

opportunities opened by satellite communication, plans to build an earth station in Canada to test the practicality of this concept. The federal Department of Transport is conducting an intensive study designed to ascertain the facts and the implications of this new era of communications, which appear to be without limit.

The development of telecommunications in Canada is outlined in the following special article.

### THE DEVELOPMENT OF TELECOMMUNICATIONS IN CANADA\*

From the dawn of history until a mere 150 years ago, communications over any distance was no faster than physical transportation—about 10 miles an hour. The first significant change occurred about 1800 when visual telegraphs or semaphore stations appeared in North America and Europe. In public demonstrations, signals were transmitted at unbelievable speeds up to 170 miles a minute, although under normal conditions they were much slower.

Electric signal systems introduced a new era of speed and accuracy to most parts of the world and 1837 is perhaps the first important date. In that year, Cooke and Wheatstone invented their Needle Telegraph in England and Samuel Morse invented his famous code and telegraph instrument in the United States. Within 10 years, long-distance electric telegraphy became a reality and by 1866 there were 3,000 telegraph offices spread across North America.

About 1847 the insulation of copper conductors became practical and water, the last great barrier, could be crossed. In 1851, a telegraph cable was laid across the English Channel and men began to think of crossing the Atlantic. After a number of failures, this too was accomplished in 1866 and by 1874 telegraph messages could be sent almost anywhere in the world.

#### Pioneering Telephony in Canada

Meanwhile, scientists in many parts of the world had been trying to transmit speech electrically, usually by trying to adapt telegraphic techniques to the problem. However, the idea for the "membrane speaking telephone" came to Alexander Graham Bell in July 1874, when he was on vacation at his father's home in Brantford, Ontario. The idea was verified experimentally (although accidentally during some experiments on a harmonic telegraph) in Boston in 1876 and patented in 1877. In August of the latter year, two "long-distance" telephone calls were made, each over a distance of about four miles. The first was from Brantford to Mount Pleasant and the second from Brantford to the Bell Homestead. What is generally recognized as the world's first long-distance telephone call was made the following week; it was from Brantford to Paris, Ontario, via Toronto, a distance of 68 miles. These calls were made over the telegraph lines of the Dominion Telegraph Company.

In 1877, the first telephone equipment to be leased in the Commonwealth was used to connect the office of the Prime Minister with that of the Governor General in Ottawa and in the following year the first telephone exchange outside the United States was installed in Hamilton, Ontario. One of the original telephones, in working order and connected to a reproduction of the Hamilton exchange, is preserved in the Bell Telephone Company's "Panorama of Telephone Progress" in Montreal. Also in 1878, the manufacture of telephone equipment commenced in Brantford. Bell assigned the Canadian rights to his patents to his father and in 1880 The Bell Telephone Company of Canada was incorporated. By the end of the year, it had 13 exchanges serving 2,100 telephones and service between cities as far apart as Toronto and Hamilton, etc., was available to the public.

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