

the same as a duplex, the only difference being in the rate of pay for Barclay operators as compared with Morse operators.

The dynamos give 3, 4, and 7 kilowatts. The voltages are 7, 24, 40, 70, 140, 200, 260, and 330. One machine, compound-wound, excites itself and the others. One set of five machines is negative, one positive; a third set can be made positive or negative as wanted. Dynamos for 7, 24, and 40 volts are separate. The 7-volt dynamos will give 800 to 1,000 amperes. The amperage of the others is much smaller according to voltage.

There is a large switchboard for controlling the power for the elevators and lighting for the large building. They have their own furnaces and generate their own electricity, but they can connect to the city mains if their own supply fails.

The pneumatic-tube service extends for some miles to different offices and all through the building. Ten minutes' delay only is permitted from the counter to the distant station. There is a tube from the counter delivering upstairs. From the time of receipt of a message to the time of its reaching the despatch not more than five minutes should elapse. Only single copies of messages are taken. Water copies on flimsy are taken by the despatch branch, sorted, and sent to the controller. Messages for the despatch are dropped from above, from the central platform already referred to, through a chute, and an exhaust fan at the bottom draws them down. After the water copies are taken the messages are passed on an endless running belt to the addressing-men. The messenger's book is prepared, the messages entered, and the charges named. The books are passed to another man, who hands them to the boys, and notes who the boys are and the time they start. Another man takes the books on the boys' return, checks their time, the returned messages, and the money.

Special messengers are sent for by the public to take messages to the office. This service is free. Messengers are also sent for for errands, for which a fee is charged. A special person is detailed to supervise this service. There is a large number of tape instruments on which the calls come in. At the counter the clerk has a sheet in which are filled the number, destination, and value of each message as it is taken. Received messages are telephoned to any person who has a telephone. A large number of persons are engaged telephoning received messages and receiving others for transmission. The company takes the risk of error, also of payment. When the telegram is received from a telephone lessee he is held responsible for the charges. They have had no difficulty so far in collecting charges for telegrams. A special place is being set apart in the operating-room in which to attend to the telephoning of messages, for which no fee is charged.

This company, which is practically owned by the American Telegraph and Telephone Company, has recently employed a telegraph engineer from Britain to put its service on a level with the standard of telegraphy in that country. It is recognized in America that, while that country is in the forefront in telephone matters, telegraphy as practised in Britain is superior to the American methods.

Telegraph-offices were seen in Philadelphia and Washington, but there was no departure from what has been referred to. Carrier systems for the distribution of telegrams were not in use in those places. That work was done by girls and boys. The telegraph companies employ about thirty-five thousand males and five thousand females. The Postal Company's system is mostly confined to the larger towns. The Western Union ramifies more, and since it has been combined with the American Telephone and Telegraph Company there is a movement to reach much smaller places than have been hitherto served. Telegraphists move about a good deal, as there is always demand for skilled men.

On the important circuits for which a bonus is paid by the Postal Company for all telegrams transmitted in a day beyond a certain number, the following are some figures that have been attained: Telegrams sent, 686, 772, 557, 668, 598, 565, 547, 555, 640, 609, 772; received, 523, 564, 539, 554, 559, 567, 644, 592, 675, 770, 692. These were handled from 8 a.m. to 5.30 p.m. They run from sixty to eighty an hour throughout the day. These speeds are not general, but they are not unusual on certain good duplex circuits. Operators usually send and receive alternately for a couple of hours. At night they work seven hours and a half. The average speed is said to be about twenty words a minute.

In the Western Union Company the average pay is about 65 dollars, or £13-odd, for males, and about £10 for females, a month. The rate of pay is based on ability. The Postal Company grades operators into three classes, and the pay for these ranges from about £8 10s. to £20 a month.

A system of telegraphy was seen operating in a workshop through artificial resistance at a rate of six hundred words a minute, and it was stated a thousand words had been reached. The transmitter it not unlike a Wheatstone, and tape has to be prepared. The received signals are marked in characters very closely resembling roman characters, but there were a few defects in the form of three or four letters that had to be overcome.

There was also seen in New York the "Dean Rapid Telegraph system." This is also worked by tape, which is placed so as to feed into a typewriter resembling the Hammond. The typist operates the typewriter, which causes the tape to be marked with specially devised embossings to represent each letter or character. The tape also receives an impression of what has been typed as a check on the work. It is then run through a transmitter and is received page-printed at speeds up to 250 words a minute. The received characters are of a special alphabet and can be quickly learned. All messages have to be typewritten at the received end before being sent out to the public. The system was in active business operation between Kansas City and St. Louis for two or three years, but seems to have been discontinued.

The Telepost was seen in Chicago and New York. The paper tape is perforated from a keyboard or by the ordinary tapper method. There is also a device consisting of two flat keys