

and satellite circuits through overseas switchboards operated by Bell Telephone in Montreal and the British Columbia Telephone Company in Vancouver. Many overseas calls are dialed direct by the overseas operators. This service is expanding rapidly with the ultimate goal of introducing world-wide customer dialing.

Numerous telephone services are provided for government, business and industry. Special conference circuits can be quickly arranged, enabling business men to discuss their affairs without moving from their desks. Radiotelephone installations link travellers with the regular telephone network, providing mobile service for such users as highway departments, trucking and construction firms, and fire, ambulance and police departments. A pocket radio signaller carried by a person temporarily leaving his telephone lets him know when there is a call for him.

Although improvement and extension of local and long-distance telephone services continue to absorb the bulk of invested money and labour, the increasing mechanization of government and business operations and the resultant need to transmit economically large volumes of information have led to the accelerated development of machine-to-machine communication. This development has been stimulated by the introduction of Data-Phone service which converts electrical impulses from business machines into tone signals acceptable to telephone circuits and again translates them at the receiving end.

Several optional services introduced recently provide great flexibility for machine-to-machine and voice-calling over long distances. Wide Area Telephone Service extends a customer's flat-rate calling to telephones within seven progressively wider zones, the largest of which includes the whole of Canada. Telpak, a private-line, intercity service, is available to organizations that transmit large volumes of information requiring an exceptionally broad band of frequencies with such equipment as computers and high-speed facsimile. It may also be used to carry simultaneously many smaller loads of information, such as voice calls and teletypewriter messages, which require relatively narrow frequency bands.

The scope and value of dial Teletypewriter Exchange Service (TWX) has been enhanced through interconnection of TWX subscribers in Canada with 60,000 TWX users in the United States and 128,000 customers in more than 100 overseas countries. This link makes it possible for TWX users to exchange typewritten information and certain low-speed data over the regular telephone network. Handwritten messages or sketches can be transmitted over private lines or over the regular telephone network through Data-Phone sets.

A Canadian telephone development for business use is Business Interphone. This provides versatile, hands-free intercommunication and regular telephone service in a single instrument. Centrex, designed for large private telephone systems, permits incoming calls to be dialed straight through to an extension without being relayed at the central switchboard. A special type of telephone has been introduced for hard-of-hearing users. Another new service is an automatic dialer which can retain up to 290 telephone numbers in its electronic memory. Canadian telephone laboratories are working on basic research in such fields as electronic circuitry, microminiaturization, solid state physics and ferrites. Applied research has been concentrated on meeting the needs of Canadian subscribers. Touch-Tone service, featuring telephones with pushbuttons in place of the rotary dial, will become available in a growing number of communities in 1966.

The telephone industry is moving toward Electronic Switching which will permit many kinds of new services. Among these are: *Abbreviated Dialing* allowing a caller to reach a list of frequently called numbers, either local or long-distance, by simply dialing two to four digits; *Add-on Service* permitting a subscriber to bring a third party in on an established call; *Conference Service* permitting callers to set up their own conference call; *Call Waiting Service* to inform the customer that a call is waiting and permit him to hold his present connection while answering the new call; and *Transfer Service*, either pre-set or variable, to permit subscribers to have incoming calls automatically transferred to any other designated telephone.