Nevertheless, it may be of interest to your readers to know of one important feature of the Telephone Service, which was the direct and exclusive suggestion of a member of the public, and that is the use of superimposed pip signals on trunk calls to indicate the passage of time. His suggestion, which he admitted was inspired by the B.B.C. time signal pips, was made soon after the 1914-18 war. Unfortunately, the gentleman concerned did not live to see the adoption of his suggestion as he was killed in a motor accident.

Yours faithfully,
 W. C. GRIFFITH.

London Telecommunications Region.

(Letters on subjects of general interest would be welcomed. They should be as brief as possible.)

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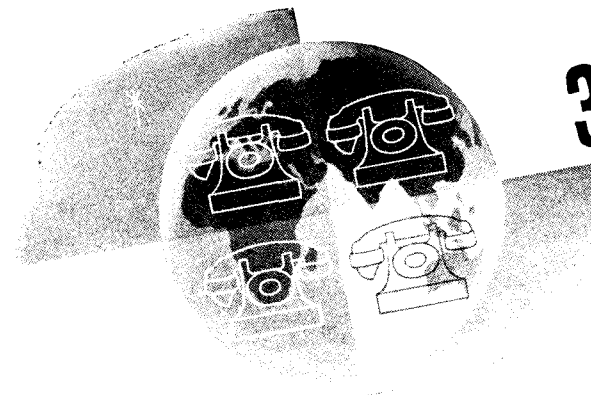
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Contributions. The Editorial Board will be glad to consider articles of general interest within the telecommunication field. No guarantee of publication can be given. The ideal length of such articles would be 750, 1,500 or 2,000 words. The views of contributors are not necessarily those of the Board or of the Department.

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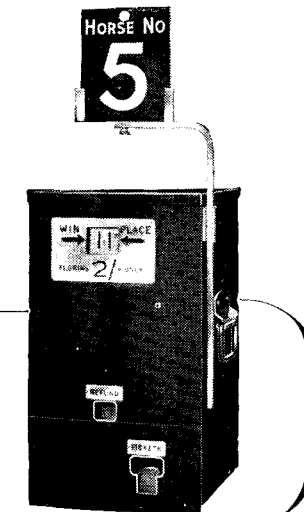
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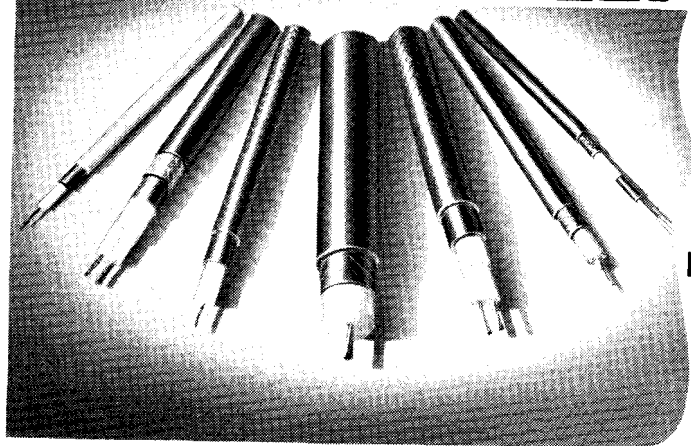
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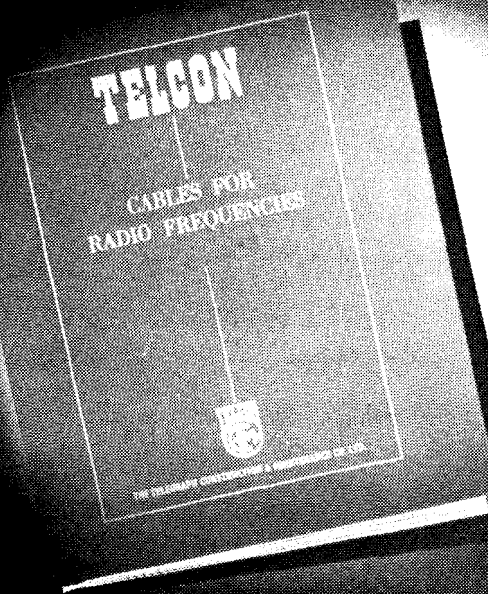
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