Private Automatic Branch Exchanges.

A Simple Unit for Attendant's use on a Single Exchange Line.

THE large number of telephone calls made through private branch exchanges invests the link between the public and private systems with an importance that can hardly be over-estimated. With a realisation of this the Company has for some time devoted considerable thought to private branch exchange operation, with particular attention, in view of modern demands, to equipments in which local calls are completed automatically.

In the past it has been standard practice to provide with each automatic equipment a floor pattern manual board from which an operator extended incoming calls and also, when extensions did not wish to dial out directly, established connection to the public exchange for outgoing calls. Switchboards of the floor pattern are necessary for large installations in which the number of lines justifies the full-time services of an operator but are not so necessary for smaller installations. In order to secure economy and to so simplify operating procedure that attention to the board may be one of a number of duties, The General Electric Company developed a P.A.B.X. system incorporating a cordless switchboard of the table pattern. This was described in Vol. 4 No. 3 (Oct. 1934) of this Journal and is designed specially for private automatic branch exchanges of up to 50 extensions capacity with an average

Fig. 1.—Special switching bell set.

number of exchange lines. Pursuing this policy of simplification, a further development is now seen in the design of a special switching bell set intended for the particular case in which external traffic requires no more than one exchange line. Clearly, in such a case there is no justification for incurring appreciable initial or operating expense and, therefore, the practice adopted should involve a minimum expenditure on both counts. To meet this requirement this special switching bell set, illustrated in Fig. 1, has been developed. It is designed to operate in conjunction with a standard G.E.C. private automatic unit, very simply and inexpensively linking the unit to the public exchange when one junction only is required.

The bell set is associated as shown in Fig. 2 with the telephone of any pre-determined extension, who thus becomes the attendant,

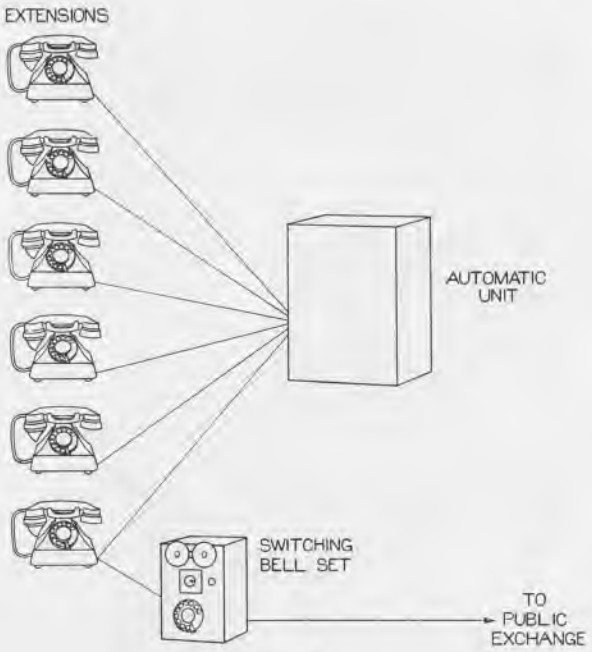

Fig. 2.

the simple operating procedure occasioning a minimum interference with other duties. From the description which follows it will be appreciated that the combination of this switching bell set with a standard automatic unit constitutes a private branch installation with the merits of simplicity and economy in initial and operating cost.

The set consists of a wood box accommodating a bell, rotary type key, plunger key, three relays, buzzer and condensers. The rotary key has four positions, the circuit conditions for each position being given in the following table :

Rotary Key Position 1 (*Normal*).

Public exchange line connected to bell of switching set.

Attendant's telephone connected to automatic unit.

Rotary Key Position 2.

Public exchange line connected to attendant's telephone. Line to auto. unit looped to provide battery feed and busy condition on unit.

Rotary Key Position 3.

Public exchange line held.

Attendant's telephone on line to auto. unit (dialling and local speaking condition).

Rotary Key Position 4.

Public exchange line through to extension.

Attendant's telephone disconnected to ensure secrecy.

With the key in position 1, the attendant may be called from the public exchange or may, like any other extension, make or receive local calls. On an incoming call from the public exchange being signalled by the bell, the key is turned to position 2, connecting the attendant's telephone to the exchange line. Upon being informed of the extension required, the attendant turns the key to position 3, holding the exchange line and connecting her telephone to the automatic unit. The number of the required extension is then dialled and, when an answer is received, the key is turned to position 4 to connect the exchange line to the extension. When either party clears, the buzzer in the set provides a signal to the attendant that the key may be restored to normal.

An extension may obtain connection to a public exchange subscriber by first dialling the number of the attendant and then stating his requirements. If the public exchange is automatic, the bell set is fitted with a dial, the wanted number being dialled by the attendant, whilst to work in conjunction with a public exchange of the magneto type, a hand-generator is fitted. For each stage in the

process of establishing connection for an outgoing call the rotary key is turned to the appropriate position. As already explained, the buzzer gives an audible clear signal when either receiver is replaced.

One other consideration relates to trunk offering when the called extension is found to be engaged. When the automatic equipment is of the G.E.C. standard A.C. ringing type, an extension to extension call may be interrupted by the attendant in order to offer an incoming call, by depressing the plunger key adjacent to the rotary key

Automatic Telephone Equipment for Siam

WITH a view to modernising the telephone service of Bangkok, the Siamese Royal Posts and Telegraphs Department recently conducted an exhaustive survey of modern practice in automatic telephony As a result, The General Electric Company has been entrusted with the supply and installation of the first automatic equipment for public service in Siam. Bangkok is to be served by two automatic exchanges, Wat Lieb and Bangrak, initially equipped for 2300 and 1200 subscribers respectively, whilst provision at each exchange for an ultimate total of 10,000 lines, together with facilities for direct access to subsequent exchanges, forecasts future developments of an extensive nature.

The equipment will be of the British Post Office standard Strowger type and will have full tropical finish. The trunking arrangements provide for a 5-digit numbering scheme to give automatic intercommunication between all subscribers at this first stage and to maintain the facility at all future stages in the development of the area.

The building illustrated in Fig. 1 will

Fig. 1.—Exchange building which will accommodate the Wat Lieb equipment.

accommodate the equipment forming Wat Lieb exchange, which is to replace an obsolete manual switchboard. A new General Post Office building will house Bangrak exchange, incorporated in which, in addition to the switching equipment for public service, will be a private automatic branch exchange having initial provision for 150 extensions in the Posts and Telegraphs Department.