

James Swail

The ranges have been set at four, seven and 15 feet and the receiver unit will respond to targets within the selected range. If a reflected pulse is received within the above chosen ranges, a monostable circuit is fired. This in turn drives a solenoid-operated tactile stimulator, a rod which vibrates through a hole in the unit's handle and against the forefinger of the operator. The distance to a target can be estimated by altering the range control until the indication ceases. Target direction is determined by scanning.

The prototype device was field tested for signal interference levels at an Ottawa construction site. It was found that the ultrasonic energy generated by construction equipment such as air-brakes had no jamming effect on the unit's signal.

"We gave it a pretty stiff test, it performed beautifully so we are confident it can operate anywhere safely," Mr. Swail says.

The device has its limitations. The beam width (eight degrees) and the pulse rate of 10 per second means that scanning cannot proceed as swiftly as would be desired. Too fast a scan and the object is missed. Certain objects such as corners around doors give disproportionately high ultrasonic reflection, confusing the operator as to target locations. Consequently, Mr. Swail expects operators will have to undergo a short period of training if a high degree of effectiveness is desired.

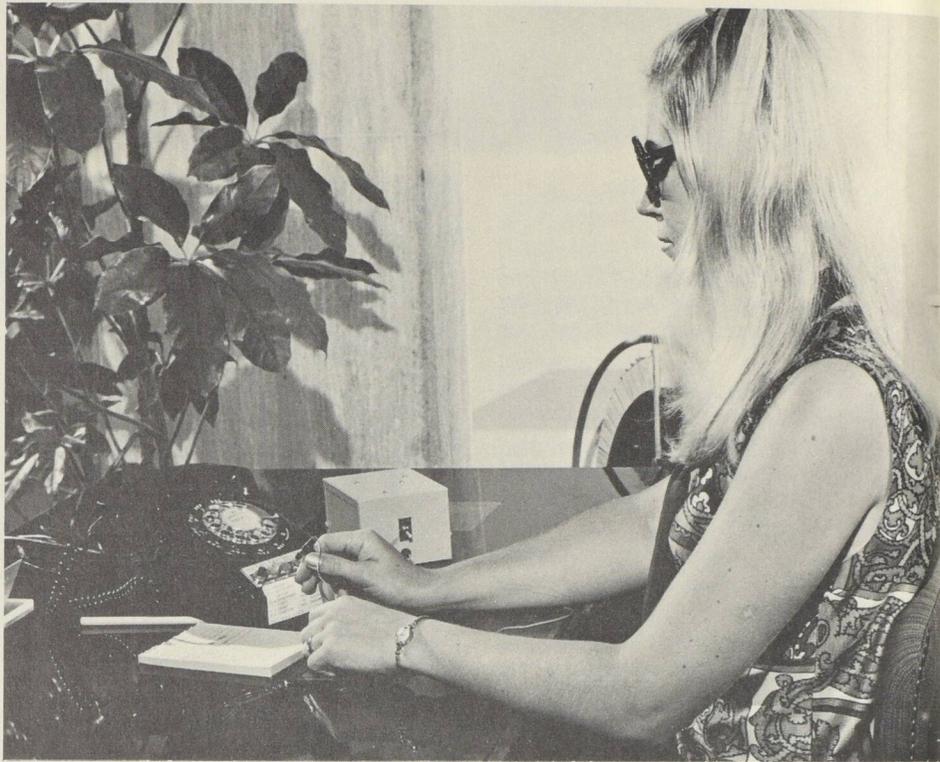
Other Swail-engineered instruments include:

—A photoelectric sensor for detecting light sources. One pencil-sized version allows blind personnel to operate telephone switchboards. When a line comes into use a light goes on and the operator can locate the line by scanning with the sensor. Another use includes detecting the presence of print on a page.

—A manually operated reader for IBM punched cards assists blind persons working as computer operators and in related fields. A carriage is moved across the card and pins are raised when a hole is encountered. Brailled markings indicate the location of the hole.

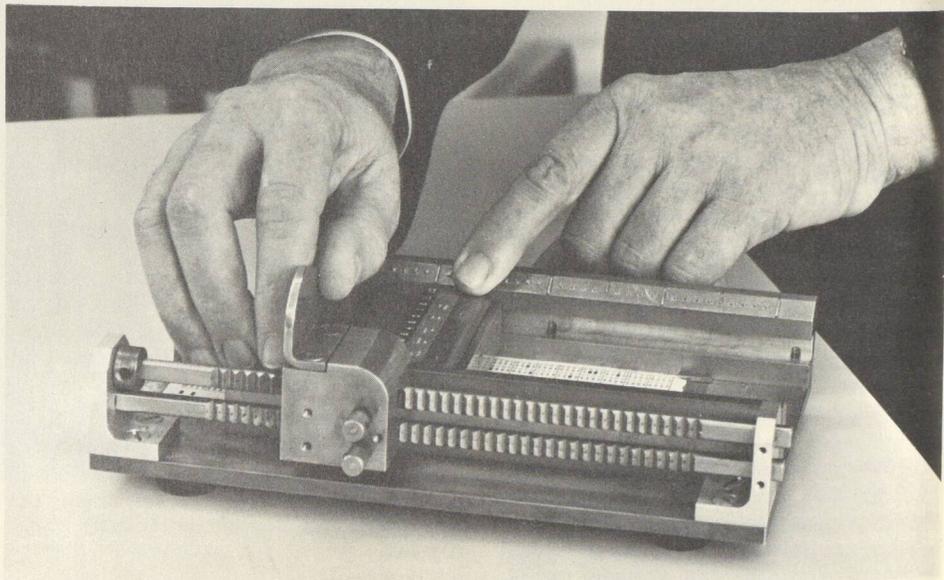
—Various electronic thermometers equipped with tactile and auditory readouts are used by blind technicians working in commercial photographic darkrooms.

—Several instruments were designed to assist the Canadian National Institute for the Blind in its vocational training program.



Light detector enables blind switchboard operator to locate flashing light indicating an incoming telephone call.

Grâce à un détecteur de lumière, les standardistes aveugles peuvent "voir" les clignotements indiquant les appels téléphoniques.



Blind programmer can scan a punched card in a matter of seconds with NRC's special reader.

Le programmeur aveugle peut déchiffrer une carte perforée en quelques secondes grâce au lecteur spécial du CNRC.

—The Swail Dot Inverter for production of Braille drawings by hand. In producing a Braille drawing, a pointed instrument is used to produce characters by punching holes through paper. The raised dots forming the characters come out on the underside of the paper meaning that Braille must be produced in reverse. The Swail inverter raises the dots on the upper

side, eliminating the reversal process.

—An auditory beacon which emits a beep every 10 seconds, enabling a blind person to place it next to an object he wishes to leave and then later locate.

—A four-section collapsible white cane for the blind. Rigid in use, four feet in length, it can be carried in a blind person's pocket.