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The BBC Concentrates its Telephone Communications

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PLANS laid as long ago as 1944 came to fruition this year when the British Broadcasting Corporation began to occupy the main block of the new Television Centre in Wood Lane, Shepherds Bush, London.

These new premises, with a large extension to Broadcasting House, Langham Place, and the earlier occupation of a large portion of Bush House in the Strand, concentrated much of the BBC's activities in London in three main centres, thus enabling modernization of the telephone services.

With the help of the Post Office and two telephone equipment contractors, Ericsson Telephones and Standard Telephones and Cables, Private Automatic Branch Exchanges have been installed at Bush House, Broadcasting House Extension and the new Television Centre. The Bush House installation was brought into use in September 1956; those at Television Centre and Broadcasting House Extension were brought into use in March and May this year respectively.

Each of these PBXs serves separate groups of several neighbouring buildings, with inter-communication through the Corporation's rented network of private circuits, so that 90 per cent. of their inter-departmental calls in London can be connected automatically without the services of their own PBX operators and without using the Post Office public telephone exchange services.

Before the new buildings were ready the staff were in about 30 separate premises near Broadcasting House, while there were six buildings in or near Shepherds Bush, three at Maida Vale, and many others in the London suburbs.

The original telephone network is outlined in Fig. 1, which shows only those premises having PBXs; other addresses were served by external extensions. The fact that these buildings were so scattered made the planning of centralized telecommunications services very difficult.

The occupation of two blocks of Bush House in 1956 was a relief measure, and the opening of a

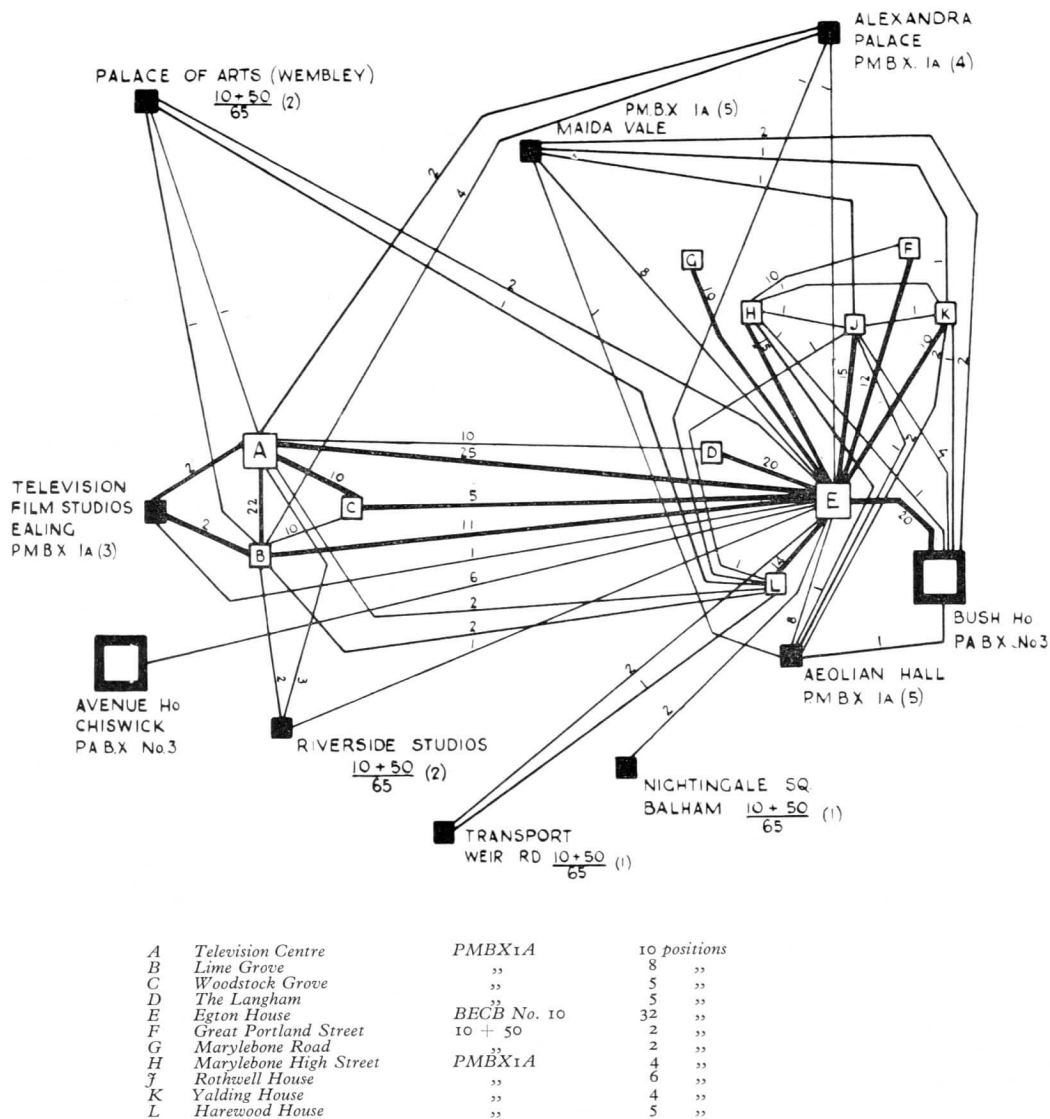


Fig. 1 : Arrangement of PBXs and inter-switchboard circuits before introduction of PABXs

PABX No. 3 there, with capacity for 1,200 extensions, did not in itself replace any of the PMBXs shown in Fig. 1. At that time there were eight separate BBC PMBXs in the Langham area, ranging from the 32 position BECB 10 suite at Egton House to smaller installations of the two 10+50/65 type positions at Great Portland Street.

The television premises at Shepherds Bush were served by three separate suites of PMBX 1A type positions. Altogether these 11 PBXs served about 3,500 extensions, and each switchboard was connected by a group of lines to one of six London Director exchanges. In addition, each PBX had private interswitchboard lines to many of the others.

At Egton House—the main switching centre—there were 30 groups of circuits to other BBC premises in London, 14 long distance routes to places as far away as Glasgow and Belfast and a dozen or more single circuits to other administrations and to ministries. In all, there were more than 250 circuits in the outgoing junction multiple. The Bush House PABX was linked with the main network by circuits to the Egton House PBX and to some of the smaller PBXs. Calls to Egton House were handled by the operators and calls to other PBXs were connected through the Egton House network of inter-switchboard circuits.

The new buildings have enabled the BBC to vacate at least three of the subsidiary premises and to re-house staff and equipment in more up-to-date accommodation. A PABX No. 3, with capacity for 2,800 extensions, has been installed in the new Broadcasting House extension and offices in the neighbourhood of Broadcasting House are now served by external extensions on this PABX.

At the new Television Centre a PABX No. 3 for 2,000 lines has been installed and the Lime Grove and Woodstock Grove premises are served by external extensions from this exchange.

All this has meant laying many yards of new ductway, building manholes, and drawing in and jointing several miles of cables. This work is too large to describe in detail in this short article, but some idea will be obtained from the following figures:

Ducts laid.....	2,318 yards
Manholes built	16
Cable used	14 miles
Telephones fitted.....	6,250
Manhours spent.....	70,000

Television Centre

The new PABX opened at Television Centre provides services for the new main block as well as replacing three PMBXs which served four other premises in the vicinity. An increase in capacity to 3,000 extensions can be made within the present accommodation to allow for further growth of television and to serve extensions of the building on the same site.

All extensions have four digit numbers. Access to exchange lines for calls to places in the London Director area is obtained by dialling digit 9, while the BBC operator can be signalled by dialling digit 0 for assistance, 5 for long distance calls which are available only through the BBC operators, or 7 for enquiries. A full multiple of the 2,000 extensions is provided on the auto-manual suite of 21 positions. These are slightly larger than the switch sections PBX SA 7560 usually associated with PABX No. 3 equipment; they are 6 feet 4½ inches tall in sections of three positions and seven sections of the multiple. Repetition of the extension and junction multiple occurs every six panels. The manual suite is finished in light oak with grey plastic facings to the key shelf. Fig. 2 shows a general view of the



Fig. 2 : The new PABX at Television Centre

Television Centre switchroom. The enquiry positions are in the centre of the room.

In the apparatus room the extension line finders are on separate racks from the final selectors and in this respect the layout differs slightly from standard PABX No. 3 equipment, but this has enabled considerable economy in rack space. There are 26 circuits graded from level 8 of the first selectors giving joint access with the manual board to a group of private wires connecting the Broadcasting House PABX. Calls to extensions on this PABX are dialled direct and traffic in the opposite direction is routed via another group of circuits from Broadcasting House and terminated on incoming selectors at Television Centre.

Broadcasting House Extension

Broadcasting House and nearby buildings are served by some 800 internal extensions and 1,700

external extensions on the new PABX. Growth up to 2,800 extensions is possible and the equipment can be increased to a capacity of 3,500 extensions in the available accommodation. The auto-manual switchboard has 24 positions of the same pattern as those at Television Centre and with similar facilities. The automatic switching plant shown in Fig. 3 is also arranged with separate racks of line finders and final selectors.

An interesting feature at Broadcasting House installation is the erection of two main distribution frames, one terminating all external cables for exchange lines, private circuits and broadcasting circuits, and the other terminating all the cables carrying external and internal extensions served by the PABX.

All extensions have four digit numbers. Access to exchange lines for making calls to places within the London Director area is obtained by dialling

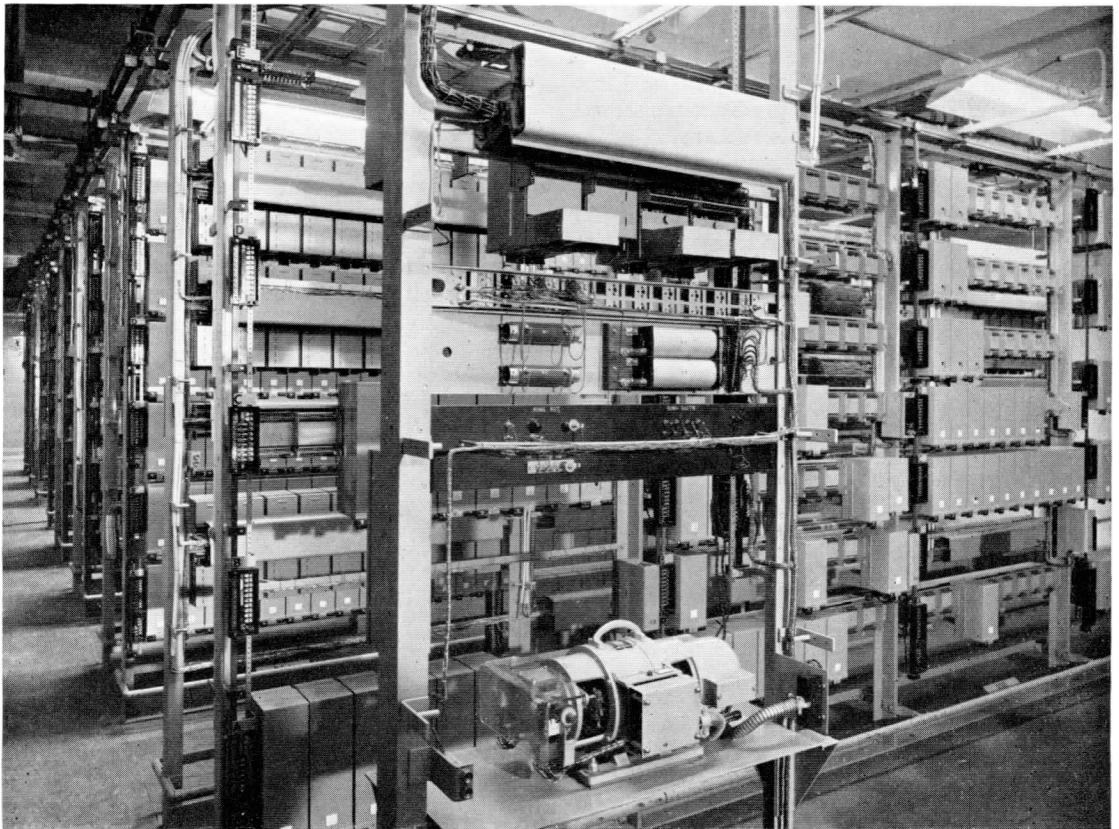


Fig. 3 : Automatic switching plant

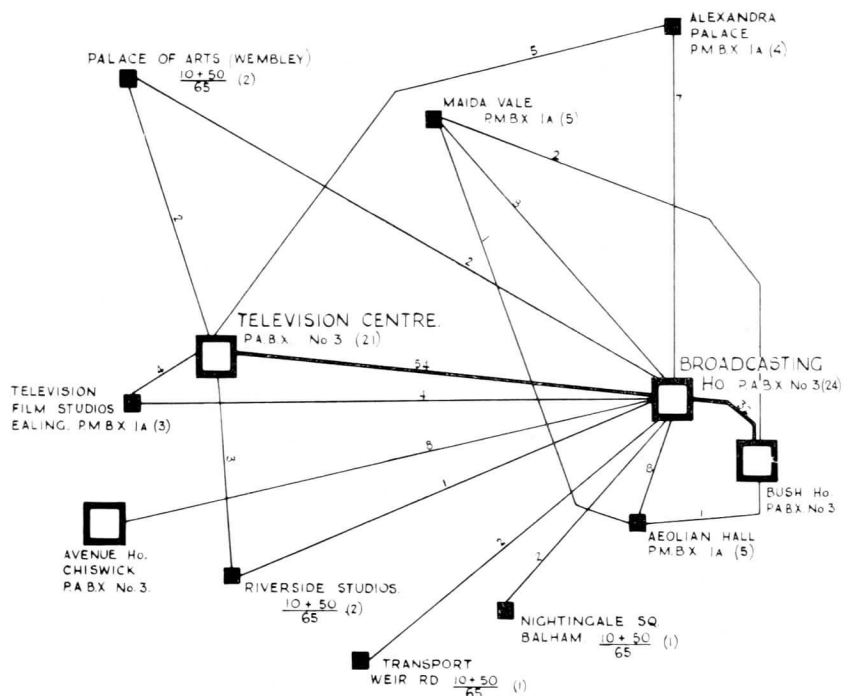


Fig. 4 :
Rearrangement
of PBXs and
inter-switchboard
circuits with
the opening
of the main
PABXs

digit 9, and the BBC operator is called by dialling 0 for assistance, 69 for trunk calls and long distance private wire connexions, which can be obtained only via the auto-manual board, and 60 for enquiries. Calls to other BBC PBXs are obtained by dialling appropriate single or two digit code numbers; for example, 7 for Television Centre, 8 for Bush House, and 61 for Maida Vale PBX operator.

On calls to other PABXs the distant extension is called by dialling the number required following the routing code digit(s). This PABX is also a tandem routing exchange for calls between extensions on the Bush House and Television Centre PABXs. Long distance private wire calls and trunk calls through the Post Office system are handled at the switchboard on a delay basis.

The new network is shown in Fig. 4.

At both the Television Centre and Broadcasting House Extension installations separate rooms are provided for main frames, charging plant, batteries, and for stores and apparatus repair.

Fire calls at the Broadcasting House and Television Centre PABXs are dealt with first by the BBC's own fire organization, and a code 666, specially shown on telephone dial labels, is dialled

to obtain direct access to the BBC Fire Service at each Centre.

This project has not been completed without some difficulties. It has involved a thorough examination of traffic statistics, careful planning and execution of engineering work, and close administrative consultation throughout. Some of the work has been done under severely adverse conditions in uncompleted buildings at Television Centre and Broadcasting House Extension.

The minutes of the numerous meetings over the past years between the BBC, the Post Office, Standard Telephones and Cables and the builders—some well into the evenings—at which every detail of planning and execution was thrashed out, are testimony to the spirit of helpful service and enthusiastic co-operation shown by everyone who had some share in the fulfilment of this major reorganization.

Acknowledgments are to the BBC for the production and use of the photographs of the Television Centre building; to Standard Telephones and Cables Ltd. for the interior photographs of the apparatus room; and to the staffs of the BBC, the Post Office and Standard Telephones and Cables who have supplied information.