

# TELEPHONE 30TH ANNIVERSARY

Story Of The Evolution Of The Telephone Switchboard—This Summer Sees Its Thirtieth Anniversary—First Crude Device For Connecting Speech.

BOSTON, July 12, 1907.—Next to the anniversary of Alexander Graham Bell's invention of the telephone instrument, no industrial birthday is more interesting and none, perhaps, is more important—than are the birthdays of the first telephone line and the first switchboard, which fall together about now. Thirty years ago in April a single wire was strung from the factory in Boston where Bell's instruments were made to the manufacturer's residence in Somerville, two or three miles out in the suburbs. This was the first telephone line ever constructed—the primal ancestor of the seven and a half million miles of wire which now connect more than three million subscribers' "stations" in the Bell system. At the beginning of the summer of 1877, soon after the erection of the first telephone line, several wires radiating from a common centre were

tion on the general plan of the exchange as we understand it today was made in Boston in May, 1877. There was then operating in this city a company which provided electrical burglar alarm service. It had a central station where the alarm signals were located, connected by wires with the premises of its various subscribers, who were chiefly bankers and merchants. Arrangements were made for the use of these lines and the central station as an experimental telephone exchange. Telephones were attached to five of the circuits—three in banks, one in the office of the manufacturer of the instruments—and repeatedly the wires were so connected in the alarm company's headquarters that conversations were carried on between the several subscribers.

The crude apparatus used for making these connections could hardly be called a switchboard, though it served, in its small way, the same purposes as does the largest modern exchange. But it contained the germ of a great idea. It started experimentation as the result of which there was put into operation the following January a real telephone central office. Down in Bridgeport, Conn., there was a private telegraph system, private telegraphy being a sort of a social fad at that time; and among the enthusiasts connected with it was Thomas B. Doolittle, already the inventor of many ingenious devices, and soon to be the producer of many more. Mr. Doolittle attached the telephone instrument to his society telegraph wires,

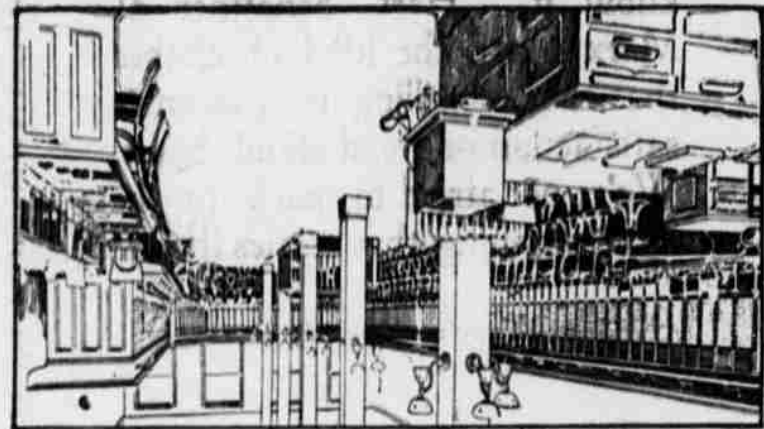
trial offices. The possibilities thus given the telephone increased to popularity enormously in spite of the doubts and hesitation nearly everyone showed in the early days. June 30, 1877, there were 230 telephones in the whole world thirty years ago today, where now there are upwards of 7,000,000. Within a month after, the number had more than trebled; within two months it had been multiplied by six; and by the spring of 1880, when the American Bell Telephone Company, the first concern to attempt the unification of the telephone system which alone gives it its full value, took up the business, there were in operation some 61,000 transmitting and receiving telephones. Meantime the central offices had multiplied wonderfully, and by March, 1881, there were in the United States only nine cities of more than 10,000 inhabitants, and only one of more than 15,000, with out a telephone exchange.

The early switchboards were curious contraptions beside the modern type of apparatus. They took several forms before the "multiple board" used by the Bell companies for nearly twenty years now was worked out. At first they had signal bells of different tones, one at the end of each subscriber's circuit, the distinctive tone indicating which line was "ringing up." Then numbered drops were adopted, each line having a metallic shutter in the front of the board which, when the subscriber turned the generator crank at the side of his telephone instrument, fell so as to display the number of his line. And finally came the "common battery" switchboard now in use in all large cities and being adapted to smaller exchanges, in which the operator's signal is given by a tiny incandescent electric lamp. The one place in the telephone system where a bell never rings is now the central office.

Some of the early switchboards were big frames set along the side of the operating room, the connections being made by boys who ran from one point to another as the calls came in. Others were like elongated tables, the switch sockets being set into the flat top and the cords for connecting them being suspended from the ceiling. Apparatus of this sort was clumsy and slow to operate, besides being limited in the number of lines it could provide for. It was abandoned in the United States a quarter of a century ago, but it is a curious commentary on the lack of progressiveness in some directions of our transatlantic cousins that it is still in use in some of the government operated exchanges of Europe. No doubt their backwardness in adopting improvements accounts for the small development of European telephone systems as compared with the development in this country.

In the last few years there have been devised so-called "automatic" telephone systems in which the subscriber does the work of making connections between his lines and the lines of other subscribers, instead of that work being done by an operator in the central office. In small communities, where the expense of giving day-and-night, Sunday-and-holiday, all-the-year-round service by means of operators is prohibitive, a limited field of usefulness has been found for such

but communication by wire have expanded, till now the Bell system alone has in use one instrument for every 28 men, women and children in the United States, and the enormous cost of this growth, are probably the most impressive things in American industrial history. They are suggested in the cold figures of the census report already referred to when it says: "The total value of telephonic apparatus manufactur-



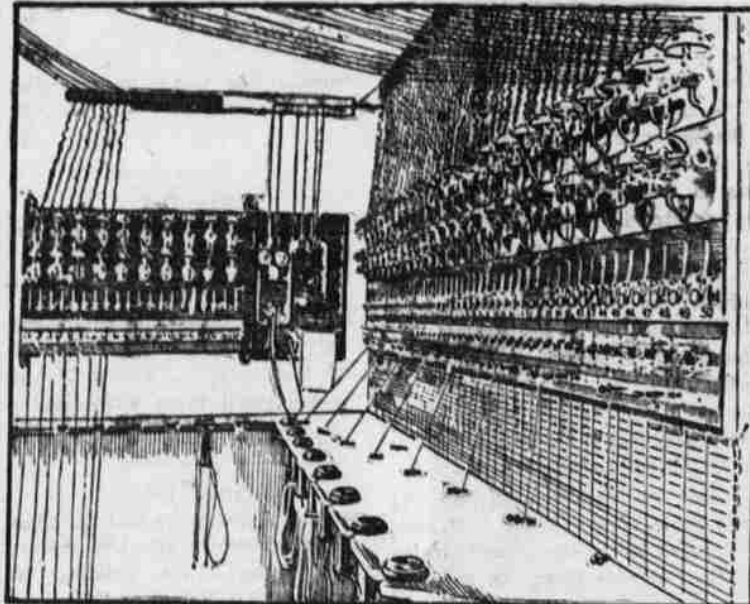
MODERN SWITCHBOARD.

for the first time inter-connected by means of a crude device which, through evolution, has become the huge, intricate, highly perfected switchboard of today.

Next to the telephone itself the switchboard is the most marvelous and most necessary feature of the communicating system. The work of the line builders has been the most spectacular, no doubt, but it would, after all, have counted for but little were it not allied with the inventive genius that devised the means of joining into one any two of the myriads of copper threads by which voices are carried far and near. The earliest attempt of inter-connec-

modified the switchboard through which the lines had been connected, so that it could be manipulated by an operator, and attached signal bells to all the circuits as a means of calling the operator's attention. There were twenty subscribers served by this pioneer switchboard.

In the same month that Mr. Doolittle put his switchboard into operation the first fully equipped commercial telephone exchange ever established for public or general service was opened in New Haven, Conn. It was a success from the start, and no sooner was the success of New Haven undertaken apparent than other cities began installing cen-



OLD TIME SWITCHBOARD.

mechanically worked exchanges. But the connection of telephone engineers is that "automatic" equipment will never, in cities and towns of any considerable size, supplant highly perfected mechanism operated by skilled, trained intelligence at the central station seems to be borne out by the United States Census Bureau's bulletin on manufactures issued last month, which says, after describing the different types of switchboards: "These manual boards constitute a very large proportion of the boards included in the present statistics. There were in 1902 no fewer than 10,842 manual boards in use, and while no detailed figures are given, it is the fact that nearly all of the central switchboards and private exchange boards made in the census year were also of manual variety." It has recently been stated on good authority that while there are 3,000,000 and more telephones connected with the Bell system, and 2,000,000 or so connected with "independent" lines, only about 100,000 of all these are "automatic" instruments. The rate at which facilities for ver-

ed, as reported in the census of 1905, had a value of \$15,803,098, as compared with \$10,512,412 for the census of 1900. These figures do not reveal all the facts, for during the period covered no greater activity was shown in any department of electrical application than in telephony.

"The value returned for the 4,283 central switchboards, was \$5,154,447, to which should be added the 3,917 private exchange boards of a value of \$564,795, making a total of \$5,719,242. To this should be added a large proportion of the value of \$2,071,303 reported for telephonic parts and supplies." The subscriber's apparatus used in connection with these exchange boards and smaller equipments was reported as having a value of \$8,003,735, of which \$6,483,418 was represented by complete sets of transmitters and receivers." And this is just the apparatus and equipment for central offices and subscribers' stations, taking no account of the expenditures upon the outside lines, overhead, underground, and submarine.

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