A Glossary

SWITCHING: Switching is essential to swift, cheap, mass telecommunications. It permits a telephone subscriber in Canada, for example, to place a call to any one of 300 million other subscribers around the world. In most cases the call is still routed manually (switched) through appropriate cities, but this method is being replaced by crossbar or electronic systems that do the job automatically and almost instantly. A call from Hamilton, Ontario, to Vancouver, British Columbia, for example, can be routed through Toronto or Montreal or Regina. The automatic equipment chooses the route most immediately available, making decisions in billionths of a second. The old systems were laid out mechanically; the new ones can be arranged and re-arranged by tapping out instructions on a teletypewriter. The ease and speed of modern switching make possible commercial data transfer operations across the continent.

DATA: Data means information. Businesses, industries, governments, schools and other enterprises exchange masses of information with extraordinary speed (as much as 50,000 bits of information a minute) through electronic systems. The heart of the system is a computer, or bank, where the information is stored, most often in digital codings. The codes use the familiar numbers but the data can be of many kinds: daily printouts of bank accounts; university registrations and schedules; the recorded heartbeats of a hospital patient; personnel records, payroll procedures, inventories, manufacturing orders.

TERMINALS: The end of the telecommunications line is the terminal. A telephone is a terminal and so are a TV set, a cathode ray tube, a teleprinter, a radio or any special receiving device.

CARRIERS: The data bank is linked to terminals by a carrier—a telephone, a cable, a microwave network.

TRANSMISSION SPEED: Most transmission speeds vary from less than the equivalent of 100 words a minute to 50,000 a minute or more. The super-high capacity digital pipe used in coaxial cable systems could transmit the entire Bible in a few seconds.

DIGITAL TRANSMISSION: In digital transmission a series of on-and-off pulses are relayed and regenerated at regular intervals along a network. Digital transmission is cheaper, more accurate and more efficient than analogue transmission, which changes the digital signal from the computer bank into a sound signal. The first Canada-wide commercial digital networks became available in 1972.

MICROWAVE SYSTEMS: Canada's microwave system stretches almost 4,000 miles, from coast to coast. Microwave towers, about thirty miles apart, are found atop buildings and mountains, and standing high in fields and forests. The system carries more than 1,200 telegraph data or telephone messages simultaneously on each channel. It also carries television and radio programs.

REPEATERS: At the base of the microwave towers are repeater stations. High frequency electromagnetic signals are received by the antenna at the top of the tower and carried to the base through a delicately machined hollow metal tube called a waveguide. At the bottom, the repeater amplifies and strengthens the signal and sends it back up the tube to be carried to the next tower.

SATELLITES: Canada's communications satellites act as a microwave system with the repeaters in the sky, transmitting messages between strategically located ground stations which are linked to the communication systems.

The switching system developed by Bell Northern Research for Northern Telecom.