

The sections of the switchboard are lighted mostly with lamps and reflectors laid in a metal piece extending the full length of the boards and placed well up and forward of the cornice. Alternate lamps are on different switches. The head receivers are light. Breastplate equipments are supplied. The boards are all of the Western Electric Company's manufacture. There are good metal foot-rests and strong chairs. The incoming and outgoing of all employees are registered by a "time clock." There are 140, 130, and 45 women in the three local exchanges referred to, and 50 in the toll-board exchange. The rooms are all large, about 14 ft. or 15 ft. high, tinted light-green. The light is not great, but enough.

The Kearney exchange was visited. It is a fine plain brick building of three stories. The basement is of ample room and floored with concrete. There was great activity here, as men were engaged forming cables for alterations going on upstairs—viz., the introduction of keyless ringing on the B boards. Partitioned off was a gas-engine with a 10 ft. drive. It was about 30 horse-power, and had two large fly-wheels. The dynamo was delivering 500 amperes: 300 amperes were charging the battery, and the rest were working into the exchange. It is quite usual here to run the dynamo for working the exchange and for charging cells at the same time. There is no noise in the receivers. This was tried and found to be so. When the battery is full they float it on the dynamo.

There are two exchanges in this building on the same floor—i.e., the top floor. These are for 9,600 lines each. One is full, the other has 7,200 connections. There are about forty or fifty A positions, not so many B. The largest A board here has the multiple. It is found, however, that the trunking is over 75 per cent.—more nearly ninety per cent.—and the A board multiple is not much used; or, in other words, there is not much direct connecting of one subscriber to another. The community of interest between them is small. It is the intention to remove the multiples from the A positions. It is pertinent to remark here that this feature, and what was seen also in London in one or two exchanges where provision was made for ringing all over the boards with party-line keys, and no party lines developed, show that it is difficult sometimes for the most skilled engineers to gauge just what is the proper thing to do in certain circumstances. The second A board has no multiples.

The room is about 60 ft. wide, 120 ft. to 130 ft. long, 15 ft. or 16 ft. high. It is lit from the top: there are also side windows. The room is tinted light-green and is well ventilated. There are 16 ft. between the backs of chairs where the A and the B boards run in parallel lines. All toll-work is done from the Bush Street exchanges. Demands are passed along to the record positions there.

Different sections on the A boards have different classes of service and different numbers of subscribers to attend to. Even the equipment of the sections varies according to the class of service being handled. Prepayment—that is, by nickels—and post payment—as in the case of Baird pay-stations—are taken at one place, measured service at another, and so on. Seventeen pairs of cords per position are used, and the cords are not reinforced in any way. They are not spiralled tips, but are screwed at the back of the board, and this feature may be said to be universal. Cleanliness and neatness prevail. A light canvas cover extends the full length of the back of the board over the cabling. Cabling-platforms are all iron: this is to reduce the risk of fire spreading. Water is always conveniently accessible in buckets. Sand is available downstairs; also chemicals. Fire-alarms are provided.

There are 166 girls for operating, and more are required. As far as possible they are used as two separate staffs for each exchange. A girl is borrowed at times. There is competition between all the exchanges in the San Francisco-Oaklands area, and keen rivalry exists as to which does the best work. A system of listening-in and observation of work is carried out, and from the results a summary is made as to the merit of the work. This summary is sent to all the exchanges every month, so that each sees how all are doing. A good deal of change takes place in the staff owing to girls marrying. Of the 166 girls about fourteen are floating—to cover sickness, absences, &c., but not including annual leave. This number was said to be insufficient, and twelve more were being asked for. Supervisors, monitors, complaint, information, and such like desk operators are included.

The girls get the national holidays as far as possible. They work at night. There are no male operators, and there are no men dealing with any business in the switchroom beyond those working at the mechanical features of the board. The girls get a week's leave each year with pay, and further leave may be arranged without it for special reasons when the business or number of girls will permit. It is said seldom to permit. It was stated that there is less sickness in these exchanges than in some others. Girls work eight hours. The hours of attendance are mostly broken, but are limited by a law, operative since June last, to forty-eight hours a week. The work is heavy from 7.30 a.m. to about 9.30 a.m., gradually dropping up to 10.30 a.m. Business remains slackened until 6.30 p.m., when it becomes very heavy until 8.30 p.m. This is explained by the district being residential.

The retiring-room, used also as a dining-room, is large. A matron is in charge of the kitchen. The bill of fare is liberal and varied. Only the actual cost of food is charged. There are eighteen matrons for the different exchanges in San Francisco for the luncheon undertaking. The greater number of the operators live at home, and their average length of service is thirty months. Throughout San Francisco and Oaklands girls start at 4s. 2d. a day, and in ten years can get 2 dollars 10 cents, or 8s. 9d., a day, maximum; average, about 6s. 6d. a day. Supervisors reach 2 dollars 60 cents, or 10s. 10d., a day.

The cables come in from underground and pass up through iron pipes, and are potheaded and taken away in four or six separate 100-pair silk- and cotton-covered lead cable, according as the underground cable is 400 or 600 pairs. The potheads stand vertically. One main frame does for both exchanges. The frames, meters, coil and condenser racks are all suitably disposed and of the Western Electric Company's pattern. The keyless ringing apparatus being added is really a relay arrangement by which the ringing is placed on the line by the insertion of the plug in the jack, and on the receiver being taken up by the called party the increase of current resulting operates the relay so that the ringing is cut off.