

Of 11,112 calls upon which observations were taken the average time of answering was 3.8 seconds; the connection was established in 16 seconds; the subscriber answered in 32 seconds; the average duration of the conversations was 105 seconds; disconnection was made after conversation finished in 3.1 seconds.

These are particularly good figures, and compare favourably with other places visited.

In Salt Lake City, with a population of about 100,000, the Rocky Mountain Telephone Company has a fine five-story brick building. The president's office and general staff offices are provided for in it. The exchange has about forty-five A positions. There are only two small outside exchanges, so the B board comprises a couple of sections at the end of the A board. About 125 girls are employed. The toll-board has four recording-positions and about a dozen operating-positions. "Information" and "complaint" positions are located in the toll-board room. There are six positions for information purposes, and four girls were listening and answering inquiries. They have twenty jacks each, and cards of particulars, and the latest directory amended. The amendments were made with different-coloured pencils, and each colour denotes something special, so that information is quickly given. Cords wear fairly; one-half are tested each night. The operators at the A boards and those at the toll-boards do not interchange. Toll-board operators are in some sense specialists. There is no second check on any toll-work: it is considered any such check would be wasting an operator's time and the line also. Switchings from one toll line to another are not recorded in any way.

This company operates over 413,000 square miles of territory in the States of Utah, Idaho, Montana, and Wyoming. Their area is four times that of New Zealand. The average depreciation over all kinds of plant apparatus is taken as 7 per cent. There are in Salt Lake City 6,106 lines; 9,520 paying subscribers; 2,841 extensions and P.B. exchanges; 4,678 business and 7,783 residence stations—total stations, 12,461. The average rental per month is 2 dollars 52 cents, or £6 6s., per annum. Each toll collection averaged 2s. 5d.

Private-branch exchanges are supplied with battery and ringing-over wires from the exchange. They have 227 lines so used. The rate is one and a third of that for an ordinary individual line, to cover the cost of the battery and ringing-pair. The rates within the city limits, about two miles and a half radius, are—individual business, flat rate, 78 dollars, or £16 9s., a year; individual residence, flat rate, thirty-six dollars, or £7 10s., a year; two-party residence, flat rate, 30 dollars, or £6 5s., a year; four-party residence, flat rate, 24 dollars, or £5, a year.

On private-branch exchange boards the charge is 18 dollars, or £3 15s., annually for each station up to ten; beyond ten the charge is 12 dollars, or £2 10s. The private-branch exchange board is provided and maintained by the company. The regular extension rate is £2 10s. per annum. Four-party lines are disliked by the company and by the people; it is only the price that commends itself to them. The maintenance is much more on this than on other classes of service, and the company is doing its utmost to curtail this class of service. The wages of linemen, such as wiring-men, installers, and inspectors, range from 90 to 110 dollars, or from £18 15s. to £22 18s. 4d., per month. Labourers or groundmen command about 10s. 6d. a day of nine hours. 225 calls per operator is the standard per hour expected to be handled. The trunking is low, as there are only two small outside exchanges in the city. Each operator can therefore complete almost the standard number of calls per hour. As there are only forty-four positions, the average lines per operator over the whole board is 138, while there are 283 stations on the average per position. The calling-rate per station is between six and seven. The work slackens off about 8.15 p.m. Eight female operators are in attendance all night. After 9.30 p.m. there is not a great deal doing.

Toll charges are made on a basis of 1 cent., or  $\frac{1}{2}$ d. a mile, air-line, for three minutes. Over three minutes each minute is charged at one-third of the three-minute rate. Subscribers here or anywhere else in the States are not advised when the three minutes are up.

Girls' pay varies: Ordinary operators, 5d. to 8 $\frac{1}{2}$ d. an hour; in a few cases, 6d. to 10 $\frac{1}{2}$ d. an hour. The chief supervisor gets £10 8s. 4d. to £12 10s. a month. The chief operator gets £15 12s. 6d. a month. The average time of answering is 3 seconds; the disconnect average is 4 seconds; the slowest answer is 17 seconds; the percentage of calls answered in five seconds is 88.5 per cent. It is stated there are not more than twelve to fifteen complaints, written and verbal, a day.

The switchboard is of Western Electric Company's manufacture. The jacks and plugs are small,  $\frac{5}{16}$  in.

The "Bell" development in this city is 7.5 persons per telephone. The Independent Company has 7,500 stations, so that the telephone development of the city is one for every five persons.

#### *Chicago Telephone Company.*

A couple of months prior to my visit to Chicago there had been a reorganization of "Bell" interests, which were made to include the States of Michigan, Indiana, Illinois, Wisconsin, and Ohio. The companies of these States are all separate, but the instructions, directions, and general control proceed from the head of the new organization.

There are thirty-five exchanges in Chicago. Some of the principal ones were visited. The first were those known as "Main" and "Franklin," for which there were eighty-six A positions and two B boards of thirty and twenty positions, all on the one floor. Besides these there is a sixteen-position local exchange board for the officers of the Chicago Telephone Company only. At the end of the A Board are two positions called "Hospital." These have no subscribers connected with them. The A and B operators have trunk connections extending to them. These operators have no time to deal with any calls presenting unusual features. Numbers improperly listed, numbers not listed, numbers changed or taken out, when asked for by subscribers, are all trunked away to "Hospital." These positions are used in this manner as it is found better to have a few girls with special knowledge looking after such matters than to have them imperfectly attended to. The trunking to "Hospital" lights lamps at those positions as in the case of subscribers' calls at ordinary positions.