

TELE COMMUNICATIONS JOURNAL

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COMMENT

COMMONWEALTH TELEGRAPHS ACT

THE COMMONWEALTH TELEGRAPHS BILL HAS now become law, having passed both Houses of Parliament without opposition. Its provisions are complicated and various, but its effects, which are of interest throughout the Commonwealth and of special interest to the United Kingdom Post Office, can be set out shortly. They can, however, only be appreciated against an historical background. Cable and Wireless Ltd. (under another name) was set up in 1929 as an operating company owned indirectly by a holding company. It merged a number of British telegraph companies which

had been pioneers in the fields of cable and of wireless telegraphy throughout the world since submarine telegraph cables—and, after a long interval, wireless—were first invented. The merger also acquired two cables across the Pacific which had been laid by joint Commonwealth Government enterprise. The merger-operating Company was subject from the outset to a measure of Government control, and the interests, not merely of the United Kingdom Government, but also of the Governments of all the other self-governing countries of the Commonwealth, were represented on an Advisory

Committee invested with certain limited powers.

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THE COMPANY DID NOT, HOWEVER, OPERATE BY any means all of the oversea telegraph services of this country; in particular, the Post Office operated (besides all the United Kingdom telephone services) most of the telegraph services with the Continent of Europe (which carry also traffic between the Continent and distant Commonwealth countries); and four foreign companies operated, under the Postmaster General's licence, telegraph services with North America, Denmark and Sweden, and a number of other countries. These United Kingdom arrangements have never been disturbed and still continue; in 1929, Cable and Wireless Ltd., however, handled nearly all the cable traffic of the oversea Commonwealth countries and was—or soon became—closely associated with wireless companies in some of those countries which carried both telephone and telegraph traffic. After the first world war, the Post Office had begun to operate telegraph cables to Canada, with access to Australia and New Zealand via the Pacific cables, and in 1925-1927 it began to operate new short-wave wireless telegraph services with Australia, Canada, India and South Africa. At the time of the merger, however, all the Commonwealth point-to-point telegraph services directly worked by Governments, including the Post Office transatlantic cables and the beam wireless services, were transferred to Cable and Wireless Ltd. The beam wireless stations were leased to the Company.

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DURING THE TEN YEARS WHICH ELAPSED BETWEEN the foundation of the Company and the second world war, a number of changes in the set-up were made, both overseas and at home, including an important modification in the relation between Cable and Wireless Ltd. and the Government of the United Kingdom. Just before the second world war, the United Kingdom Government agreed to relieve the Company of its liability to pay rent for the beam stations and, in return, gained shares in the Company representing about one-twelfth of its total capital. These arrangements were given legislative sanction by the Imperial Telegraph Act of 1938.

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DURING THE WAR THE COMPANY PERFORMED VERY important services for the Commonwealth, but the rapidly-changing conditions brought about

by the war, and in particular the further development overseas of wireless services tending to compete to an increasing extent with the Company's system, necessitated review of the arrangements. The most vital date is 1944, when the Advisory Committee was transformed into a Commonwealth Communications Council. The Council recommended that the system should be nationalised by establishing a series of public corporations in the United Kingdom and in the other Commonwealth countries concerned. Each corporation was to be owned by the local Government, but linked with the remainder by an exchange of shareholding. This proposal was not adopted in its original form, and in 1945 Lord Reith, at the request of the Government of the United Kingdom, undertook a special mission round the Commonwealth and, on his return, recommended nationalisation on a somewhat different basis. On this basis, while private shareholding would be wholly abolished, each Partner Commonwealth Government (including, of course, the United Kingdom) was to acquire the assets of Cable and Wireless Ltd. in its own territory, as well as the communication assets of its own local company where one existed. Lord Reith's recommendations were approved by all the participating Governments in 1945, after examination by a Commonwealth Telecommunications Conference; and by the Cable and Wireless Act of 1946 the United Kingdom Government acquired all the remaining shares of Cable and Wireless Ltd. apart from those which they had acquired in 1938. The price to be paid for these shares was settled by arbitration as recently as February last.

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AGAINST THIS HISTORICAL BACKGROUND IT BECOMES clear that the Commonwealth Telegraphs Act of 1949 is not a measure of nationalisation; the organisation of Cable and Wireless Ltd. as a limited liability company operating under the Companies' Acts remains unaffected both by this Act and by the Cable and Wireless Act of 1946. The main effects of the 1949 Act are two. First, in pursuance of the agreement at the Commonwealth Telecommunications Conference in 1945, which was formally signed in the summer of 1948, the Commonwealth Communications Council is superseded by a rather similarly constituted but somewhat more closely-knit body, the Commonwealth Telecommunications Board, which in fact the Act sets up. Secondly, the

Postmaster General is given the necessary powers to enable him to implement certain other provisions of the Commonwealth Agreement under which the Post Office will become the operating body within the United Kingdom of the new Commonwealth partnership arrangement, and will take over (subject to certain not very important exceptions) all the assets and staff of the Company within the United Kingdom.

Each of the Commonwealth Governments is of course pursuing the same general policy under the Agreement, but their proposed method of operation is not necessarily the same as ours; South Africa and New Zealand, as well as Ceylon and Southern Rhodesia, have assigned the new responsibility to their respective Postal and Telegraph Departments, in the same way as the United Kingdom; India has done the same, but in a somewhat different manner; Australia has set up the Australian Oversea Telecommunications Commission, a Government-owned public body under general Government control; Canada has not yet announced what form of public ownership she will adopt; and Pakistan has not yet taken any decision in regard to the future organisation of her oversea telecommunication services.

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AN IMPORTANT PART OF THE PRESENT ACT RELATES to the terms on which Cable and Wireless staff will be merged into the Post Office; the general position has been discussed with, and accepted by, the two trade unions representing the large majority of the Company's staff as well as with the Staff Sides of the two Departmental Whitley Councils in the Post Office. The position in regard to pensions is specially complex, since the pension schemes to which the Company's staff belong are numerous and their conditions vary widely. The Act provides for Regulations in regard to pensions to be made by the Postmaster General. This will, of course, be done in consultation with the staff representatives and the Regulations will be framed so as to safeguard the interests, not only of the staff who will transfer to the Post Office, but also of those who will transfer to the services of the Commonwealth countries overseas and of those who will remain with the Company.

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THE ACT IS A FIRM TESTIMONY TO THE EFFECTIVENESS of Commonwealth collaboration; and will also be of close interest to many readers of this Journal

from the point of view of the effects on the United Kingdom Post Office of the changes for which it provides. The following is a summary of the salient points in regard to the latter:—

(1) The services of Cable and Wireless Ltd. within the United Kingdom will be transferred to the Post Office, with the staff operating them, on April 1, 1950.

(2) Cable and Wireless Ltd. will remain in being as a United Kingdom company operating services in the Colonies and in foreign countries (with subsidiary companies, as at present, in many of the latter) and owning and maintaining its world-wide network of submarine cables, as well as a number of important wireless stations overseas. It and its subsidiary companies will continue to employ the staff (some 7,500 in number) who operate and maintain the system in the Colonies and in foreign territories.

(3) The staff of the Company in the United Kingdom is not likely to exceed 500 persons. The remainder of the United Kingdom staff of the Company will be absorbed into the Post Office; they number about 4,500.

(4) The Post Office will take over the Company's owned or leased buildings in the United Kingdom. For some time to come the operating centre for working the United Kingdom services now operated by the Company will remain at Electra House on the Victoria Embankment in London, but the staff operating those services, together with the staff now employed by the Company at its wireless stations and branch offices in the United Kingdom, will become Post Office servants, integrated into the appropriate organisations of the Post Office.

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THE LAST BIG MERGER AFFECTING THE POST OFFICE was in 1912 when the Post Office absorbed the National Telephone Company. The staff then taken over amounted to 11.5 per cent of the Post Office staff at that time, and was scattered over the whole country. The staff to be taken over from Cable and Wireless Ltd. is only 1.3 per cent of the staff now employed by the Post Office, and the vast majority of them are employed in London. In the light of this comparison the task of assimilation does not seem too formidable; and with the helpful co-operation of the Company's officials, good progress has already been made. Indeed, the cordial relations which already exist between the Post Office and the Company are an excellent augury of the success of the merger.

PSYCHOLOGY OF SUPERVISION

by Miss J. A. D. Quigley, Belfast Telephone Area

IT IS SAID THAT PSYCHOLOGY IS THE ATTEMPT to take a scientific view of human behaviour. The aim of psychology is to render our knowledge of human nature more exact and systematic in order that we may control ourselves more wisely and more effectively.

A supervisor should be a leader not a driver; she must be everything that she desires her subordinates to be. Leadership is the art of influencing a body of people; the truly great leader is one who, by her own high example, inspires her staff with such an outstanding degree of self-confidence that they will carry out quickly, cheerfully and thoroughly whatever duties they are called upon to perform. Therefore, leadership is largely a matter of personality and example. A supervisor, being a leader, must look and live the part. She must be thoroughly reliable and efficient, absolutely straight and scrupulously just; she should be captain of her team and her primary duty is to arouse enthusiasm in the individual members of her team. There is no person so dull that she has not some talent that can be praised; whoever takes the trouble to praise it, is generally rewarded with rich and constantly-recurring dividends. The supervisor will get the best out of the telephonists if she treats them with patience, courtesy and consideration.

It is not pretended that a supervisor will not have occasion every day to reprimand or to criticise the conduct or work of a telephonist but there is a right way and a wrong way of doing it. When a telephonist has to be criticised it is wise, first of all, to remind her that she has fallen below her own standards. Discipline involves blame for bad work but praise for work well done should never be overlooked.

A supervisor must know her staff in the sense that she knows their temperaments, their thoughts and moods, grouses and worries. She will handle her group infinitely better when she has learnt to handle the vastly different individuals who make up the group. One of her chief duties is to develop and harness the collective mind of the group so that it can work with maximum power and effect, in other words, she has to

inspire the telephonists with the team spirit, then each individual in the team feels she is an essential part of a complete unit, a body in which each member is expected to carry out her own individual part in order to attain the perfection and completeness of the whole.

It must be realised that the team spirit can be built up only on the self-respect, self-control, self-confidence and self-discipline of individuals. It will thus be seen why it is so essential to treat each individual with courtesy; such treatment gives the telephonist a sense of dignity, and a team with a sense of dignity will work harder and give less trouble. The development of the team spirit will depend more than anything upon the attitude of the supervisor. In the unalterable laws of nature everyone is at times subject to moods; it is the duty of a supervisor to understand and have regard to these moods in her subordinates, but she must ever be on her guard to see that she does not communicate to her subordinates, by her own conduct and actions, any of her own moods.

When the members of a team are inspired by the team spirit and feel that they are one with each other, they have a personal reason for not offending against the rules, for no one wishes to offend against herself nor will any person willingly offend against a leader whom she respects and whose good opinion she values. A supervisor is at her best when her supervision is quietly effective, but she should never be timid; she should be completely capable in all aspects of the work to which she has been appointed to supervise. Supervision requires instant obedience but the staff should feel that what they are giving is obedience to a well-thought-out requirement, and not simply the obedience to the personal whim or fancy of the supervisor.

The good supervisor obtains results by influence and example and without the need of continual orders or prohibitions. To obtain such influence the supervisor must have created instinctively in her staff a feeling of complete confidence in her judgement, her fairness and in the justice and good sense of her guidance and leadership. She will only obtain the confidence of the staff if she

(continued on page 127)

TELEPHONE EXCHANGE PROBLEMS AT BOURNEMOUTH

by W. R. Tyson, M.I.E.E., Telephone Manager,
Bournemouth

BOURNEMOUTH (OR Poole) Bay stretches from Hengisbury Head in the East to Sandbanks in the West—a distance of some ten miles—and the landward side is, save for a few carefully-preserved open spaces, fairly continuously built up to a depth of about four miles inland. The county boundary dividing Hampshire from Dorset proceeds very roughly due north from the beautiful Branksome Dene Chine. Eastward from the boundary the area is controlled by the Bournemouth authorities, westward by the Poole authorities, and there is, naturally, a good deal of local rivalry—of the friendliest type—between the two boroughs. Nevertheless the whole area comprises one conurbation, and from the point of view of public services (gas, electricity, telephone, posts and so on) it must be treated as a concrete whole. The telephone service in this delectable part of the world is wholly manual; it is one of the few districts of comparable size in the country of which this can still be said. The Bournemouth exchange, now nearly 40 years old, serves about 4,500 subscribers in the busiest part of the district and is a group centre. It is located in a badly-designed building which also houses a large telegraph instrument room. The exchange is overloaded, and the building overcrowded; the accommodation for welfare and technical plant is unsatisfactory. Everything there is in sad need of replacement.

The outer areas are served by Southbourne (3,400 lines), Boscombe (2,800 lines), Winton (4,000 lines), Westbourne (2,100 lines), Canford Cliffs (1,200 lines), Parkstone (2,800 lines), and Poole (1,200 lines) (see figure 1). The last three exchanges are located in the Poole Borough, the



Mr. W. R. Tyson

others in the Bournemouth Borough. All except Westbourne are in well-designed buildings built within the last 20 years, and are strong enough to take automatic plant eventually, although in some cases an extension of the building will be necessary. Westbourne is a post-war exchange recently installed in a prefabricated building. Boscombe exchange, some two miles from Bournemouth exchange, is also a group centre.

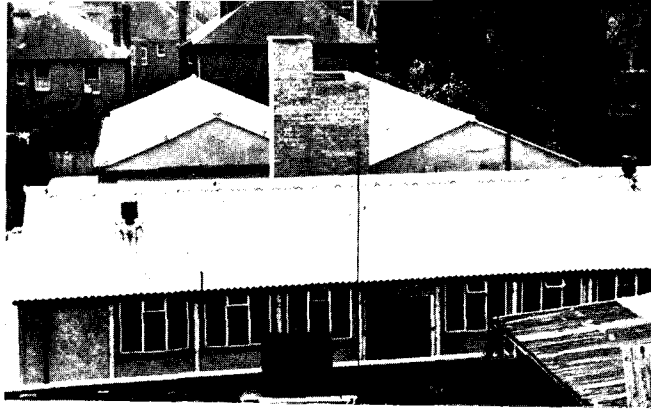
There has always been a heavy demand for telephone service in the district and the potentialities are still high. Little, if any, slackening in demand can be foreseen for many years. Post-war restrictions therefore posed a number of difficult problems. One of the major considerations was that the manual plant must not be allowed to grow to such an extent that it would preclude the utilisation of the accommodation for automatic equipment in the buildings which had been designed for this. Had we allowed this, we should soon be looking for fresh sites, designing new buildings and dealing with all the engineering and other complications inevitably involved by such measures, all made worse by the economic situation.

There were, therefore, two problems to be solved; first, that of relieving the Bournemouth exchange; second, that of providing for an initial instalment of automatic equipment in those manual exchanges where this was essential to safeguard the future of the buildings.

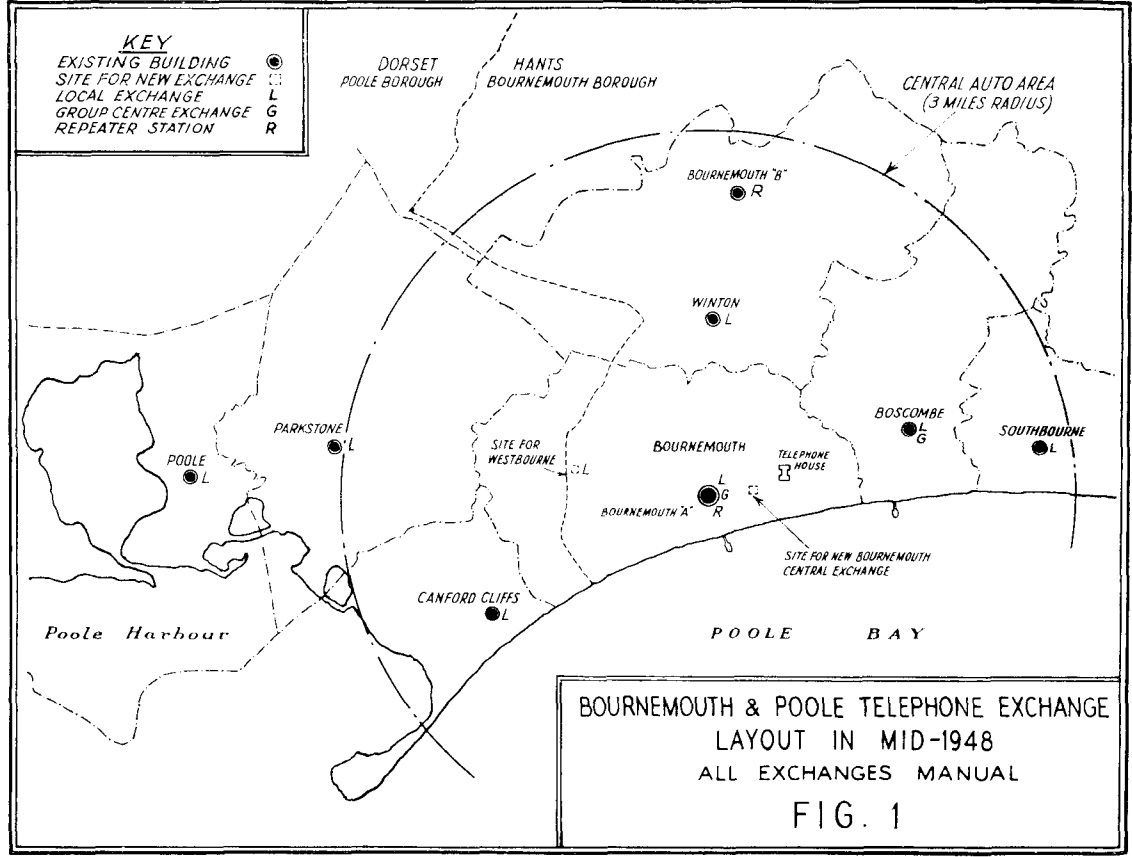
So much for existing conditions. Their most important features were decided upon some 25 years ago when the rapid growth of the district made it essential to lay down a plan for its future telephone needs. It was decided that, due mainly to the low calling rate, the provision of

automatic equipment was not justified immediately. It was also decided that the first exchange to be converted would be the large Bournemouth manual exchange and that in 1937 or 1939 the area it serves would be split into two parts; the western portion, containing about one-third of the subscribers, to be served by a new automatic satellite exchange called Westbourne, and the remainder to be served by a new Bournemouth

were all to be experienced. They produced the inevitable doubts and delays, resulting in a thorough dislocation of the ordered scheme originally conceived. The provision of a new automatic exchange of more than a few hundred lines takes time, and this can be unduly prolonged when there is uncertainty regarding probable development, difficulty in finding and purchasing a suitable site,



Westbourne Telephone Exchange. Fig. 2 (Left): Operators' retiring room. Fig. 3 (Right): Exterior view showing the welfare rooms in the foreground, the switchroom behind the chimney on the right and the apparatus room on the left



automatic exchange. This exchange would be the parent for the remaining exchanges in the Area as and when they were converted, and would also be a group centre. Unfortunately, when these plans were made, it was not possible to foresee the changing fortunes of the following years. Booms and slumps in trade, lowered telephone tariffs and charges, the phenomenal growth in the long distance services, culminating in the effects of a catastrophic war,

and local opposition to the site eventually decided upon. All these factors operated in the case of Bournemouth exchange, but it was not until 1939 that plans were finally settled for the new Bournemouth Central Automatic Exchange, to be opened in 1942. This was to have been (and still will be) a really first-class job, superbly architected, and containing all the latest and best in equipment, accommodation and welfare facilities. It was to contain a local automatic

exchange for 8,000 lines, "parent" and tandem switching facilities for handling traffic from and between other exchanges in the group, a large manual board for handling long distance traffic, enquiries and so on, and speech amplifying plant for long distance calls. But the war came and we could not have our new exchange.

As we all have good reason to know, difficulties of provision do not prevent growth in traffic and consistent demand for new lines, and conditions at the existing exchange steadily grew worse. Some years before the war we gave relief by installing an additional suite of 23 manual positions in an odd corner of the building. In 1939, further relief was given by the removal of long distance work for the local fee area (with the exception of subscribers connected to Bournemouth exchange itself) to the neighbouring Boscombe exchange (about two miles away), which was given group-centre status and was extended by 24 positions. This work was carried out by the local engineering staff, who did a first-class job.

These two exchanges did yeoman service during the war, but something had to be done pretty quickly afterwards to avert a serious situation. Therefore, about six years ago, the position for the whole of the local area was examined. We found that fairly urgent action was needed if we were to get the Westbourne exchange opened, (thus giving further relief to Bournemouth exchange) and to get Boscombe and Canford Cliffs converted to automatic working before manual extensions precluded this.

Bournemouth exchange itself, which would be exhausted in two to three years even after relief by Westbourne, was showing signs of wear after its long life. The engineers were shaking their heads over the state of the wiring insulation in the multiple and in some keyboards. But now

came post-war crises, with fuel scarcity, manpower and steel shortages and so on. The cup of achievement was once more dashed from our lips by the rude hand of circumstance. Austere plans for a building shorn of much of its glory and pruned to meet only a few years' growth proved beyond our means. With a sigh we resigned ourselves to the knowledge that Bournemouth manual exchange would have to grow still more hoary in service before it received its quietus. But get relief for this exchange we must. As I have said already, consideration turned to Westbourne, which, when opened, would take away at least 2,000 subscribers. We had the site, acquired about 1938, but we needed a building and automatic equipment. But while there were blitzed cities and houses to rebuild, nobody would look at our request for either of these. We moderated our demands and eventually received authority to have a prefabricated building and to instal a manual exchange by using our own staff. Well, Westbourne is open now—born on December 4, 1948. It has turned out to be a beautifully-engineered job in a snug little building (see figures 2 and 3). Though the outside is austere, the internal arrangements would do credit to any specially-designed permanent building, and the operating and engineering staff are well pleased by it all. We have left sufficient room on the site for the future automatic exchange building. It wasn't an easy exchange to build, because of recurring stores shortages which continually dislocated the programme.

At one time we had no special terminating cable for the external cables; at another no 84-wire cable for the answering jacks; similarly with the supply of jacks and meters.

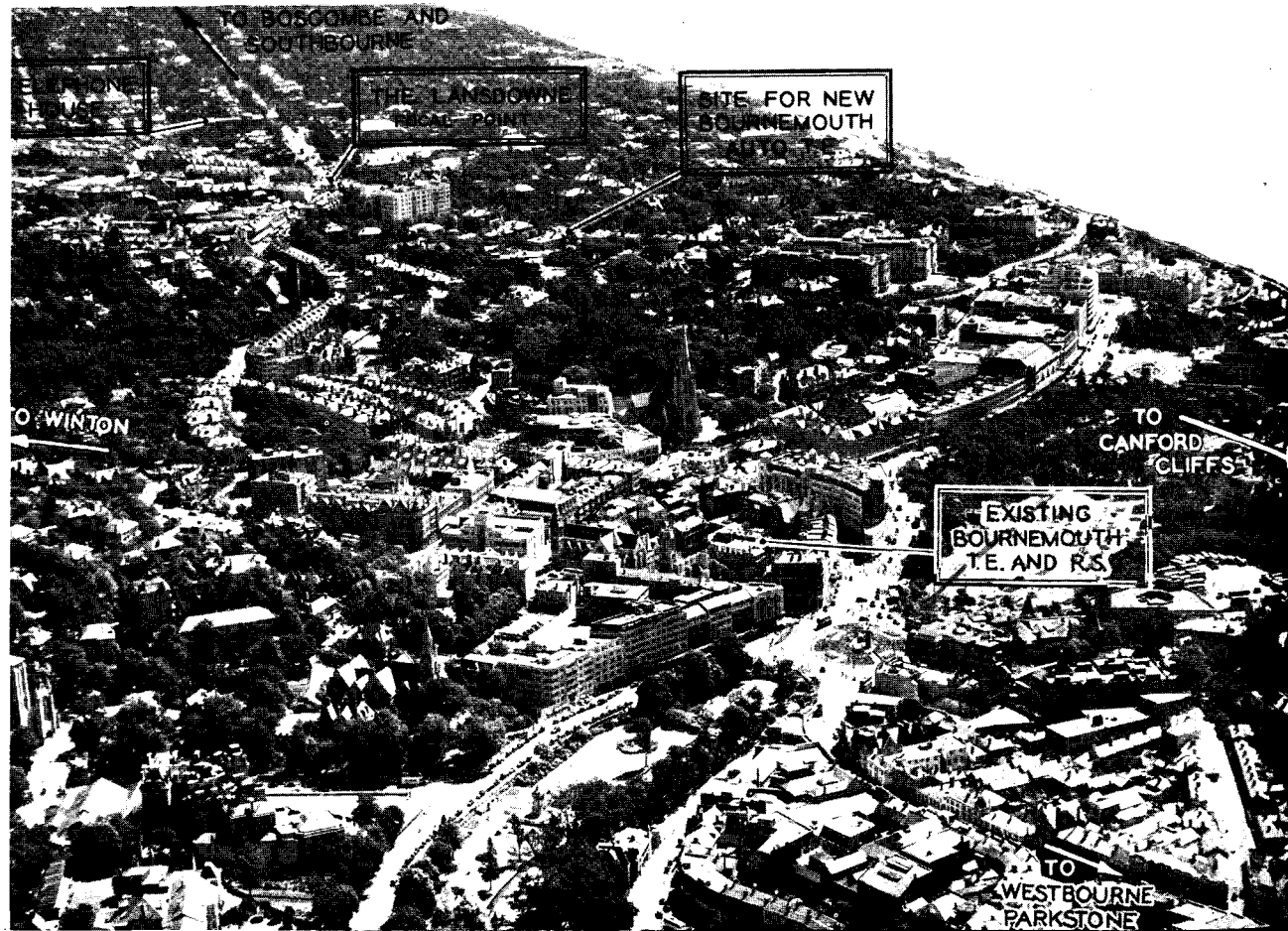
All the Westbourne subscribers have been given their future 5-figure automatic numbers, so that

when the change to automatic eventually takes place there will be no need to have another irritating change of number. All these numbers commence with the digit 6, which will be the discriminating digit for Westbourne in the final scheme. In order to get them in the telephone directory in time for the transfer, and to ensure that the resultant spare multiple equipment at Bournemouth would be available for new subscribers immediately after the opening of Westbourne, the numbers were changed about two years ago, Westbourne being worked hypothetically on Bournemouth until the new exchange materialised.

We must now turn our attention to some of the other exchanges. Early in 1943 we found that an extension was needed at Boscombe exchange, which, if carried out in full, would preclude our using this building for automatic plant. Similar considerations were arising at Canford Cliffs, and would also shortly arise at Southbourne. All these buildings were designed to accommodate

automatic plant, and to save endless delay and very great expense, it was necessary to ensure that an initial instalment of automatic plant should be provided as quickly as possible in the first two buildings. In the basic design for the Area both these exchanges were to be satellites with main exchange and manual board and group-centre facilities at Bournemouth Central—the “parent” exchange when the full scheme was complete. But there was not going to be a parent, so we had to provide a “foster parent”—or temporary main exchange—to fill the gap. The plant for this had obviously to be installed in an existing building, and, after examining scheme after scheme, we decided, very reluctantly, to utilise about one-third of Telephone House. This is the Telephone Manager’s headquarters, a fine modern block of offices, about three furlongs from the site for the future main exchange and fairly conveniently located for external cabling. We could do this by turning out the local Inland Revenue staff, who occupied

Aerial view of Bournemouth. By courtesy of the Bournemouth Corporation



a suite of offices in the building, and by outsourcing a few of the telephone staff.

The equipment to be installed in Telephone House would have to provide tandem switching facilities, group-centre facilities (to be displaced from Boscombe) and a directory enquiry bureau. We also decided to remove the badly-congested maintenance control from Bournemouth exchange to Telephone House in advance, and this has paid us handsomely.

Having completed all these plans during the war, we were fortunate in getting the contracts for the equipment placed at a fairly early date, and installation by the Automatic Telephone and Electric Company Ltd., is now nearing completion. We hope to open Boscombe, Canford Cliffs and Boscombe automanual and group-centre exchanges (the latter in Telephone House) during the late autumn of this year, and, when this is done, the first instalment of Bournemouth’s automatic system will have been completed.

The Central Automatic Area will eventually comprise Bournemouth, Boscombe, Southbourne, Winton, Westbourne and Canford Cliffs exchanges. Ultimately these exchanges were to lose their individual names and be known as Bournemouth, all taking the same charges. When advice to this effect was given to the local authorities and Chambers of Trade, the Poole authorities objected to Canford Cliffs exchange, which is in Poole Borough and the County of Dorset, losing its name and identity and becoming known as Bournemouth in the County of Hampshire. In view of the special circumstances, it was decided to allow Canford Cliffs to retain its distinctive name, whilst still remaining in the unknuck numbering scheme and taking the same charges as Bournemouth. Poole and Parkstone will become “remote non-director” exchanges with their own numbering schemes, but with inter-dialling and multi-metering facilities, and with manual board facilities at Bournemouth Central.

With the removal of over 2,000 subscribers to the new Westbourne exchange we can now do something for many of the large number of applicants who are waiting for service on the existing Bournemouth exchange. Concurrently there is a steadily-increasing volume of trunk traffic. The combination of these two factors will produce considerable overload by the season of 1950, in spite of the relief given by Westbourne.

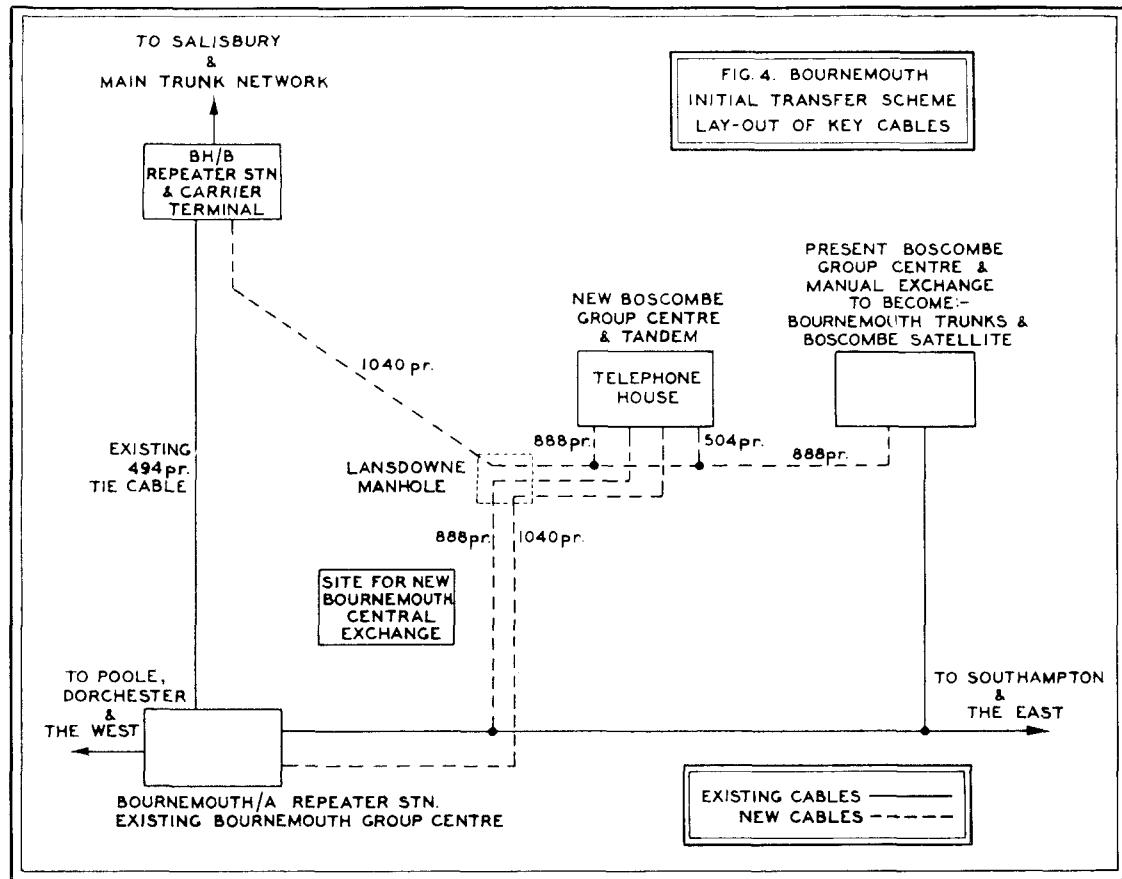
But now we are in a position to provide a really

decisive solution to the problem of keeping Bournemouth exchange alive. With the opening of Boscombe automatic exchange and the removal of the Boscombe group-centre traffic to the new Telephone House switchboard, there is left at Boscombe a redundant manual switchboard in good condition. Therefore, early in 1950, we shall move to Boscombe most of the long distance traffic now being handled at Bournemouth, leaving Bournemouth as a local and toll exchange, which should serve for another six or seven years, by which time we hope to get the new Bournemouth Central exchange. Note that we do not expect that the present Boscombe switchroom will be needed for automatic plant before we get the new Bournemouth building. We haven’t found the answer if, contrary to our expectations, this situation does arise. This will still leave us with two group centres—one sleeve-controlled automanual and one central battery manual—for some years. It was impossible, however, to provide for all the trunk working at Telephone House without completely disrupting the present excellent office arrangements there. We should only do this as a last resort. It will seem somewhat odd to have Bournemouth trunks in Boscombe exchange, and Boscombe trunks in Telephone House—a mile nearer to Bournemouth. We considered the possibility of using the redundant switchboard at Boscombe for Boscombe trunks and having Bournemouth trunks at Telephone House. The accommodation and traffic problems encountered were insurmountable. We also considered renaming the Boscombe automatic exchange “Bournemouth.” It will be, eventually, but the existence of a Bournemouth manual exchange precluded this.

All this complex planning by the traffic and engineering staffs has resulted in a massive job for the local works’ engineers. In addition to the installation of the complete new Westbourne exchange, the complications of installing automatic plant side-by-side with and in the same room as working manual plant have necessitated much careful thought and collaboration with the Contractors and the Ministry of Works. After the opening there will be a complicated tangle of temporary and permanent wiring to clear away at Boscombe in order to remove the manual frames and racks of apparatus, and, at the same time, provide for the trunk terminations to be switched from Bournemouth. In Canford

Cliffs there is rather more room and the work will not be so tricky. Furthermore, many of the manual exchanges left in the vicinity will need to have some of their equipment modified so that they can "team in" with the automatic exchanges. These already complicated little jobs are likely to be made worse by the fact that many essential items of equipment are in very short supply.

to the new Bournemouth Central Exchange when it is eventually provided. Fortunately, the lay-out of the cable system and the relative positions of the buildings and exchanges concerned will enable this to be done in such a way that a negligible amount of cable will have to be recovered. Naturally, the economic practicability of carrying out the plan



The external work now being done is also considerable and sufficiently complex. For the trunk and junction network alone some 45 miles of new duct and 15,000 miles of wire are being laid and a considerable number of local development cables are being provided in addition. The major consideration in the planning of the new, and diversion of the old, trunk and junction cables has been that the whole network shall be capable of being turned in economically

of moving Boscombe trunks into Telephone House (in the Bournemouth exchange area) and then moving Bournemouth trunks into Boscombe, has depended very largely upon the cable lay-out. A complicating factor is the existence of two repeater stations; one, Bournemouth "A," situated at the focal point of the trunk and junction network in the basement of Bournemouth exchange, and the other, Bournemouth "B," some three and a half miles away on

the northern outskirts (Winton exchange area). The first move in the plan has been to expand and to concentrate all the carrier equipment at Bournemouth "B," which can thus become the terminal of most of the long distance trunks. The next move—a complicated one—will be the re-routing of many circuits on carrier groups to this terminal. Only when this has been done can we carry on with the necessary alterations to the audio-trunk and junction cables. Three trunk and junction cables from Bournemouth to the east will be partially intercepted at a strategic point and led by a 888-pair cable into the new Boscombe Group Centre Exchange (Telephone House), passing via the site for the new central exchange. (See figure 4.) Another interception is required in Boscombe. A new 1,040-pair cable is being provided from Bournemouth to Telephone House past the future Bournemouth Central site in Bath Road in order to bring up to that point all the junctions from the West. This will also extend the new junction cable which we are laying from Canford Cliffs. From the carrier terminal at Bournemouth "B" a cable is being laid (1,040 pairs) to Telephone House, passing through the Lansdowne

Manhole and extended to Boscombe as an 880-pair cable. This will carry most of the trunk circuits to Boscombe group centre and later to Bournemouth trunks in its new situation. It also provides, on the latter section, for the tandem junctions from Boscombe automatic exchange. Transmission difficulties on certain routes when they are extended to the new Bournemouth trunks exchange have necessitated the loading of additional cable pairs in the existing tie cable Bournemouth "B" to Bournemouth "A," and in the Bournemouth-Boscombe junction cable.

The focal point of the new cable network is the multiple road junction called "The Lansdowne" at the top of Bath Road. Here was built, in the island, a magnificent manhole to accommodate the 66 ways of ducts and their cables which converge upon it. The opportunity was taken to clear out a number of aged local and junction cable joints and a cast iron cable distribution lead which was over 40 years old. The engineers were, with difficulty, restrained from replacing this lead by a new cocktail cabinet, in order to round off the job properly! Unfortunately the necessary equipment for this is not included in

(continued on page 133)

The Telecommunications Industry and the Export Drive (2)

by J. A. Mason, A.M.I.E.E., M.I.I.A.

★ ★ ★

We have pleasure in printing the remainder of Mr. Mason's interesting article, the first instalment of which appeared in our May issue. The article contains the substance of an address delivered by Mr. Mason of the Automatic Telephone and Electric Company, Liverpool, to the Post Office Telephone and Telegraph Society of London, in the Lecture Theatre of the Institution of Electrical Engineers, Victoria Embankment, London, W.C.2, on 17 January, 1949.

★ ★ ★

10. EXPLOITATION FACTORS

IN CONTRAST WITH THE RATIONALISATION that has taken place in this country following the British Post Office policy of bulk contract purchasing, in approaching the export market it is necessary to develop a technique of specialised

salesmanship. The sales engineer needs not only a flair for the commercial side of the business, but a detailed technical knowledge of his own and his competitors' systems. Frequently he also needs knowledge of the country which can only be gained by having studied it for some time before

he even tries to sell anything. This, in turn, implies that sales in overseas markets are usually the result of long-term campaigning. Another important factor is the type of operating administration, which may be Government or privately-owned. In the Government-owned case, one would expect a tendency to standardise a particular system on a nation-wide basis, to simplify training and maintenance, but in practice there are a number of examples where the initial capital cost of a particular exchange or network has been the predominating influence, without particular thought for the future. The privately-owned type of administration falls into two main categories, namely, an independent public utility company, or a company associated with a financial group, which, in turn, may have an interest in other concessionary-operating and or manufacturing companies. In either case, such privately-owned companies usually operate under a concession granted by the Government of the country concerned. The independent type of privately-owned administration would tend to pay most attention to the initial capital cost of the equipment, and may also call upon the resources of the local repre-

the basis of its merits. He will also need to discuss competitive systems, or, if another system is already installed in the area under review, he will need to have a good working knowledge of economical methods of interworking. Political considerations exert a very decisive influence in some cases, particularly in the form of tariff discriminations.

11. RESULTS ACHIEVED

The overall results achieved in relation to the target are shown graphically in figure 1. It will be seen that, after recovering from the electricity crisis early in 1947, the industry's exports rose steeply and the rate is at present slightly ahead of the revised target.

Regarding the distribution of this business, the important feature is the Government's interest in supplying exports to hard, medium or soft currency countries, in that order. The telecommunication industry's exports for 1948 were distributed as follows:—

Dominions and British Empire ..	58%
Hard Currency Countries ..	20%
Other Countries	22%

12. FUTURE PROSPECTS

Very briefly, the prospects for British manufacturers may be summarised as follows:—

12.1. *Commonwealth.*—The majority of Commonwealth Nations have based their telecommunication networks on Post Office practice, and therefore British manufacturers are extremely well placed in these markets. With the quickening of developments in India and Pakistan and other parts of the Commonwealth, it may well be expected that the present volume of business will show a considerable increase.

12.2. *Europe.*—In Europe, British manufacturers are supplying considerable quantities of equipment to Netherlands, Poland and Portugal. In certain other territories, such as the Scandinavian countries, the influence of large manufacturing units, in particular L.M. Ericsson of Sweden, has naturally had its effect on the various administrations in their choice of equipment. Due to local manufacturing facilities, such countries as Austria, Belgium, Czechoslovakia, France, Germany, Hungary, Italy, Roumania, Spain and Switzerland offer little or

nothing in the way of prospects for British products.

12.3. *America.*—In the U.S.A. the telephone-operating administrations are privately-owned and approximately 80 per cent of the total is controlled by the American Telephone and Telegraph Company, which has the large Western Electric Company factories as its main source of manufacture. The remaining 20 per cent of the telephones are owned by a large number of independent companies, who, in turn, are served with supplies from various privately-owned factories in U.S.A. It is considered that U.S.A. has adequate manufacturing capacity for both home and export markets. Canada has local manufacturing resources supplemented by supplies from U.S.A. A limited market however is available for British products. In South America, British manufacturers are already well established in the Brazilian and Venezuelan markets, whilst a certain amount of business continues to come in from Argentina. In other South and Central American countries the future volume of business is likely to be small.

12.4. *Near East.*—A foothold has been gained in Iran, Iraq, Palestine, Sudan and, to a lesser degree, in Egypt and Turkey.

12.5. *Asia.*—There may be prospects in China, U.S.S.R. and other countries in Asia. Of these, perhaps the largest potential market lies in the U.S.S.R., but obtaining business in that country presents many difficulties. In the case of China, the civil war and the general financial situation are not encouraging, though obviously there is a large potential market. Japan has its own manufacturing facilities, and, under present-day conditions, does not offer any prospect of business for this country.

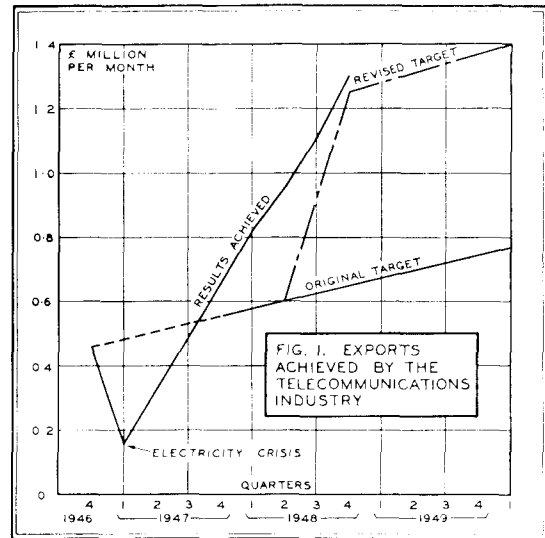
13. THE POST OFFICE AND EXPORTS

In broad terms it can be said that the Post Office has made no small contribution to the export drive, not only by its willing agreement to sacrifice its own demands, but also by placing at the disposal of the Contractors the whole of its technique, as expressed in the investigation, development and research work undertaken in its vast organisation. The standardisation of apparatus items such as selectors, relays, uniselectors, telephones, has also enabled the contractors to offer equipment which is backed by the experience of the British Post Office.

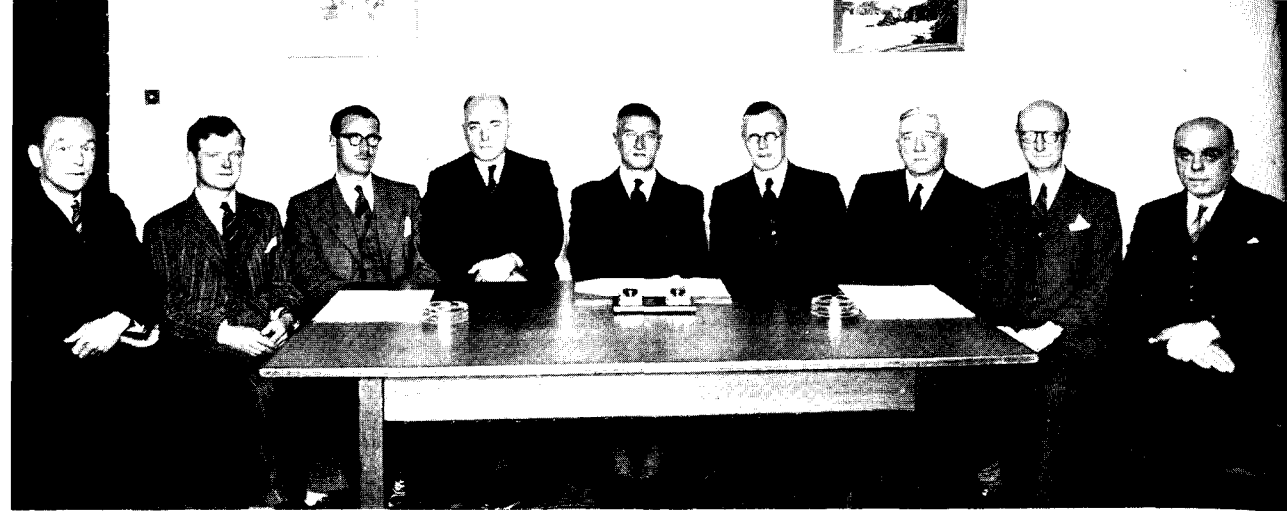
In addition, the Post Office has always been willing to explain to overseas administrations the working of the bulk ordering procedure, and to undertake, if called upon to do so, the certification of prices in accordance with the cost investigation procedure between the Post Office and the contractors. The world-accepted prestige and integrity of the British Post Office in such matters has been of inestimable value to the contractors. The position today is that the industry looks to the Post Office, not only as its principal single customer, but also as an impartial representative in presenting its problems to the Government. In this connection valuable work has been done in making representations on supplies of materials—particularly those in short supply nationally—and in having the Government appreciate the importance of the industry and the contribution that it is capable of making to the export drive. The Post Office is also extremely helpful in giving technical advice and the benefits of its operating and maintenance experience to overseas administrations, even to the extent of sending teams of experts overseas to assist potential customers to formulate their requirements. Furthermore, in conformity with Government policy, it is limiting its own demands for the home market to a minimum.

14. THE FUTURE

To maintain or improve the industry's export prospects it is essential that it should be able to market highly competitive products. In this connection the Post Office can assist in the four directions indicated below. Firstly, by positive action involving re-examination of the standard system of automatic telephony and other components, to consider whether certain initial requirements have outlived their usefulness and whether essential facilities can be provided in a more economical manner. Secondly, by negative action to resist any trend towards elaboration, because additional "non-essential" features can easily add to the cost without contributing anything material to its selling points in international markets. Thirdly, by impartial examination of new or competitive systems or components to ensure that the technical and economic merits are fully



sentative for technical assistance in formulating the requirements. The group type of privately-owned administration will always tend to conform to a group source of supply. Apart from initial capital cost and delivery, the salesman must be prepared to sell his system on



From left to right: E. W. JOHNSON, G. SPEARS, A.M.I.E.E., F. W. GILL, A.M.I.E.E., R. A. E. PARSONS, B.Sc., A.M.I.E.E., Area Engineers; J. W. SHEPHERD, Telephone Manager; C. H. HOWARD, Assistant Telephone Manager; W. A. CATLING, Chief Clerk; F. W. BALDRY, Chief Traffic Superintendent; S. T. FAULKNER, Chief Sales Superintendent.

LONDON TELECOMMUNICATIONS REGION, SOUTH WEST AREA

The Area lies almost entirely in Surrey, extending southwards from the River Thames to the slopes of the North Downs. Its 292 square miles of country have many beauty spots, and notable among the places of interest are Hampton Court Palace, Kew Gardens and Richmond Park. Associated with this Area are diverse sporting events which command world-wide interest—Lawn Tennis Championships (Wimbledon); Oxford and Cambridge Boat Race (Putney); Royal Horse Show (Richmond) and the Derby (Epsom). Of the 55 exchanges, 24 are automatic. There are 166,000 exchange lines (of which 12,000 are shared service) and 223,000 stations. Over 1,088,000 miles of wire underground and 16,000 miles overhead exist. The total staff of all grades exceeds 4,700.

PRESTON TELEPHONE AREA

The Area covers 524 square miles and includes Blackpool, Fleetwood, Preston, Southport and Wigan. Although the south of the Area is highly industrialised (coal and cotton), the greater part of the Area is agricultural. There are 42 automatic and 16 manual exchanges with 40,683 lines and 66,664 stations, 322,644 miles of underground wire and 16,883 miles of overhead wire. The staff numbers 778, of which 582 are engineering.

From left to right: W. OWEN, A.M.I.E.E., Area Engineer; A. F. HULSON, Senior Sales Superintendent; H. RIDGE, Telephone Manager; MRS. HAINES, Secretary; H. J. TURNER, Traffic Superintendent, Class 1; J. KELLY, Chief Clerk.



The Public Office

by A. Robinson

London Telecommunications Region, South East Area.

The recent publication of the Committee Report on training of Civil Servants who have contact with the Public lends point to this article. Mr. Robinson is employed in the Telephone Manager's Public Office.

TAKE A SLICE OF CAKE AND EAT IT. IF THE ingredients have been properly mixed you have enjoyed eating a cross-section of the whole cake. These opening remarks may serve to describe, in a fashion, the people who call for interviews in the Public Office of the Telephone Manager's Office. There, members of the general public, "subscribers" and "non-subscribers" can call in person, air their grievances and make a few enquiries. Thus a cross-section of the community (and how cross some of them are!) drifts in through our front door, wet or fine. The job itself is certainly not a piece of cake. On the contrary, the end of a busy day, during which two men interview between 50 and 70 clients, leaves them both with a headache. Periodically the accounts cases tend to predominate. The "waiting list" applicant is, of course, anxious to lay his case personally before some official who is able and willing to assess his chances, if any, of procuring a telephone. Take one particular case, a frequent one, I regret to say. He is an ex-service man, crippled or suffer-

ing from a similar disability and getting a Service pension for anything between 20 and 100 per cent disability. To earn a living he must take up a job suitable to his kind of disability and starts, say, a car-hire service. He finds he cannot have a telephone, owing perhaps, to lack of plant in the vicinity of his home and so risks losing, through not being "on tap", the small precious connection he has laboriously built up. Take also the case of the professional musician who, for the same reason, cannot get a telephone and so cannot secure any engagements until he is on the telephone. Agents very often do not trouble to write these days, they nearly always telephone. Again, an applicant may have an invalid wife whose complaint confines her to the house. The husband goes to business each day and is forced to leave his wife unattended. There are no children and the only callers are neighbours who "pop in" occasionally to offer their services. All these people are entitled to a hearing; sometimes we can help them, most times we cannot; it depends upon where they live. Whatever the

outcome of the interview, they leave the office with the knowledge that their case is not forgotten, and that they are still in the running. Such people can be dealt with sympathetically; however hopeless the case may seem, sometimes in the course of the interview new factors often come to light in a way which helps.

The Public Office attracts many callers whose business is outside our range. A passer-by comes inside and asks, "How can I send my dog to Aberdeen?" Or, again, how would you deal with two old ladies who drifted in, apparently lost, wanting an office of the War Damage Commission in some other part of London? What reaction, if any, would you show to a foreigner, nationality Norwegian, who could not speak a word of English? What's to do? Well, the "dog man" was referred to the Royal Society for the Prevention of Cruelty to Animals, who sent an official to crate the animal and arrange the railway transport. The office the two old ladies wanted to visit was rung and someone was persuaded to send a car to collect them, which, we learned later, conveyed them home afterwards. The Norwegian was connected to a Norwegian-speaking operator at the International Exchange and was directed by her to a destination he was apparently trying to reach in the West End of London. This was confirmed to us in English after the Norwegian conversation had ended. Elementary, my dear Watson!

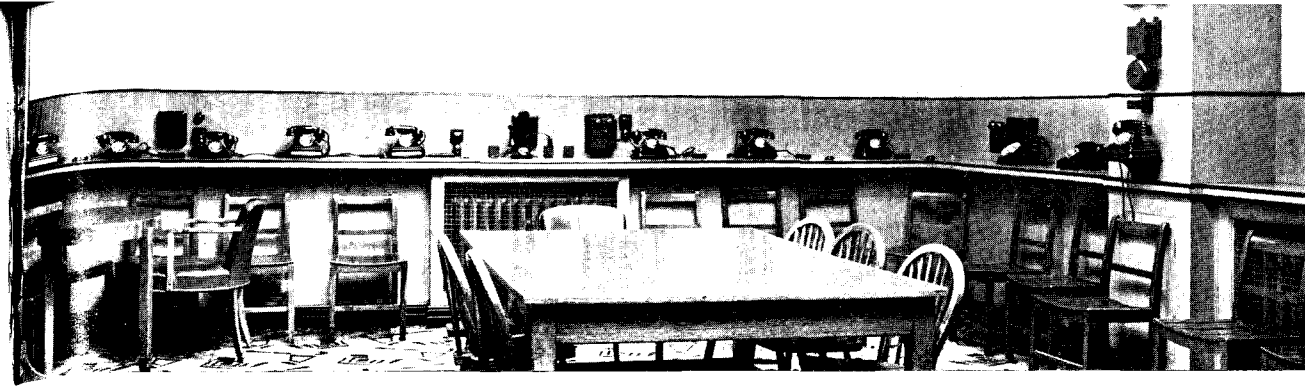
Can you help me find my father? He has left my mother and he works for the Telephone Com-

pany. Can you help me find my friend? He saved my life in Burmah and he lives in Bermondsey. His name is "X" but I do not know his address? Can I get a temporary job as an operator, please? Can you find me an operator to operate my switchboard? What amount of money can I send to India and how do I go about it? Where can I find the Dutch Ambassador's office? I have a note from Guy's Hospital; where do I go to get my spectacles? I want to find the Polish Resettlement Office? How can I get a telegraphic address? These are indicative of the variety of problems which are put to us. Our reputation demands a helpful attitude, although it might be argued that all this is outside the scope of a telephone public office. Moreover, considerable satisfaction is felt that we are doing a public service and, anyway, if we cannot give the enquirer the exact information he requires, we can at least tell him where he can get it.

It must not be imagined that the Public Office is just a reliable type of Information Bureau for the convenience of the general public. Its true function is, of course, to issue receipts for the payment of accounts and deal with queries thereon; to take applications for telephone installations, and to deal with "awkward" customers who perhaps are not satisfied with correspondence or telephone calls. We also deal with multiplicity of technical enquiries connected with telephone apparatus.

Extreme pressure is brought to bear by the "waiting applicant" who will not take "no" for

The Public Office. In the foreground, Mr. Robinson is seen interviewing a member of the public



The Telephone Apparatus Demonstration Room

an answer. One man wrote to the Telephone Manager complaining bitterly of the "Iron Curtain" that existed in the Public Office. Women, I find, are more persistent than men, more emotional and, let me say, more artful! One lady felt faint and asked for smelling salts. She pleaded that this condition was brought about because the absence of a telephone gave her more running about to do. "So inconvenient, you know". She didn't get her telephone but only a glass of water.

Younger women of the "actress" type make their entrance into the Public Office as if they were coming on the stage, and try to create an impression. We could shout "actress" before they say a word; it is written all over them.

Other people pour out intimate family affairs with a wealth of extraneous detail, which makes us feel that we are on a par with doctors, family solicitors or clergymen. Wives talk freely about their husbands and yes, husbands talk about their wives. Domestic tragedies are often laid open. We treat such disclosures as professional secrets except insofar as they relate to the cases under review and, even then, only the essential details are given.

I have often wondered why people are so frank about their domestic affairs. Maybe they know they can speak in perfect confidence to a public officer and, of course, we in the Bureau are trained to listen. That encourages them to be frank. Perhaps they just want to talk to someone who will listen patiently, and thus "get it off their chests". Whatever the reason it is still our job to ensure that very, very few leave the office still feeling dissatisfied. The value of the interviews is undoubted. Occasionally a person will demand to see someone "higher up", such as the Telephone Manager himself. If the caller is very persistent, a senior officer is called in but an efficient officer will find the need to do this but

rarely. He must be prepared to be fully responsible for the accuracy of any statement. He cannot carry conviction otherwise. He must carefully watch developments in the service he represents and know his brief inside out.

Next door to our Public Office is an Apparatus Demonstration Room in which are various types of plan-number extension telephones coupled up to a small switchboard. On one of these extensions is fitted a valve amplifier. These callers are given a thorough test and outside calls are set up, preferably from members of their families, to simulate actual working conditions. Deaf subscribers come from all parts of London to try it out. Occasionally, however, subscribers turn up who are so deaf that even the amplifier is of little help. Sometimes the amplifier is used in conjunction with a "deaf aid" worn by the subscriber. With an additional earpiece or watch receiver, some degree of hearing is usually achieved, and when this happens, to have been helpful is satisfying.

Our most unpopular caller is the one who, on his way home, just "drops in" for a few minutes before closing time. A couple of trains are lost as we listen to his problem. Even during the day this craving to drop in for a few minutes is a problem in itself, especially where the matter has already been discussed *ad nauseum*.

Even the time-honoured phrase "I'm sorry, we can do no more for you" doesn't check the persistence of the business man who thinks that if he "worries the Telephone Manager enough, he will eventually get what he wants", so he tells us. A time-waster indeed, but his very persistence is a measure of his desperate need for a telephone. Behind all this facade of telephone business there is real human drama, comedy and sometimes tragedy. Shakespeare was right when he said, "all the world's a stage and all the men and women merely players".

MATERIALS HANDLING AND PALLETISATION

by W. A. Smith, M.B.E., Supplies Department

"Modern Materials Handling is now regarded as the team mate of Production. A new word, 'Palletisation' is steadily gaining ground in warehousing terminology. The following describes the Supplies Department's contribution to increased productivity."

HANDLING COSTS MONEY WHICH, ONCE spent, adds no value to the article handled, and is gone for ever. Much ingenuity has been expended in the improvement and cost reduction of manufacturing processes and this has probably overshadowed the possibilities of economies in other directions, such as the handling of the finished product. Material handling is the pipeline from the manufacturer to the consumer, and the manner of the journey of the articles from the production line to the consumer is often taken for granted. For example, the number of times a telephone is handled before it reaches a Section Stock is probably in the ratio of 30 : 1, in other words, 30 lb. of material has to be handled to get 1 lb. to the consumer.

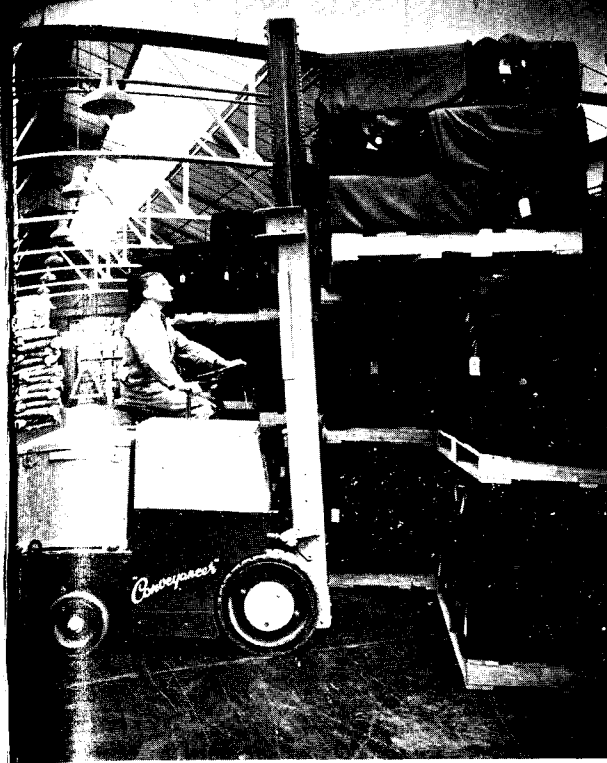
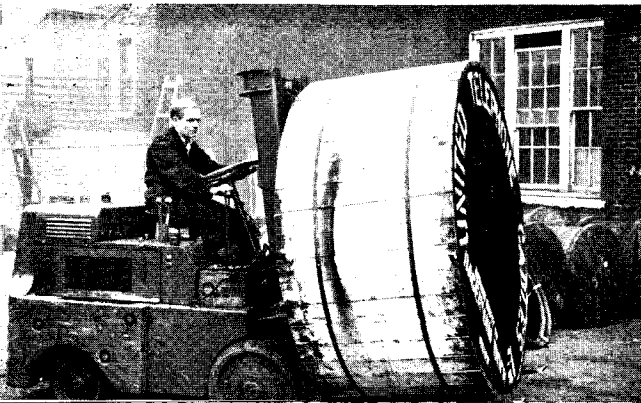
In moving and storing a vast miscellany of stores and equipment, the Supplies Department is involved in a series of repeated operations such as lifting, carrying, pushing, pulling, edging, levering, all of which contribute to the arrangement of the stores into the orderly pattern which forms the basis of good storekeeping. Until recently a big percentage of these operations was carried out by muscle power with its associated high accident ratio, but, with the present urgent need for the conservation of man-power and

having regard to the ageing of existing staff, special attention has been directed to the relief of the burdensome problem of handling. This is typical of most modern supply organisations.

The first principle of modern materials handling is to increase efficiency by supplying labour with mechanical aids, as the potential saving in effort, fatigue and man-power is considerable. Post Office stores differ widely in size, weight and shape and there is a variety of storage conditions. Such diversity calls for a versatile handling agency; such has, until recently, only been available in the human being. For work within its capacity the human being is no doubt efficient, but, owing to fatigue, cannot maintain this efficiency for long.

The fork truck, used in conjunction with pallets and the unit load system, is a most versatile mechanical aid and enables a truck driver, unaided, to pick up a load, move it, set it down again or stack it at will without leaving his seat. In addition to releasing man-power for more productive work, the system achieves reduction in storage area by using headroom formerly inaccessible to unmechanised labour; reduction in handling accidents and injuries; lessening of fatigue particularly towards the end of each day;

A comparison of methods for moving a drum of cable



Cloth for uniforms stored on pallets



Barrels of insulators become easy to handle, four at a time, on a pallet. Headroom is used to advantage

speedier and simplified stocktaking, and, in case of fire, an improvement in the chances of salvage as stores can be removed from the danger area more speedily than if they were stored by any other method.

The system was little known in this country until 1942 when it was used extensively by the American Army in Great Britain. The British Services, particularly the Army, quickly adopted the method for handling and storing vast quantities of war matériel and since then the fork truck has been adopted as a handling medium by the Supplies Department and by many large industrial and distributive organisations. It is not, however, the complete solution to all handling problems. There are situations which still demand the use of traditional methods, but the system is a substantial contribution to overcoming handling difficulties.

The Fork Truck—Pallet System

The fork truck is a powered vehicle fitted with two projecting forks capable of picking up, carrying, raising and depositing, with appreciable precision, loads at any required height up to

18 feet. A pallet is a double-faced wooden or metal platform with a space between the top and bottom faces sufficiently large to permit the entry of the forks of a fork lift truck. Stores are assembled on this platform, which is then lifted to the required height and deposited in the stack until the stores are required for removal when the process is reversed.

The fork truck provides for both horizontal and vertical movement of stores, which, in the past, has been performed separately by a hand or powered truck for the horizontal journey and a light crane, mechanical stacker, or manual stacking for the vertical journey.

The truck consists of a heavy and compact chassis carrying the power unit and a hydraulically-operated telescopic mast to which the forks are attached. The masts tilt through an angle of three degrees forward and ten degrees backwards to facilitate the manœuvring of the forks. When operating, the weight of the load on the forks is counter-balanced by the heavy chassis and power unit; thus the length of the load has a direct bearing on the weight that can be carried or lifted.

Various types of trucks in this country give a range of lifting capacity from 2,000 to 10,000 lb. to heights ranging from 7 to 18 feet. Motive power is provided by storage battery and petrol-electric, diesel or petrol-driven engines. Considerations in respect of fire risks and contamination from exhaust fumes favour the battery model but the internal combustion-engined truck is capable of longer and more sustained hours of work. The machines move in a horizontal direction at speeds up to ten miles per hour and lift loads at speeds of up to 36 feet per minute and can manoeuvre in a restricted radius. On the truck's degree of manoeuvrability depends its ability to stack in narrow gangways—a consideration of prime importance.

"Palletisation", "pallet-tiering" or "palletting" is the process of assembling stores on pallets and by means of a fork-truck, placing or withdrawing the loaded pallets on and off stacks. Different materials require different types of pallets, but, generally speaking, any article which can be hand-stacked can be palletised, that is, articles which are sufficiently symmetrical and can stand super-imposed loads, can usually be accommodated on flat pallets. Packaging and package design has, therefore, an important bearing on the extent to which flat pallets can be

used. Lightly-cartonné or fragile stores which cannot stand the weight of super-imposed loads require box or post pallets where the super-imposed weight is taken off the stores and carried on fitted posts or sides. Material of uneven consistency in sacks, and awkwardly-shaped goods, which do not present a level surface for the next load, do not make a safe stack and are also best accommodated in box or post pallets.

Unit Load

The principle underlying the unit load is that stores are not handled as single items but are assembled on a pallet in a predetermined pattern and quantity so that they remain a unit load as long as possible along the chain of distribution. Thus handling does not need to be repeated so many times at subsequent stages as in traditional handling methods.

Development

Until recently the main medium of internal materials handling in the Supplies Department was the stillage system which is a natural development of the hand truck and consists of a wooden platform mounted on skids which permit the entry of a four-wheeled hand jack truck between the floor and the platform. The down-



The old method of stacking lead ingots. Each ingot weighs from 60 to 80 lb.



Pallet loads of ingots being stacked by a fork lift truck. Thirty-six ingots, weighing 2,160 lb., are handled in the time taken by one man to lift one ingot

ward movement of the handle raises the skids a few inches from the floor so that the platform can be wheeled away. The advantage of the system is that the truck and its operator are never kept standing for loading and unloading operations; in other words, only the comparatively cheap stillage remains stationary or idle whilst the truck is free for other journeys. The stillage method, however, fails at the point where the load has to be stacked or loaded into a lorry.

Fork trucks were first introduced into the Department in 1945. Since then their number has been considerably increased and includes representative types produced by the newly-established British fork truck industry. In 1945, prisoner-of-war labour was being employed by the Supplies Department and many of the prisoners had spent some of their period of captivity with the Americans from whom they had learned to operate these machines. Their zestful handling of the Department's first fork truck very quickly demonstrated its possibilities as a means of lightening and speeding up a whole series of burdensome and fatiguing tasks.

There is no doubt that the introduction of these trucks had a profound effect on the handling of an increasing load by a "pegged" labour force and has facilitated the re-organisation of store locations which has been a most troublesome

feature of the post-war activities in the Supplies Department, due to the evacuation of temporary accommodation and the subsequent occupation of fresh buildings.

It is in the handling of the heavier range of stores that relief has been most apparent. Lead ingots have a typical movement history. Each ingot, a product of recovered cable disintegration weighs approximately 60 lb. These used to be transferred from the moulds on to a stillage or truck and pulled manually to the stacking position and stacked by hand at the rate of 45 separate lifts of 60 lb. per 25 cwts. of lead moved. Subsequently when issued or sold, the ingots were removed from the stack, weighed and loaded into a lorry by a series of a further 90 manual lifts. The ingots are now transferred from the moulds on to a pallet and one man with a fork truck moves the same 25 cwts. of lead in the same time that it took one man previously to lift a 60 lb. ingot. The issuing operation is just as expeditious. The pallet with its 25 cwts. of lead is removed from the stack by a fork truck which pauses at the scale and then places the loaded pallet on to the lorry in one operation. The saving in effort in the handling of other stores is probably not so dramatic as with lead ingots but such diverse stores as kiosks, motor generators, rectifiers and so on are a close parallel. The palletisation of

An open-sided lorry can be loaded to capacity with lead ingots by a fork truck in a matter of minutes

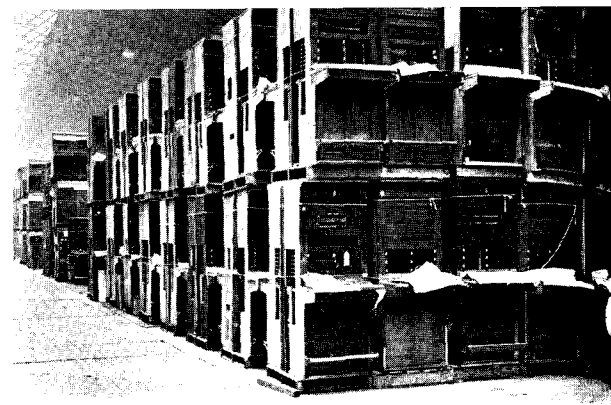
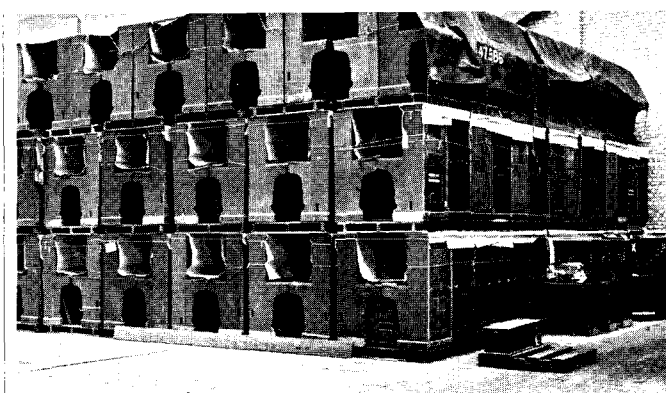


The old method of stacking telephone directories



Bundles of telephone directories made up into convenient pallet loads for stacking





Examples of the efficient use of storage area when the fork truck and pallet system is used in handling switchboards

telephone directories has resulted in a reduction of 50 per cent in the staff normally employed and an increase in output of 40 per cent. Stock-taking has been simplified and the variety of tasks which the fork truck is called upon to perform in the Department increases daily as experience is gained. It is variously claimed that one truck does the work of three to eight men according to the type of task. The cubic space occupied by palletised stores in a stack is naturally greater than would be occupied if pallets were not used. This is due mainly to the depth of the pallet and the small but necessary lateral interstices left between each pallet load. In addition, fork trucks require wider gangways than the more conventional methods they supersede, but, despite this and provided the building is sufficiently high and the floor strong, palletisation saves floor space by utilising the third dimension in storage, that is, vertical space, previously so often wasted. 65-line private branch exchange switchboards are stacked three high on pallets which is a saving of 63 per cent in area space when compared with the old method of storage. Similarly, such awkward items as

motor generators which, because of their weight and shape, have been wasteful in storage space are now, with the aid of a fork truck and pallets, handled and stored in a manner which reduces the storage area by 70 per cent.

Obviously, to obtain the maximum benefit from the unit load system, the co-operation of the Department's suppliers is necessary and successful experiments have been conducted with the Plessey Coy. Ltd. of Ilford in the handling of cartoned telephones palletised in standard quantities at their works. Two methods are used. In the first, parallel lengths of gravity roller are laid on the floor of the van on which box pallets, of a size to fill the width of the van, are placed by a fork truck and then moved along the rollers into position. In effect, this is an extension of the container or demountable body idea. Alternatively small flat pallets, fitted with quick-release castors are used in a side-by-side arrangement. By each of these methods 1,250 telephones are loaded, unloaded and stacked in a matter of minutes by two or three men compared with several hours and much labour by previous methods.

The application of modern handling principles greatly multiplies the power of human muscle; adds to the workers' safety and welfare; and makes possible the more economical utilisation of space. A modern handling system, therefore, deserves primary consideration in the stores distribution cycle and calls for careful planning and a different technique and approach to handling problems. In other words, the objective is the replacement of muscle power by machines and *brains*. The manpower released from the dreary back-aching and often unhealthy job of lugging and humping welcomes the opportunity of more productive work thus made possible.

A typical stack of palletised telephones. Those in the foreground have been assembled on expendable cardboard pallets and bonded with special glue which does not injure the cartons when the load is broken down



"Let me suggest to the Post Office that it should"

by W. H. Wyles, Inland Telecommunications Department

Suggesting is one thing, practice is another. Many well-intentioned suggestions are received from the public about the admittedly difficult job of keeping telephone kiosks in good order. The magic of some of the suggestions disappears in the light of cold reason. Our contributor sums up some typical ones which have not been adopted.

AT THE END OF MARCH, 1949, SOME 51,000 public telephone kiosks and cabinets were in service in Great Britain and Northern Ireland. Their maintenance in a satisfactory condition is a heavy task made more onerous by wilful damage which they sustain. There is no lack of suggestions from the would-be helpful public to put matters right.

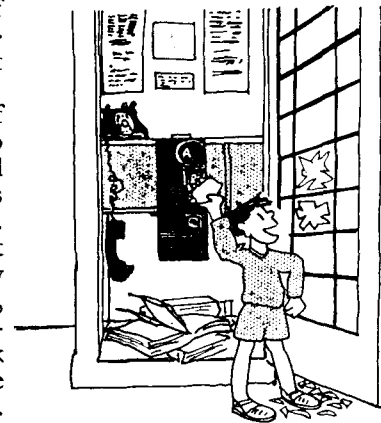
Misplaced exuberance of youth is popularly claimed to be the source of such wilful damage, although statistics do not substantiate the claim. Many suggestors urge that damage by juveniles, at any rate to the interior fittings, could be prevented by providing a coin-operated lock on the door of each call office as in public conveniences. The idea is that one penny

would be used in part payment for the prospective call, the coin box unit being operated by the other penny. It is true that this remedy might keep some of the youngsters out of the call offices but only for a time. Such devices are not really proof against the persistent ingenuity of modern youngsters. There are, however, other solid reasons against providing contrivances of this kind.

Over 40,000 of the call offices are kiosks which are not placed in brick-built weatherproof buildings, but on public highways, away from continuous supervision by the Post Office staff or the police, and they are, of course, exposed to all the vagaries of the British climate. The provision

of a coin-operated lock would thus add another item to maintenance work since the locks would, within a few months, begin to rust and moreover, would doubtless receive the undisturbed attentions of the criminally-minded. Some arrangement would also be required for refunding the penny from the lock if the call should prove ineffective, while, from the engineering aspect, the mechanisms of some 51,000 coin boxes would need modification to allow them to be worked with the energy of one penny only.

So, on these counts, the suggestion does not justify itself. A curious feature of the "lock" suggestions is that usually they overlook the need for permitting the door to be opened from the inside. (It goes without saying that if a lock on the door were fitted, to be effective, it would



have to lock automatically when the door spring closes the door. This would happen whether the call offices were occupied or unoccupied.) For the Post Office to contemplate the introduction of a one-sided device which would not allow a caller in a call office to depart at will would be sheer absurdity. Some means for opening the door from the inside would therefore be indispensable; but here again, with one convenient pane of glass broken, anyone could gain access to the call office by turning the lock from inside through the broken window. It is a matter for speculation whether the provision of a lock would not, in fact, increase the number of broken panes of glass.

We also wonder what our colleagues in the Accountant General's Department would feel about this suggestion. We often learn from complaints that frequently a caller (invariably, we are told, of the fair sex) monopolises a call office to the disgust of an impatient queue. Would each member of the queue, as his turn comes, insert a penny in the lock of an already open door? Probably the most serious objection to the suggestion is its effect on the emergency services.



The Post Office gives an invaluable facility to the community by providing emergency calls gratis, and the facility is widely utilised. Indeed it is often for this reason that local and highway authorities permit the erection of telephone kiosks on public highways, and it would be a retrograde measure to introduce a device which would impair in any way this outstanding facility of the public telephone service.

Then there are the ingenious suggestions for detecting bogus 999 callers. One would provide for an automatic lock on the door, to operate immediately 999 is dialled, thus detaining the caller until the police, fire brigade or ambulance arrives. The personnel of these services, having been previously supplied with the necessary key, release the bona-fide caller but retain the imposter. Some suggestors have provided elaborate sketches of the necessary mechanism, but none seem able to incorporate the one essential feature differentiating between bona-fide and bogus callers. One shudders to think of the consequences of detaining a genuine 999 caller in a kiosk while his home is on fire!

The emergency service has also inspired suggestions with ideas for helping callers in trouble. The hardy annual is that the roof of every kiosk should be surmounted with a red light and or a siren, both being set in operation when 999 is dialled; the bona-fide caller could then be assisted by fellow citizens if necessary, while the identification of a bogus caller



would be facilitated. Although the Post Office has an acknowledged right to use Post Office red paint on its kiosks, it would, for fairly obvious reasons, be reluctant to vie with doctors and dentists for the prerogative of the use of a red lamp. The present generation, moreover, prefers sirens to be left in the limbo of the past, and the community would not be too tolerant of noise, whatever alternative sounds were substituted. In any case, a caller for an emergency

service, who is not always calm and collected, would not want to be further distracted during the passing of his all-important message by a wailing of a siren. Both devices, incidentally, would prove a delightful incentive to mischief workers, particularly children and practical

jokers. The warning note of the siren would have the doubtful virtue of also warning a burglar or other misdoer to time his getaway. Generally speaking the suggestions from the public for reducing wilful damage to kiosks and detecting frauds are usually of little value. There is undoubtedly a limit to what can be done by mechanism. A larger measure of competent supervision and the interest of the man and woman in the street, to ensure that public telephone facilities are not abused, are the essentials for improvement. Detection and prosecution of offenders are still the most satisfactory means of curtailing damage and abuse, and it is noteworthy that in 1948 some 360 offenders were successfully prosecuted, 89 of them being juveniles.

The Post Office welcomes reports from the public about wilful damage to kiosks and still more, timely action. It does not fail to recognise such action. In a recent case a lady was mainly responsible for securing the conviction of two offenders. The Post Office not only suitably rewarded her but also secured the replacement of the eggs which she unfortunately dropped when she promptly secured the services of the police!



by C. R. Dancey and Miss V. E. West
Inland Telecommunications Department

THE SPOTLIGHT WAS FOCUSED ON TRAINING during the war when there was an urgent need to train large bodies of people quickly and efficiently to perform vital jobs. It was obviously desirable to apply the experience gained to training schemes in civilian life, in industry and in the Civil Service. The Post Office which, for many years before the war, provided training schools and courses for both telecommunications and postal staff, and in particular had operated a well-established system of training for engineering staff for over twenty years, set up in 1943 a Training Committee to examine the general question of the training of Post Office Manipulative and Engineering Staff. Many of the recommendations contained in the Committee's three reports have since been carried into effect.

Two general recommendations, having a particular bearing on telephonist training, were the application of modern methods of teaching as practised and proved in educational and industrial spheres, and the introduction of an ingredient of background training. The latter innovation aims at stimulating interest by making the staff more aware of the working of their Department and of the purpose and importance of their specific jobs.

The Committee recommended that all background training for new entrants should take place at residential Regional schools, and that for telephone learners this should be followed by four to six weeks' vocational training at special centres

to be regarded as "Wings" of the Regional schools, concluding with up to four weeks' "post-school" practical training in an exchange. This scheme was expected to allow the standard of the qualifying test to be raised.

So far, the Regional schools have not materialised, although some planning has been carried out; the main trouble, of course, has been accommodation. In London, however, where the residential difficulty does not arise, most of the new entrants to the telephonist grade pass through a Reception Centre where a week's introductory course is given.

Initial Training

Even before the Training Committee's Reports were published, plans were in hand to introduce the now well-known Wing scheme for telephone initial training. In this system, based on a modification of a training scheme used in America, each operation is taught to small classes of between eight and twelve people by the "lesson" method, and each class instruction is followed by practice on artificial traffic. Towards the end of the course, the trainees are introduced to live traffic in an exchange. The lesson method, which is advocated by the Ministry of Education, requires the class, by answering the instructor's carefully-framed questions, to play an active part in building up a knowledge of the new subject; it also enables the instructor to be sure that each learner is keeping pace with, and understands, all that is being taught.

By the end of 1945, 23 Wing centres, consisting of 59 "units" with an annual capacity for approximately 3,500 trainees, had been opened in the Provinces. During 1948, out of a total intake of 8,300 provincial telephonists, 4,770 or 57.5 per cent. were trained at Wing centres; with limited equipment extensions and an anticipated fall in wastage, we estimate that the 1949 figure will be about 74 per cent., while a further 14 per cent. will receive organised instruction in exchanges at the hands of trained instructors. The remainder are largely recruited for part-time and season duties or work in remote exchanges, but even so, half of them will receive full-time attention during training. In London, about three-quarters of the 6,250 trainees expected this year will pass through Wing centres. The only school not yet operating on the Wing system is Trunks, where the intake is high and the accommodation problems are serious; the changeover here depends on the completion of special self-contained practice equipment now being installed at two new centres.

Many advocates of the older methods of training condemn the cost of the Wing centres, particularly as regards instructors (three per class), but present recruitment difficulties and the shortened "life" of a telephonist demand modern and palatable instruction and full efficiency as soon as possible. The Wing centres claim to turn out a theoretically sound telephonist who will quickly pick up speed in manipulation. This claim has been justified by the raising of the passing-out standard from 50 to 75 per cent. efficiency (following a review of test results in 1947) and by the reduction to a very small value of the extra staffing allowance necessary in exchanges to offset inexperience. In fact, most ex-Wing trainees qualify nowadays at a standard of about 90 per cent. and are reckoned as fully efficient after six months' service.

Post-School Training

Post-school training, which takes place in the exchange to which the learners are to be assigned, is spent in getting used to live traffic and working up speed prior to taking the qualifying test. In view of the care taken over initial training, the first few weeks under working conditions are obviously rather critical—the trainees need "nursing" to gain confidence.

At exchanges where there are three or more in training together, we can allow a supervisor to

devote whole-time attention to them, but in other cases this is just not an economic proposition. As against this, it may be argued that, in the smaller exchanges, the trainees will have less difficulties to contend with and the lack of continuous attention is a theoretical rather than a practical handicap.

In future, the introduction of the cordless switchboard will make exchanges very much alike and the centralisation of post-school training will no doubt become a practicable proposition. At the moment it has little application, although it is being carried out very successfully in one Area where there are a number of adjacent manual exchanges of a similar type.

Refresher Training

We must, of course, have some arrangements for telling telephonists about alterations in procedure and for taking up general operating weaknesses, and present-day staffing standards allow of each operator being scheduled for between one and four hours' duty each month for this purpose. Normally, operators are released once a week in batches and attend a class, of about an hour's duration, conducted by a supervisor. The problem facing us has been to get as much value as we can from these "refresher" sessions, and to keep them from descending to the level of a monologue from the instructor on the failings of the operating staff. What are the difficulties and how have they been tackled? There are four main factors to be considered; let us take them in turn. Firstly, the instructors. Except in the very large exchanges, they are employed only part-time on training work, and have to be selected from the exchange supervising staff. Here we are in trouble at once; it is very difficult to keep instructors on the job for any length of time. Teaching is not everyone's forte, but those who are good at it are usually adaptable people and the calls of clerical duties, substitution of higher officers and other special jobs all contribute to the tug-of-war which goes on for their services.

To the officers in charge of the smaller exchanges, a fixed duty for the instructor is sometimes a serious restriction on the flexibility of the supervising force and, without careful planning of duties, we are therefore liable to get a rotation of so-called "instructors" most of whom have neither aptitude nor enthusiasm for the job. As we have now extended our instructor-training programme to include officers from all medium-sized and

large exchanges, our aim must be to get the maximum "teaching life" from trained refresher officers. Given the chance, those who are keen will, we hope, stay on the job, but in any case an instructor who has lost enthusiasm is better off the duty.

Secondly, the method. We must vary the method of presentation to keep the interest of both staff and instructors; no one can be expected to get enthusiastic about the same old "hardy annuals" put over in the same old way. Only too frequently, for instance, have the words "service observation results" invoked in telephonists either a feeling of injustice or (in advanced cases) a desire for slumber. The fault lies, however, not with the observations—an essential and helpful feature of the service—but in the method adopted to introduce them.

With this sort of thing in mind it was decided to invite exchange training officers to the Headquarters Training Centre where, under the guidance of experts from the staff of the Training and Welfare Branch, they are introduced to the modern teaching methods which have proved so successful in other fields.

The lesson method previously mentioned has a wide application to refresher training. The "controlled discussion", as we use it, is in fact a particular form of the lesson method, with the instructor guiding the speakers, provoking comment on specific points, and tactfully correcting any mistaken ideas. Lecturing finds little favour nowadays; it has few equals as an after-lunch sedative and, as the number of operators in each class is usually small, more personal methods can be used to better advantage. It is our aim for supervisors to attend with their teams as this helps them to see where their operators need encouragement and advice; if they are of the calibre we expect of the grade, they will not hesitate to join in the discussions.

Other more informal methods, among which are the "Quiz" and the "Question Box", have also been widely used recently, and help to make the sessions true "refreshers". Local ingenuity in organising both "round the table" and broadcast quiz competitions has reached astonishing levels

PSYCHOLOGY OF SUPERVISION

has a feeling of full confidence in herself based on clear thinking about her work. Hesitation and lack of confidence on the part of the supervisor communicate themselves at once to the tele-

and has aroused great enthusiasm amongst the staff.

The third problem is material, and here there is plenty of scope. It is our policy to tell the staff the why and wherefore of instructions and to give them some idea of the working of other sections of the telephone service, if possible by means of a talk by an expert on the particular subject. These background information talks form a useful and welcome variation from the more mundane matters of exchange working. Film strips and projectors are available for circulation in each Telephone Area, blackboard work is encouraged, and "Refresher Training Notes" on subjects of interest or the introduction of new procedures are issued from time to time by Headquarters.

The fourth, and perhaps most difficult, problem is that of accommodation. Before the war no special provision was made for training rooms in the design of telephone exchanges, and although this has now been remedied, present building restrictions make it impossible to take any retrospective action. Classes therefore have to be held in any chance spare rooms or even in the staff welfare quarters; local controlling officers have to make the best arrangements possible.

Conclusions

There remains one important aspect to which we have not yet been able to give the attention it merits. Instructors are very dependent on the understanding and support of their controlling officers, and we fully realise that many higher supervising officers have not yet had an opportunity of gaining an insight into the new methods of teaching. However, we hope to tackle this problem in the very near future; in the meantime we are confident that newly-trained instructors will be given every encouragement to do a good job.

There have been great advances in the field of telephone training since the war and, although our troubles are by no means over, both those who pioneered the present schemes, and the instructors who have worked conscientiously and efficiently to make them a success, can look with satisfaction on the results achieved.

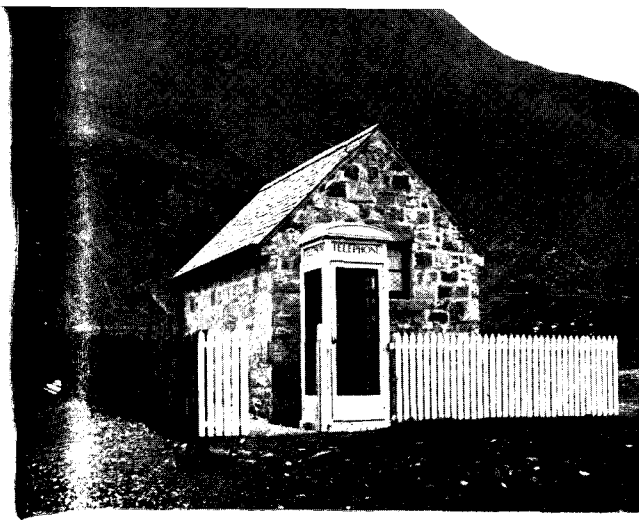
(continued from page 104)

phonist with disastrous results, therefore the most efficient supervisor is the one who obtains the obedience and respect of her staff with the minimum of interference and rebuke.

BUILDING UP

DURING THE WAR YEARS, MANY OF US must have had visions of a great wave of re-building which would quickly transform our cities and clean up our small towns and villages. At last we would have telephone buildings of the right size, in the right place and at the right time. The first four years of peace have shown us that this is all going to take a long time. Shortages of men and materials and the over-riding need for new houses for the people have prevented us from achieving anything like the pre-war rate of building telephone exchanges. A great proportion of our readers may not have seen a single building erected since the war for telephone purposes. Some of the photographs and drawings which accompany this article do show actual post-war buildings and telephone exchanges of the very near future. Those readers who have had to contend with equipment and switchboards crammed into buildings which were never intended to cope with the great demand for telephone service which followed the war, may find consolation and even hope in these pictures. Temporary expedients of the nature of those at Bournemouth described in this issue will, however, continue to tax the ingenuity of the engineers until we can build at the rate we desire. Even in normal times, the provision of a new building for telephone equipment is a lengthy process, which necessarily starts with a survey of the area so that a reliable estimate may be made of its potentialities. When we have determined the number of telephones which are likely to be required some fifteen or twenty years from the date at which we plan to open the exchange, we can work out how much floor space we shall need. From this information, the architect can see what sort of building is required and how much ground will be needed for it. It is also stipulated that the exchange must be within a certain limited area so that the cost of cables will be kept within bounds. Fine! We know how much ground we want and where we want it. But we cannot seize the local football pitch, nor requisition a handy timber-yard, much less can we dispossess the

grocer or the cottager. So we have to set out to find someone who has land to sell "with vacant possession". There's the rub! We may be successful, but on the other hand we may have to resort to the lengthy and distasteful process of compulsory purchase. However, when we have finally settled the site of the new exchange, the architect can draw up his plans, and when they have been vetted by the interested parties, including the staff representatives, tenders are sought from a number of builders. And so, in due course, building begins, and the equipment, which has been ordered from the manufacturers months before, arrives when the building is ready for it. The equipment is installed and tested and the exchange is brought into service. In pre-war days all this took about five years. It may, therefore, be years after we revert to "normal times" before we see buildings springing up just when, where and how we want them. Telephone exchanges naturally vary in type and size according to the requirements of the locality. Each is designed to meet the estimated requirements of the particular area which it is to serve, be it rural, industrial, commercial or residential. The smallest types are those for the Unit Automatic Exchanges (U.A.X.) which provide for up to 800 subscribers in rural areas and small towns. Similar small buildings are the Telephone Repeater Stations (T.R.S.) located on long distance telephone cable routes. Of these small buildings, those costing up to about £1,000 are constructed by local builders to standard specifications provided by the Post Office Architect. The more expensive U.A.X. and T.R.S. buildings are, however, erected under Ministry of Works supervision, but standard plans are used for their lay-out. It will be seen from the photographs that the architectural treatment of these buildings may be varied to suit local conditions. The larger and more varied telephone requirements of suburban and urban areas are met by specially-planned automatic and automanual exchanges. These exchanges require the attention of a small staff of maintenance engineers. The

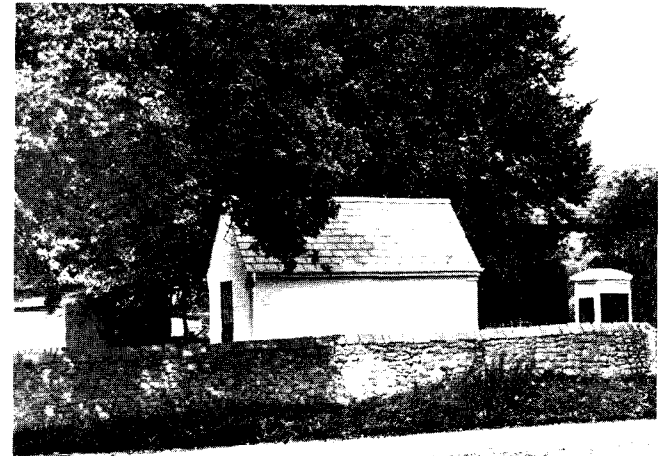


Ballachulish Unit Automatic Exchange, Argyllshire

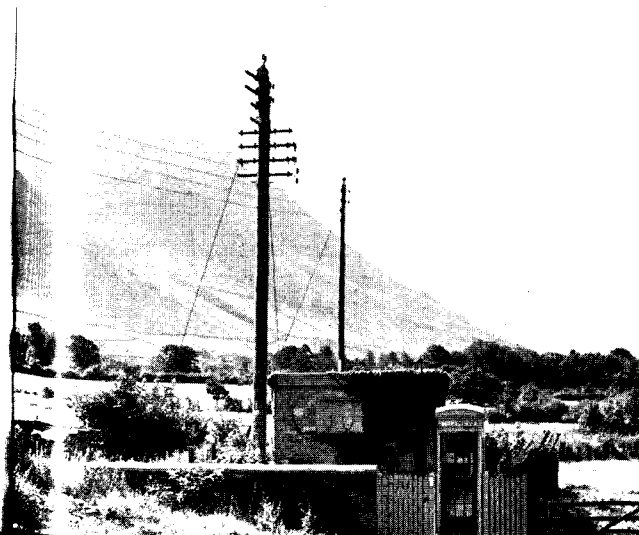


Wilton Unit Automatic Exchange, Wiltshire

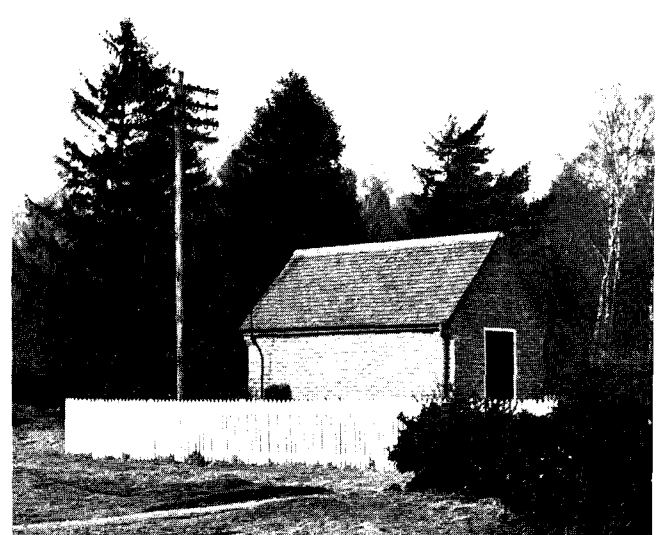
SOME TYPICAL SMALL AUTOMATIC EXCHANGES



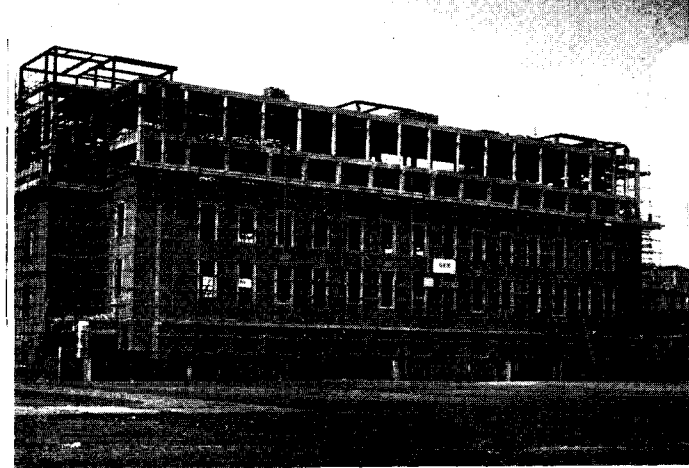
Tunstall Rural Automatic Exchange, Suffolk



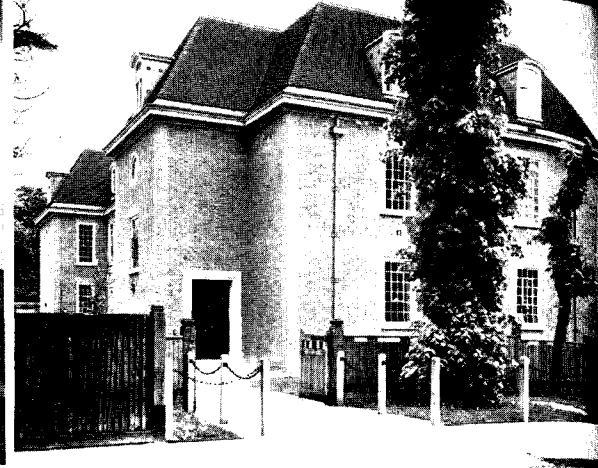
Lorton Automatic Exchange, Cumberland



Syderstone Unit Automatic Exchange, Norfolk



Cardiff Automatic Telephone Exchange under construction



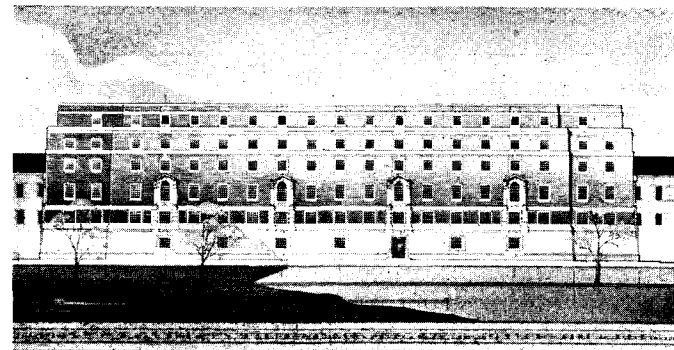
Livingstone Telephone Exchange, London



Above: Claygate Temporary Manual Exchange, Surrey. Standard concrete frame, asbestos roof and standard metal windows in precast stone surrounds



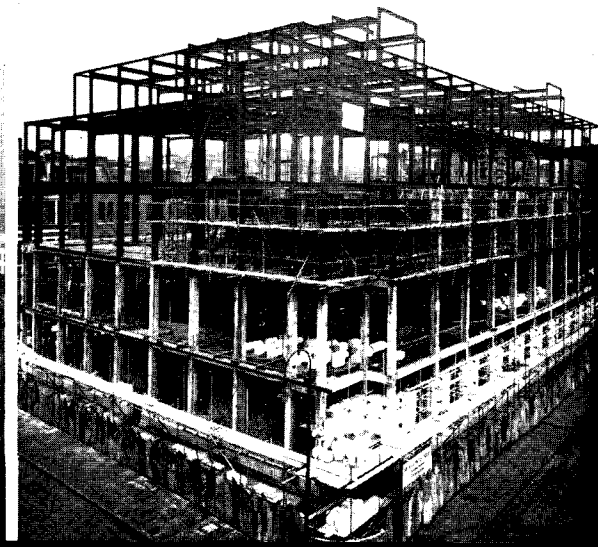
Above: Lee Green Telephone Exchange, London. Steel frame structure, solid brick walls, reinforced concrete floors and roof and metal windows in stone surrounds



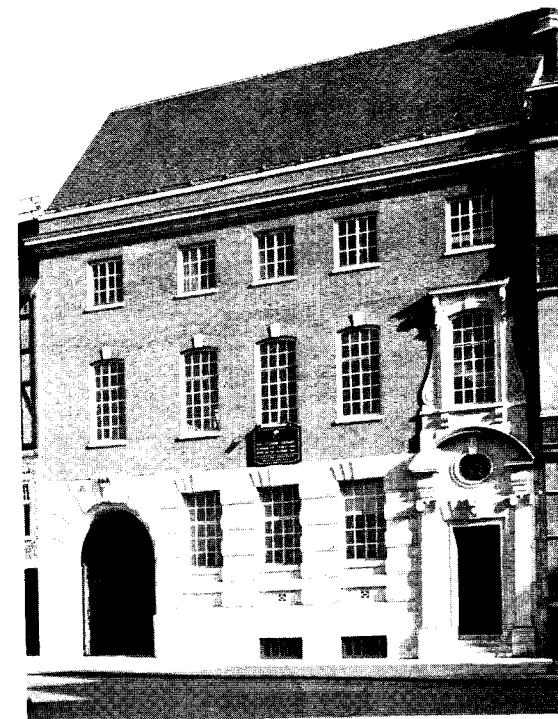
Centre: Proposed extension to Faraday Building, London. Architect's impression of the facade to St. Paul's precincts, agreed by the Royal Fine Art Commission and the City authorities

SOME LARGER TELEPHONE BUILDINGS

North Manual Control Centre, London, under construction

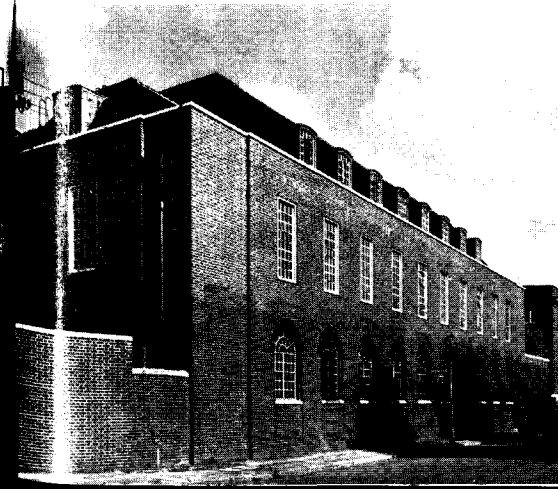
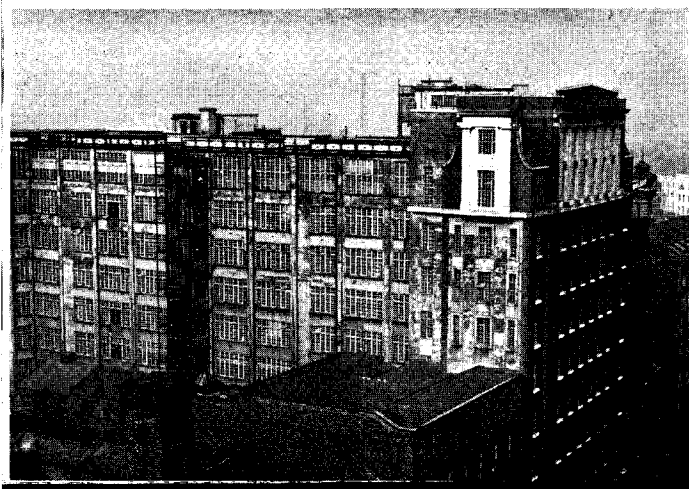


Below: Hayes, Middlesex, Telephone Exchange. Steel frame structure, solid brick walls, reinforced concrete floors and roof covered in hand-made plain tiles. Metal windows in precast stone surrounds



Centre: Great Yarmouth Telephone Exchange, Norfolk. Designed in Georgian style, built in brick, the lower part being faced with stone

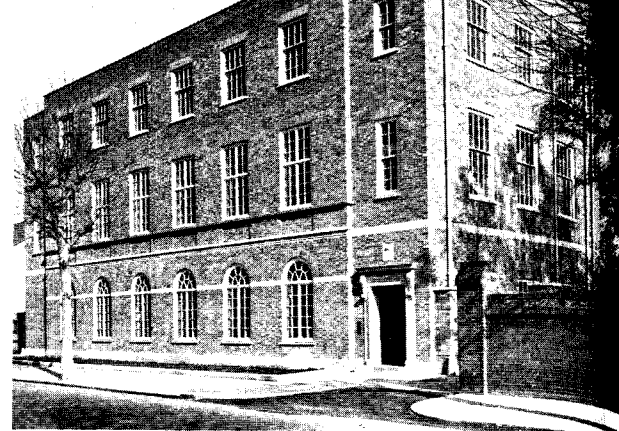
Telephone House, Manchester



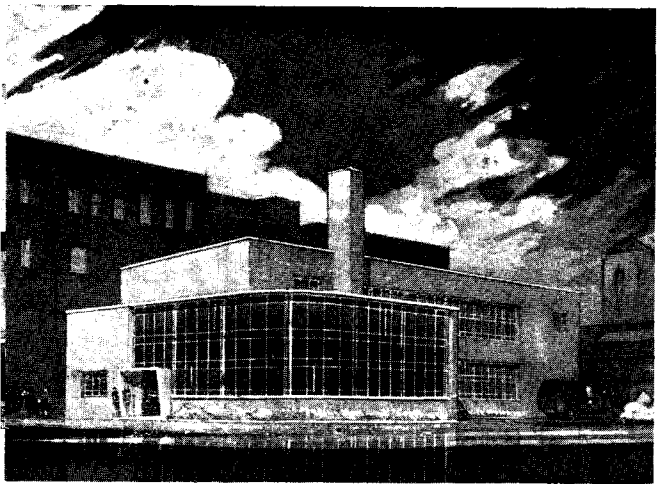
Below: Barnstaple Telephone Exchange, Devon. Brick building with a flat roof and a stone course at first floor-level



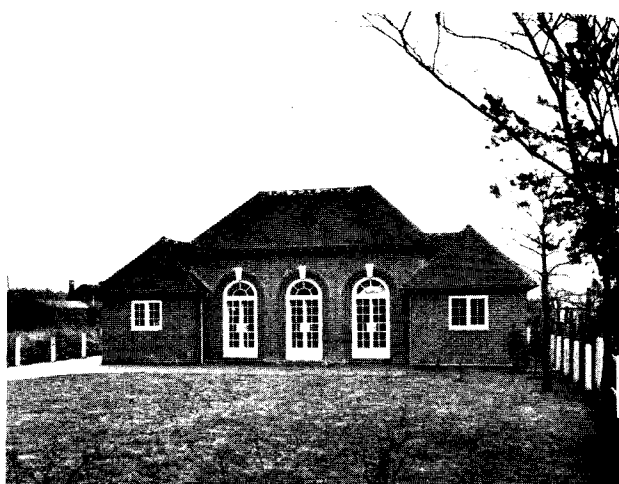
Woodford Green Telephone Exchange, Essex. Built in traditional style with brick walls and tiled roofs



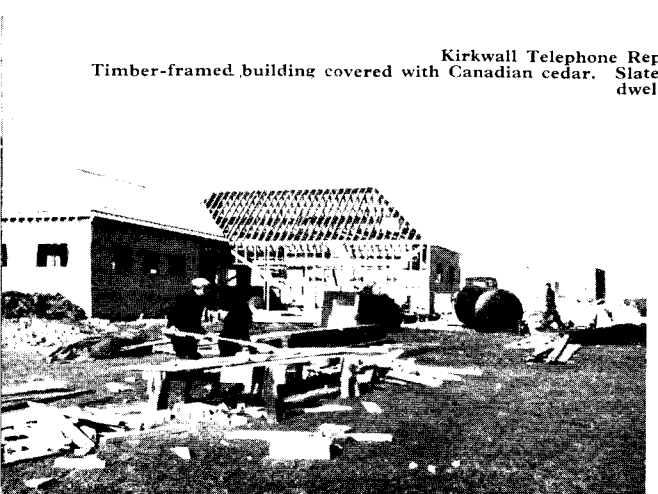
Newmarket Telephone Exchange, Suffolk. Steel frame structure with solid brick walls



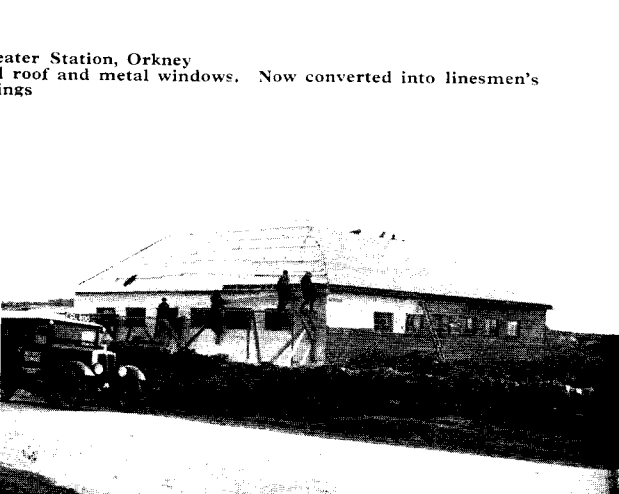
Drawing of Chiswick Telephone Exchange, London. Steel frame structure, designed for upward extension, by two further storeys. Solid brick walls, reinforced concrete floors and roof, and metal windows



Church Cobham Telephone Repeater Station, Surrey. Solid brick walls and standard metal windows in wood frames



Kirkwall Telephone Repeater Station, Orkney. Timber-framed building covered with Canadian cedar. Slated roof and metal windows. Now converted into linesmen's dwellings



automannual exchange has, in addition, manual switchboards and an operating staff to deal with calls outside the range of the automatic system. Such exchanges are normally designed to accommodate between 800 and 10,000 lines. In addition, the requirements of the long-distance services demand special buildings in the largest cities, especially in London (for example, the North Manual Control Centre).

Traditional materials are normally used in the construction of the permanent telephone exchange buildings. Fire-resisting construction is employed throughout and where there are two or more floors, the buildings have steel or reinforced concrete frames. Dressed stone, facing bricks, natural slates and clay tiles are in general use for external walls and sloping roofs. The window frames are usually of steel or aluminium and the doors of hardwood. All apparatus and power rooms have hardwood block floors. Good quality rubber and linoleum are suitable for switchroom floors and acid-resisting tiles are necessary for the floors of battery rooms. Welfare room floors are covered with linoleum and walls and ceilings generally are finished in plaster. Heating is normally by low-pressure hot water except in the small standard telephone exchanges and telephone repeater stations where the small

amount of heating required is provided by electric heaters. The apparatus and power rooms have a plenum system of ventilation but only natural ventilation is required for the other accommodation. Tungsten lighting is general at present but fluorescent lighting is being tried in some exchanges.

The illustrations demonstrate that telephone buildings are not all built to the same style of architecture. Each one is, in fact, created for the peculiar local requirements, not only of telephone density, but of architectural treatment. Sometimes a particular style of facade is dictated by the planning authorities, and nearly always there are restrictions on height. Even so, it is not difficult to pick out telephone exchange buildings, although the cats-cradle of overhead wires is a thing of the past. We would not attempt to define the qualities which help us to identify these buildings, but we think that the sheer worthiness of the structure is the main feature. Clearly, our architects have no intention of disguising our buildings as Greek temples, Gothic churches or Tudor inns, nor is their style dictated by a bureaucracy.

Acknowledgments are due to the Ministry of Works for the use of some of the photographs, drawings and descriptive matter in this article.

TELEPHONE EXCHANGE PROBLEMS AT BOURNEMOUTH

(continued from page 111)

the Rate Book!

The laying of the cables is progressing very well, but a big job lies ahead in bringing them into use, and close co-operation with all our colleagues in other areas to which we have circuits will be

required when the diversions are started.

We shall all be very pleased when these tricky little jobs have been successfully completed, and we offer our thanks for the help given to us throughout by both Regional and National Headquarters.

THE TELECOMMUNICATIONS INDUSTRY AND THE EXPORT DRIVE (2)

(continued from page 113)

appreciated by the industry and other interested parties.

Fourthly, by acting as a buffer against temporary or permanent recession of exports by accepting equipment for the home market. This, in turn, implies that telephone exchange buildings must be made available to take advantage of the vagaries of the export markets if the increased capacity of the industry is to be fully and efficiently utilised. The permanent solution to

this particular problem lies in the ultimate restoration of the pre-war conditions, where, while exports would play quite an important part, the larger percentage of the industry's capacity would be required for the home market.

Meanwhile, of course, the telecommunication industry will continue to play its full part in supporting the export drive to the limit of its capacity, relying on the skill of its salesmen and the technical merits of its products.



The Post Office and Wireless Amateurs

by D. G. Clarke

*Overseas
Telecommunications Department*

OF RECENT YEARS THERE HAS BEEN AN ever-increasing interest in wireless telegraphy and in no field is this more pronounced than in the ranks of those enthusiasts who are known as "Hams"—the men and women who set up their own amateur wireless sending and receiving stations. The Postmaster General is interested in this matter because his licence is required before any amateur station may be established in this country. At the outbreak of war, 5,631 licences had been issued to experimenters and amateurs in respect of privately-owned wireless stations. 2,984 amateurs were allowed to transmit and receive messages to and from others in various parts of the world. The remainder were allowed to use only artificial aerials and were prohibited from using their stations for communication purposes.

All amateur stations were closed down on the outbreak of war and for a while amateur wireless activities were at a standstill. Quite a number of the amateurs put the experience they had gained to good effect in the service of the country during the war years, but it was not until 1946 that they were able to enjoy freely their hobby again. On January 16, 1946, the first post-war licences, authorising the use for amateur purposes of frequencies in the bands 28-29 and 58.5-60 megacycles per second, were issued. Additional frequencies were released from time to time until amateurs were able to work on any of seven bands of frequencies ranging from 1,715 kilocycles per second to 2,450 megacycles per second, which were made available by inter-

national agreement for their use. As a result of the decisions reached at the International Radio Conference held at Atlantic City in 1947, additional bands of frequencies were assigned. On and from January 1, 1949, use of five of the additional bands between 144 and 10,500 Mc's was permitted and, since then, there has been great rivalry among licensees in the building of apparatus capable of working on the new frequencies, and of establishing communication on the frequencies over longer distances than had previously been possible. Before the resumption of the issue of licences after the war, steps were taken to review the conditions under which amateur stations were allowed to operate. One of the changes decided upon was to abandon the issue of "artificial aerial" licences and to permit all amateurs who had the necessary qualifications to use their stations for communication purposes. Applicants for licences are now required to show that they have the knowledge and ability to send and receive messages in the morse code at 12 words per minute and to operate and maintain transmitting equipment at a degree of efficiency which would ensure that, if granted a licence, they would be able to prevent their stations causing interference with other people's wireless reception. The Radio Amateurs' Examination was instituted under the auspices of the City and Guilds of London Institute for those who do not already hold some tangible evidence of their technical knowledge (such as a B.Sc. degree) and a pass in this examination is accepted as evidence that an applicant possesses the necessary technical

qualifications. The popularity of "amateur wireless" and the demand for licences, despite the difficulty of acquiring the necessary knowledge, and the limitations on the use of amateur stations which have to be imposed to meet international and other requirements as conditions of the Postmaster General's licence, is obvious from the increase from year to year in the number of licences issued. At the end of 1946, some 4,350 licences had been issued. The years 1947 and 1948 showed increases to 5,880 and 7,236 licences respectively, and the total number of licences in force as at April 8, 1949, was no less than 7,651. The work of the Post Office in ensuring that all amateur stations are used with due regard to the needs of other users of wireless telegraphy has increased with the number of stations. The main problem is to ensure that amateurs do not allow the emissions of their stations to interfere with other people's wireless reception. To a great extent, the likelihood of a transmitter causing interference is dependent on the efficiency of its design and maintenance. The conditions of the amateur wireless licence lay down certain fundamental requirements as regards the type of transmitter which may be used at a station, and compliance with these basic requirements—and indeed with all the conditions of the licence—is ensured by routine inspections of all amateur stations which are carried out by the Engineering Department. Apart from the requirements of the licence, however, the natural desire of the amateur to obtain the best results from his station is probably the best guarantee that the technical efficiency of his equipment will be limited only by the size of his pocket (and recently even this limitation has been reduced by the large amount of surplus service equipment which has been "sold cheaply" to the public). The interference question is unfortunately complicated by the fact that wireless reception in the immediate vicinity of any wireless transmitting station is liable to be prejudiced by the signals transmitted.

Amateurs are aware of this and take all possible steps, sometimes at considerable expense, to minimise the possibility of such trouble occurring. They are jealous of their reputation as wireless experts and, on hearing that they are causing interference, they are usually able to produce remedies which enable them to pursue their hobby while at the same time their neighbours are able to listen without disturbance. Where an

amateur cannot produce a remedy, he usually refrains from transmitting during broadcasting hours and does his "work" during the night hours when the rest of the community are asleep.

A further concern of the Postmaster General in licensing amateur wireless stations is to ensure that the requirements of the International Radio Regulations, which prohibit the transmission of messages on behalf of others, are observed. Amateurs, by the very nature of their calling, are a gregarious fraternity and the temptation to demonstrate the capabilities of their equipment by allowing their friends to use their stations for the purpose of talking to people in other countries, sometimes proves to be very strong! The licence rules that amateurs may exchange with each other only messages which relate to their own private affairs and in order that there shall be the minimum of uncertainty on this point, the licence goes on to specify types of messages which may not be sent. Vigilance is exercised by the Post Office in order to ensure that amateurs adhere to the terms of their licences in this respect, and any contravention of the appropriate licence conditions which come to light is taken up with the licensee concerned. In most cases a warning is all that is necessary; the average amateur desires primarily to discuss radio matters with his "contacts" and few would willingly risk losing their right to operate merely for the sake of passing unauthorised messages.

Space does not permit discussion of the many other aspects of what, to 7,000 or more people in this country (apart from the many holders of broadcast receiving licences who listen to the backchat and interchange of messages between amateurs), is a very fascinating hobby. Suffice it to say that an amateur station, properly maintained and efficiently operated can be a source of endless pleasure to its owner, and a powerful means of increasing international goodwill and neighbourliness since wireless telegraphy knows no international barriers or curtains. The desire of the Post Office is to grant the amateur the maximum scope for his activities consistent with ensuring that the minimum of inconvenience is caused to the rest of the community. When communicating with a correspondent at the other side of the world he must not overlook the desire of his neighbours to listen to their local broadcasting station. He must be a good neighbour. The amateur recognises this and conducts his activities accordingly.



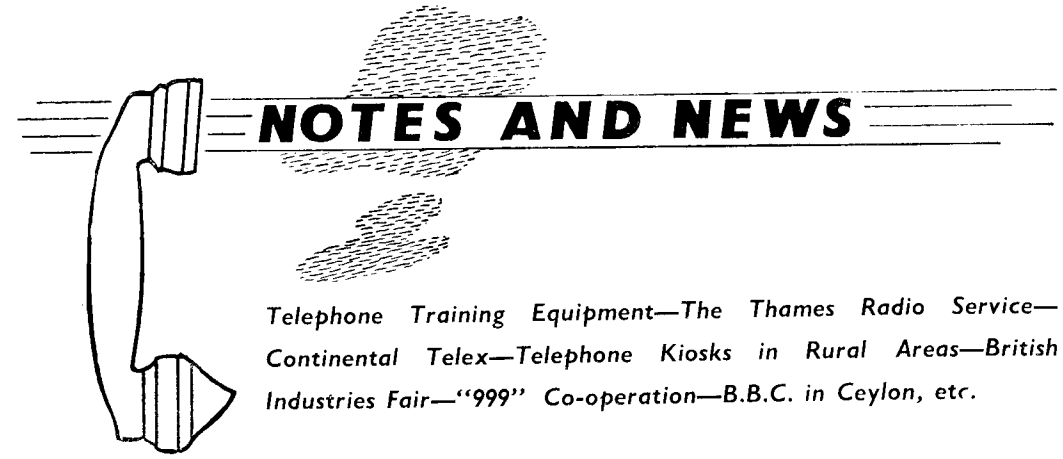
BOOK REVIEWS

THOSE WHO DISLIKE SCIENCE WILL BE ABLE to feed their emotions on a scientific description of a man as a quarter-horse-power engine. Nevertheless, however dangerous the political condition to which applied science has brought us, had we to rely on human muscles there are many everyday amenities we should have to forego. A modern historian commenting on such a viewpoint estimated that the amount of electrical power generated in Great Britain during 1947 was 41,000 million kilowatt hours, power which 200 million men could produce, working eight-hour shifts six days a week. He suggested that electrical power is not more than one-fifth of our total power. Twenty million workers must, therefore, have exerted an amount of power that could only be exerted by a thousand million men using their muscles. With the increased production of power that is being planned, the number of machines with which each of us could be equipped seems limited only by the number of people available to maintain them. That we have not many more available today is because of the appalling amount of power wasted in warfare. Whatever we think of science, we know from our daily experiences that anyone who is unaware of what science is and does is not fully qualified to take part in social administration. This has been felt by a number of writers who are, moreover, as interested in bringing a general perspective of scientific activities to the view of a scientist pre-occupied in a narrow field as in informing an ordinary citizen. Machines undertake a great deal of distasteful work. They can be designed to carry out almost any task that requires no judgement, for example,

we have TIM. Replacement of men by such a machine will only be made when its capital cost is less than the wages of the human operatives it replaces. When labour is cheap and plentiful there is no incentive to produce such a machine. The coincident trend of humanitarian legislation and the workers' own efforts to get higher wages stimulated machine design, a tendency which will become stronger with each increase in the wage costs of unskilled labour. A writer in an earlier issue of this Journal commented adversely on the judgement of a former Engineer-in-Chief: he based his comment on a quotation lifted from its context. Sir William Preece was, of course, in no position to ignore current labour costs. In America there has always been a shortage of human labour and this has given a constant stimulus to the design of mechanical aids. One could not fairly expect the conditions in our country today to have been foreseen 70 years ago. For many years after 1879 we had a superabundance of messengers and errand boys, obtainable at very low rates of pay. With the passing of the recent Education Act we have the ironical position of telegraph transmission nearing perfection, but the problem of finding someone to deliver telegrams promptly more difficult than ever before. Its solution seems to lie in providing telephones on an even wider scale than at present so that most telegrams can be transmitted to their termini without delay. Against this we cannot but add, alas, that someone wrote to *The Times* a few weeks ago postulating that a telegram is a confidential message and complaining bitterly that one to him had been telephoned to his address where another member of his household had taken the message.

E. C. BAKER

(a) *MAN'S CONQUEST OF NATURE*: by F. Sherwood Taylor; Elek, 7s. 6d.
CONCERNING SCIENCE: by F. Sherwood Taylor; Macdonald, 6s.
 (b) *SCIENTISTS AND AMATEURS*: by Dorothy Stimson; Sigma, 15s.
A SHORTER HISTORY OF SCIENCE: by Sir William Cecil Dampier; C.U.P., 7s. 6d.



Telephone Training Equipment—The Thames Radio Service—Continental Telex—Telephone Kiosks in Rural Areas—British Industries Fair—"999" Co-operation—B.B.C. in Ceylon, etc.

Broadcasting Committee, 1949.—The Broadcasting Committee under the Chairmanship of the Rt. Hon. The Lord Beveridge, K.C.B., F.B.A., 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. is not responsible) and to advise on the conditions under which these services and wire broadcasting should be conducted after December 31, 1951, held their first meeting on June 24, 1949.

The Committee will be glad to receive from organisations and individuals, representations on any matters falling within their terms of reference. These representations should be sent in writing to the Secretary, Broadcasting Committee, General Post Office Headquarters, London, E.C.1, not later than October 1, 1949.

Telephone Training Equipment.—In some exchanges the general shortage of switchboard equipment has resulted in the practice positions, formerly reserved for the use of trainees, being taken over for traffic use during the busier hours of the day. As this phase is bound to persist for some time, measures have had to be taken to meet training needs. After some experiments, a completely self-contained training switchboard, powered by a rectifier unit, has been designed and should be available early in 1950. The switchboards will be prefabricated

by the Factories Department from materials available and will be delivered in "units", each consisting of two trainees' sections, one practice-instructor's section and one control-instructor's section. Being self-contained, they can be installed in any building where classroom space is available; facilities are given for simulating traffic of all types and, although the number of working circuits is small, the use of a life-size photographic multiple gives realism. It is said that even one or two old hands have been deceived and have attempted to plug into the photograph!

H.M.T.S. "Monarch".—The Post Office cable ship *Monarch* of 8,050 tons, the largest cable ship in the world, has recently been chartered for the Company and for the Italian Government, by Italcable Ltd. for cable laying and repair operations off Gibraltar and in the South Atlantic. It is expected that this work will take about four months to complete.

Call Office Instruction Cards in Foreign Languages.—Many visitors to this country will doubtless be relieved to find simple instructions in their own language displayed in telephone kiosks and call offices at seaports, airports, main line railway stations, exhibitions and so on. Cards suitable for most types of exchange are now available in French, German, Italian and Spanish. The notice frames already fitted in most kiosks will allow two translations to be

displayed in addition to the standard card, and a notice on the door will indicate that instructions in particular languages are posted inside. To be sure of striking the right note with the newly-arrived traveller, considerable pains were taken to obtain translations not too classical or technical. The assistance of experts was sought. In the preparation of the Spanish text, for instance, the Foreign Office, the Argentine Administration at Buenos Aires and the Spanish Chamber of Commerce were all consulted.

★ ★ ★

Television.—In view of the opening of the B.B.C. television station at Sutton Coldfield near Birmingham, later this year, television licences are now on sale throughout the Midland Region and at a few offices in adjacent Regions.

★ ★ ★

“Well done!”—An officer of the United States Air Force in this country has written to the General Post Office expressing high praise at the work of telephone installation. He goes on to say: “I would like to make record of the appreciation of all concerned USAF personnel on the prompt and efficient handling of the installation. In spite of several changes in plans and policies, which tend to confuse and irritate workmen, your personnel went on and uncomplainingly accomplished the job in near-record time. Each man and supervisor gave his whole-hearted co-operation and effort in support of the job. This accomplishment is very deserving of the ‘Well Done!’ herein expressed.”

★ ★ ★

United Kingdom-Pakistan Direct Radiotelephone Service.—Prior to its division into two separate States, telephone service between this country and the continent of India was maintained by a radiotelephone link between Rugby and Poona, so that when the two independent States of India and Pakistan came into being, this single channel had, of necessity, to carry traffic between the United Kingdom and both countries. Plans were accordingly made for the establishment of a separate service with Pakistan as soon as possible, and a direct circuit between Rugby and Karachi was brought into use on June 1. To mark the inauguration of direct telephone service between this country and Pakistan, the Assistant Postmaster General received the first

call over the new channel from Mr. Z. Khan at Karachi. The introduction of this new service to Pakistan will prove of great benefit, and will result incidentally in considerably improved communication with India.

★ ★ ★

London Wall Telephone Exchange Returns Home.—On the night of December 29, 1940, when the second great fire came to the City of London, one of the targets was the Telephone Building in Wood Street, where London Wall and several other exchanges were housed. Although London Wall ceased to exist in the



Part of the Metropolitan Exchange after the fire at Wood Street

Wood Street Telephone Building that night, the enemy was denied the satisfaction of knowing it because the exchange continued to function by using equipment intended to cater for future development of Avenue Exchange. A new exchange has been provided in the Wood Street Building and London Wall now occupies its old home, thereby releasing the equipment which has filled the breach since the blitz. It is interesting to note that the present building is the second on the site to be made the target of aerial bombardment, its predecessor having been demolished in a Zeppelin raid during the first world war.

★ ★ ★

The Thames Radio Service.—A radiotelephone service for messages related to ships' business is now available between telephone subscribers in the London Toll Area and ships on the River Thames between Hammersmith

Bridge and Southend. The call charge is 10d per minute (minimum three minutes) plus the normal inland call charge between the telephone subscriber and the Dartford (Kent) telephone exchange, which is being taken as the charging centre.

The service, which uses very high frequencies with a restricted range, is the first of its kind to be established in this country. It is hoped that the frequencies used will be standardised on an international basis so that the ship equipment will be suitable for any similar services which may later be established.

★ ★ ★

The “erlang”.—In the previous issue of this Journal, the review (on page 92) of *The life and works of A.K. Erlang* contained a reference to the fact that the C.C.I.F., at its plenary meeting at Montreux in 1946, decided that the international unit of telephone traffic should be known as the “erlang”. It may be of interest to note that the erlang is the same as the old traffic unit (T.U.) used in the British Post Office, and shown as definition No. 3506 of the British Standards Institution. Traffic and engineering officers can thus bring themselves up-to-date by the simple expedient of using the word “erlang” (with a small “e”) where in the past they said “T.U.”

It was the Swedish Telephone Administration who had the happy thought of proposing the adoption of the name “erlang” when the new unit came to be chosen by the C.C.I.F. The recommendation (“avis” No. 1) of the C.C.I.F. now contains the definition: “Average traffic intensity.—The average traffic intensity during period ‘T’ of a group of circuits (or of a group of switching equipments) is the sum of the holding times divided by ‘T’”.

The unit of traffic intensity defined above is called an erlang . . . The name ‘erlang’ is adopted in recognition of the important work accomplished by the Danish scholar Erlang in the application of the calculation of probabilities in telephone problems.”

★ ★ ★

Telephone Service on the Island of Alderney.—The first telephone exchange on the island of Alderney was opened by the Bailiff of Guernsey on May 18, 1949. The new exchange, which will service about 120 subscribers and will be operated by the States Telephone Department,

will be connected with St. Peter-Port Telephone Exchange, Guernsey, by means of a temporary radiotelephone circuit provided by the Post Office. At the outset, service beyond Alderney will be considerably restricted, but the temporary circuit will be replaced later by a permanent 6-channel radio system.

★ ★ ★

Piccadilly Circus Underground Telephone Experiment.—Just over a year ago the 33 telephone kiosks in the Piccadilly Circus Underground Station in London were put in charge of five attendants in order to assist the public with their calls and to provide change. This was an experiment which has met with great success both to the public and to the Post Office. From the heart of London it is possible to speak to any place in the world to which there is telephone service from this country. The telephone boxes are also used for trunk calls. A special feature of the Piccadilly experiment is an interpreter service whereby any caller



Telephone attendant at work in Piccadilly Circus Underground Station

labouring under language difficulties is connected directly by telephone to “Continental”, where multi-lingual telephonists are available. In this way, his difficulties can be quickly overcome, and he can be given any call he wants. Two officers are on duty at one time. One books calls, and the other patrols the suite of telephone boxes and is able to assist callers in trouble and to report immediately any line out of order. Thus, a call box is seldom out of commission for more

than half an hour, whereas under the old system call boxes could be out of use for considerably longer, with resulting irritation to telephone users.

The attendants and the Post Office have received many expressions of thanks for the service, and many helpful suggestions for improving its quality.

★ ★ ★

Continental Telex.—The telex service to the Continent, which was first opened with Holland in March, 1947, is now extended to Belgium, France, Switzerland, Czechoslovakia, Denmark, Norway, Sweden and the British and U.S.A. occupied zones of Germany.

The service is operated over voice frequency telegraph channels and at present is confined in this country to subscribers in London who rent Tariff "B" lines to the Central Telegraph Office where four non-multiple-type switchboard positions are installed and are working to operating capacity. Indeed, the demand for the service is such that plans are afoot to replace the existing boards by multiple-type switchboards with eight positions en suite initially; but until these are available further applications for service cannot be accepted.

A small portion of the existing operating capacity is, however, being held in reserve for extension to the provinces which, it is hoped, will be possible shortly.

The annual rental for the teleprinter and associated equipment is £50 plus surcharge. Where the renter is already an inland telex subscriber, switching equipment is provided to enable the one teleprinter to be used for both the inland and overseas services. The annual rental for this equipment is £8 plus surcharge.

Call fees are charged at half the appropriate telephone rate and the minimum chargeable duration of a call is three minutes.

★ ★ ★

Broadcast Receiving Licences.—11,910,850 broadcast receiving licences were current in Great Britain and Northern Ireland at the end of June, 1949. The total includes 147,900 television licences.

★ ★ ★

Leeds Automatic Area.—The Leeds telephone system is of the non-director type, that is, subscribers dial numerical codes without alpha-

betical prefixes. This system is satisfactory in all but the largest telephone communities and when the Leeds automatic system was designed, it was envisaged that Leeds would not warrant the director (alphabetical dial) system for very many years.

The very rapid development of the Leeds telephone area has necessitated a review of the position. It is now clear that conversion of the Leeds system to alphabetical dialling will have to be proceeded with at a very much earlier date than was previously intended. Conversion of a whole town's telephone system would necessarily be a fairly long process even in normal times, but in times of restriction of capital outlay such as the present, introduction of the new system will have to be piecemeal and will have to be effected as replacement of the exchanges is warranted on other grounds.

In addition to London, the director system is already working in Birmingham, Glasgow, Liverpool and Manchester, and is in course of introduction in Edinburgh.

★ ★ ★

To Account Rendered.—For some years now most European countries, including the United Kingdom and many others, have agreed to assist one another in the collection of outstanding telephone accounts, where difficulty is met in obtaining settlement. Between April 1, 1948, and March 31, 1949, there were 244 cases in which, owing to the subscriber having left this country, difficulty arose in securing payment of the account and, with the co-operation with other administrations, over £1,500 was recovered.

★ ★ ★

Great Northern Telegraph Company.—This Danish Company, which operates services between this country and Denmark, Sweden and Finland and to the Far East by a landline across Soviet territory, is now planning to lay a new cable between the United Kingdom and Denmark, capable not only of high-speed telegraph working but also of the transmission of telex messages.

★ ★ ★

Telephone Kiosks in Rural Areas.—Early in 1935, the Post Office undertook to provide a kiosk in every village with a post office. This arrangement, known as the "Jubilee Concession" to mark the Silver Jubilee of the reign of King

George V and Queen Mary, is now nearing completion with over 8,000 kiosks already provided.

Later in 1935, the "Tercentenary Concession", marking the 300th anniversary of the Post Office as a public service, was introduced to provide for hamlets and villages too small to warrant a post office. Since kiosks in such places would, in general, be provided at a loss the number had to be limited, and it was decided that a kiosk might be erected in any village where there was no public call office within half a mile, and where the local authority would pay for five years the normal rent for a residential subscriber's line. This scheme did not prove entirely satisfactory and resulted in the erection of less than 1,000 kiosks. It was discontinued this year.

A further scheme has now been adopted. A certain number of kiosks will be earmarked annually for rural areas. In England and Wales the Post Office, in co-operation with the Rural District Councils' Association, will fix the number of kiosks to be allocated to each county. In Scotland and Northern Ireland, the arrangements are left in the hands of the respective Regional Directors. Under this scheme no payment by local authorities will be required.

★ ★ ★

British Industries Fair.—The Post Office Exhibition stand was designed as a permanent feature on one of the most prominent sites at

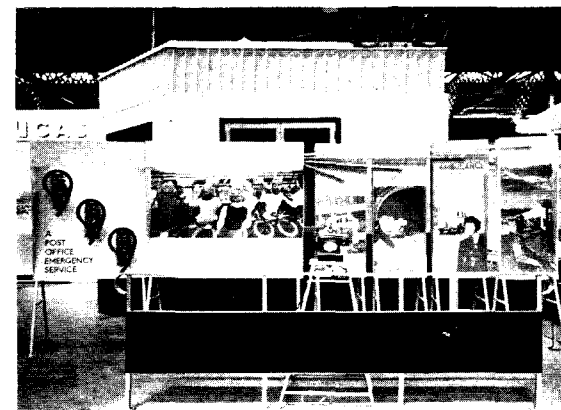


Birmingham. Its purpose is primarily functional to serve the needs of both exhibitors and visitors, although opportunities are taken, where

practicable, to display the services offered by the Department.

A feature of the stand is the use of a louvred-glass grille set in red standards. The glass is armour-plated and scientifically arranged for the maximum transmission of the voice. The arrangement is not only as efficient as the normal wire-mesh grille, but it has hygienic qualities. The woodwork is faced with Australian walnut veneer and the metalwork is anodised aluminium.

The "999" exhibit shown below was displayed on the stand, to help to correct the impression falsely held by a large section of the public that the 999 services are only incidentally associ-



ated with the Post Office. Members of the public were invited to pick up the telephone and dial 999. The left-hand panel related the action of dialling with the stepping of the automatic selectors, while the lighting of a lamp inserted into the centre panel, together with the sounding of a hooter, represented the call being received in the exchange. Tubes inset with lamps formed connecting links with each of the four smaller photographic panels, and the rapid spread of light outwards along each of the tubes in turn, symbolised the dependence of each service upon the telephone exchange.

★ ★ ★

Erratum.—In the diagram on page 71 of the May issue of the Journal, the words "single pair" should have been "screened pair".

★ ★ ★

"999" Co-operation.—Each week, parties of Metropolitan Police officers from Scotland Yard

Information Room visit the Whitehall Telephone Exchange to see how the exchange telephonists deal with 999 emergency calls for "Police", "Fire" and "Ambulance". After a tour round the exchange and an explanation of the operating procedure, a demonstration call is passed to 999 and is connected to the Information Room at Scotland Yard. The visitors are also shown how the call can be traced back to the originating telephone, if, after dialling 999, the caller has to leave the telephone before being able to pass a message.

Every fortnight, parties of telephonists, men and women, who will be promoted to supervisors in the near future, visit the Information Room at Scotland Yard. They also see the switchboard for Whitehall 1212.

★ ★ ★

City Stockbroker's Tribute.—The Telephone Manager of the London Telecommunications Region, City Area, has received the following high tribute from a leading stockbroker :

"Your assistant has recently carried out a long and rather difficult job for me by replacing telephone bells by lights. I would just like to tell you that he did this work extraordinarily efficiently, and went to a great deal of trouble to avoid causing any interruption with the work of the office. It was a great pleasure to find work so conscientiously carried out, and I feel I would like to let you know how much it was appreciated here."

★ ★ ★

"Where Are You?"—When a motorist goes to a public telephone kiosk to report an accident,

he is usually asked where he is speaking from, and if he is a stranger to the district he may be quite unable to say. Questioning him in an attempt to identify the spot may waste a good deal of precious time. The Post Office is therefore going to supplement the existing emergency services, by amplifying the emergency instruction card in each kiosk to show its location in the most readily intelligible form, for example, "at the junction of Moor Lane and the Puddlecombe Road". About 52,000 emergency instruction cards will need to be replaced.

★ ★ ★

B.B.C. in Ceylon.—"Radio SEAC", the broadcasting station which provided programmes for British Forces in S.E. Asia, was transferred on March 1, 1949, to the Government of Ceylon and the station is now called "Radio Ceylon". By agreement with the Government of Ceylon, the B.B.C. is using the station for eight and a half hours a day to supplement the low-power transmissions from Singapore, (see May, 1949 issue) until the new high-power station at Tebrau is brought into service.

★ ★ ★

Mr. B. L. Barnett, C.B., M.C.—As we go to press, it has been announced that Mr. B. L. Barnett, C.B., M.C., Chairman of the Editorial Board of this Journal, is to be Deputy Director General of the Post Office in place of Mr. R. A. Little, C.B. Mr. Little will be Director General in succession to Sir Raymond Birchall, K.C.B., K.B.E., who retires on September 30, 1949.

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

EDITORIAL NOTICE

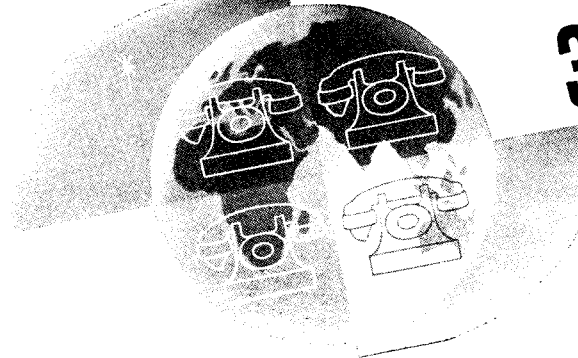
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CONTRIBUTIONS. The Editorial Board will be glad to consider articles of general interest within the telecommunication field. No guarantee of publication can be given. The ideal length of such articles would be 750, 1,500 or 2,000 words. The views of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

COMMUNICATIONS. Communications should be addressed to the Editor, Post Office Telecommunications Journal, Public Relations Department, Headquarters G.P.O., London, E.C.1. Telephone: HEAdquarters 4428. Remittances should be made payable to "The Postmaster General" and should be crossed " & Co."



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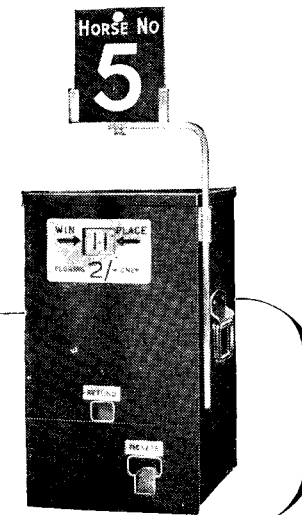
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This machine is an independent ticket printing and issuing unit, constructed to operate on the insertion of a 2/- (two shilling) piece or other denomination of coin. Runner numbers can be varied from 1-99, which enables the machine to be used for both dog and horse betting.

The machine is portable and can, therefore, be moved from one track to another and run from power mains or portable accumulators.

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