

is that the voltage of the battery, which is 40, is maintained constant during all hours by having a booster in series with it, so that as the voltage of the battery falls the booster voltage can be varied to keep 40 volts steady.

The B board is on the first floor. It has fifty-eight positions. Each position has thirty cords, and is fitted for thirty-six. The multiple is on this board only, and not on the A board. The sections are nine-panel, 6 ft. 4½ in. long. Ringing is automatic on the B operator plugging in. No subscriber can be rung, however, unless the A operator has a cord up to the junction that has been assigned. The B operator cannot listen-in. She can handle five hundred to six hundred calls an hour. The calling-rate on this exchange is expected to be twenty-two calls per day per subscriber, and it is the busiest in London. This is to take the place of the old Avenue Exchange of magneto type in the locality. Fireproof bulkheads, shelves, and covers are provided inside the switchboard. Lighting is all done from the ceiling by Osram lamps, but arrangements are provided on the board for lighting by reflectors if required. This applies to the A room also. There are three or four monitors' and supervisors' desks in the B room.

The A switchboard is on the second floor, and has 123 positions. Each position has the usual equipment on the key-shelf. The sections have eight panels. Each operator has 130 lines to attend to. There is capacity for 200 lines. There are ancillary jacks in sets numbered 1, 2, 3. Operators attend to the calls on their direct lines first, and then, as far as they can, take calls on jacks in the sets marked 1 next, and so on. This is said to assist team-working. It is also in operation in the United States, but it is doubtful if there is advantage gained to warrant the cost. Monitors' lamps are fitted every few sections, and a monitor or a learner can plug in. At the end of the A board there is an arrangement for cutting off particular sections from an order-wire circuit. This enables an order-wire circuit fault oftentimes to be easily located, and does not hang up the entire circuit. When the plugging-up lines are used a tone is put on the faulty line, so that operators know that it is out of order when they test. According to the nature of the fault, this plugging also lights or does not light a special lamp. The attendant, if the lamp lights, throws a key which puts it out. On removal of the fault the lamp lights, and it is at once known that the fault has been removed.

There are three trunk positions fitted with thirty cords and listening and ringing keys. Three hundred girls will be employed in this exchange. The kitchen is 30 ft. by 15 ft.; dining-room, 42 ft. by 30 ft. There are wooden lockers placed back to back, with good space between rows of lockers. A rest-room is provided. A fire-alarm system with numerous points from which alarms can be sent in is also installed. This exchange has been erected in six months, and it was stated that it was the first time that the Post Office had got an exchange completed up to time. The Post Office engineers expressed themselves as in every way satisfied with the work that had been done.

Some time was spent at the Gerrard Exchange, one of the largest in London, which was erected by the Western Electric Company for the National Telephone Company, and taken over by the Post Office at the time of the transfer. Everything here was of first-class workmanship, and the general lay-out very good. This exchange had more the appearance of and seemed to be well in line with the class of work that exists in the States. What surprises one in all these large exchanges is the orderly and methodical way in which large masses of cables are taken care of and extended in suitable iron runways overhead from one point to another. Neatness and cleanliness prevailed. Great precaution against fire was taken, even to providing outside the switch-room a telephone in a convenient place so that alarms might be sent by direct circuit to the fire-station. There are about 9,000 lines and 23,000 stations on this exchange, with 106 working A positions and 41 B positions. The lines allotted per A position are about eighty-four. The calls per line and per station per day are 14.4 and 5.7 respectively. In the busy hour the average number of calls answered by A operators is 164, and the work on these is equivalent to about two hundred and thirty-nine straight-line calls. The percentage of outgoing junction calls is 73. Each outgoing and incoming junction carries approximately 100 calls per day. B operators in the busy hour effect about three hundred and ninety connections. Their calculated load under the conditions existing is 366. The number of A operators is 147, of B operators 53, supervisors 18, monitors 11, managerial, record-testing, and other clerks 14, and private-branch exchange operators 63, a total of 302. The relief staff and extra operators number 29. It is found in all exchanges that girls work best when they are working without slackness or strain.

Gerrard is a common-battery exchange, and the figures given may be taken as approximately applying to several other large exchanges in the City of London. Some of the exchanges that were being operated by the National Company as magneto are being changed over by the Post Office to common-battery as speedily as possible. Avenue, already referred to, is one, and Westminster another. At Willesden an exchange was seen fitted with Peel-Connor apparatus, and at Finchley and Barnet the installations were of Western Electric type. These were common-battery installations, and were all suburban, with a few hundred subscribers, and were well equipped and finished. The buildings were substantial and roomy. There was ample space for further extension.

Girls in the London Post Office telephone service work forty-eight hours a week, but not necessarily eight hours a day, and may have to perform duty on about one Sunday out of four. They do not work after 10 p.m. They are taken between the ages of sixteen and nineteen. Learners are paid 7s. a week. On filling a vacancy they get 11s. the first year and 14s. the second if employed within the London postal area, and 10s. for the first year and 12s. for the second if employed at exchanges outside that area. Increases thereafter vary from 2s. to 1s. 6d. a week each year up to 28s. Second supervisors are paid from £80 to £100; first supervisors from £100 to £145; and chief supervisors, from £145 to £190 yearly. Men's wages are from £1 5s. to £1 10s. a week. About 5 per cent. to 10 per cent. of the girls are generally absent through sickness. Annual leave is granted on the scale of a fortnight per annum up to two years' service, and thereafter three weeks annually.