There is no difficulty in connecting one toll line to another, as all are multipled. No record is kept of this work.

On some long toll lines, such as that to Los Angeles, a telegraph is superimposed, and everything is arranged for the next connection, so that there is no waiting or loss of time on valuable long-distance wires. The operator sits at a position of the board where the set of telegraph instruments is fitted. This method is falling into disuse. It is not used in the States or in England nearly so much now as formerly.

A special feature in San Francisco not seen anywhere else, and one which has certainly much to commend it for large multi-office areas, is that of a clock with a lamp below it. The object of the clock is to have uniform time all over the area, and to enable time to be easily got by operators. Any operator by pressing a key marked "Tm" (and these keys are fitted amongst the order-wires keys at all exchanges) can get time. A girl sits before the clock and every few seconds speaks the time, and changes only at half-minutes: thus she says "4.7, 4.7, 4.7, 4.7"; then "4.7½, 4.7½," and so on. As long as the lamp is alight she keeps talking, as that indicates some person has the key depressed. When the lamp is dark she need not speak. It is found that the lamp is alight forty-nine minutes per hour. There are no errors of parallax in reading clocks, as this means obviates them. There is a telegraph-office, and several circuits are working. Not much work is done, and it is merely to comply with the terms of the franchise, which require telegraphy to be conducted as well as telephony. In a separate room a woman is keeping observation on the operating, noting time and generally acting as a detective over features that it may be desirable to know and to check.

In a small room apart was a three-position board of special subscribers, such as grocers and merchants. They work amongst each other and do not use the ordinary exchange, as they more readily get those whom they chiefly want. It occurred to me that this was an admission on the part of manual of weakness in giving connections promptly. It was stated, however, that this board was to be discontinued shortly.

In the same building on the fourth and fifth floors are two large exchanges, and on the sixth floor a smaller one. Each has B boards. The multiples of subscribers' lines are on the B boards. There are no multiples on the A boards. The most of the switching is done to other exchanges, and it is found more economical to work B boards and to discard multiples on the A boards when the switching is over 70 to 75 per cent. of the total connections. Ringing on the B boards is keyless. There are about forty single plugs and cords on which the trunks terminate.

On the A boards different numbers of subscribers per position are allotted according to the class of work to be dealt with. The party lines or nickel lines are not "metered." There is only one key for ringing and listening. Some positions where nickels are dealt with have two keys with each cord circuit—one to return the nickel, the other to collect. They are coloured red and black. The boards are all eight-panel. The A boards have seventeen pairs of cords on some positions, fewer on others. Every six panels they have the multiples of the outgoing trunks.

The answering jacks and lamps are also repeated in the multiple field to some extent, to aid reaching and to promote team-working. This is done in other places also. It is claimed that this improves speed of answering about 6 per cent. for one set of "ancillary" jacks, as they are called, and 9 per cent. for two sets.

Order-wires are numerous for the different purposes of prompt communication with attendants at other exchanges. The operator at any of these exchanges cannot connect a subscriber direct to another on the same exchange. The services of a second operator, known as the "B" operator, have to be utilized. The "A" operator on getting a demand for a connection "order-wires" the "B" operator either in her own or a distant exchange. In her own exchange the "B" operator is usually just across the room. The "B" operator assigns a trunk and the "A" operator plugs into that. When keyless ringing is used on the B boards the called subscriber's telephone continues to ring until the receiver is taken down to answer the call. That act automatically cuts off the ringing. The usual supervisory lamps are provided. The "B" supervisory lamp is dark until the "A" operator clears, the "B" lamp then lights and the "B" operator clears.

All calls are registered. Even ineffective calls are registered, but the operator fills a ticket for rebate to be made in such cases. The rebate is attended to when the accounts are being made up.

Operators fill a ticket in connection with "busy" calls, and endeavour to complete such calls as soon as possible. This is general in telephone exchanges where the measured rate is used.

"A" operators also fill up a ticket in connection with "toll" calls across the harbour to Oaklands, Berkeley, and Alameda, for which a charge of 15 cents. is made. These "toll" calls should be distinguished from "long-distance" calls, which latter term is more applicable to calls over a considerable distance. There is such demand for speech between the cities on each side of the harbour that it would be slow and costly work to handle calls in the usual "long-distance" manner. It is arranged that when subscribers ask for numbers upon which a toll is chargeable, the "A" operator makes the connection in the usual way, but she fills up a ticket and gets the time of the commencement of the conversation by pressing the "time" key already referred to. She has to closely supervise so as to get the correct time of termination of the talk also, but she is expected to do this in respect of all conversations to be able to "cut off" promptly, so it is not considered much extra burden to do this business in this way, beyond the loss of time over the ticket. All tickets are kept small, and the particulars to be filled in reduced to a minimum. Although this may reduce the total number of calls per day per position, and necessitate a few more "A" positions, it is calculated that this method is cheaper than having special positions, and the connections are made with much more satisfaction to the subscribers.

A corresponding method was found to be in use in several other places, such as Chicago to Milwaukee, Chicago to neighbouring exchanges on the outskirts of the city, New York to Philadelphia, and *vice versa* in each case.