

## TECHNOLOGY

# Blind Read by Machine

Blind people may be freed from the confines of braille by a machine which will make it possible to read any printed or hand-written page—By Patricia McBroom

► IN SIZE, it is no bigger than a small pistol. In operation, it will read anything from Shakespeare to the label on a can of pork and beans.

It is a new reading machine for the blind. Called a Visotactor by its creators, Hans A. Mauch and Glendon C. Smith of Mauch Laboratories, Inc. in Dayton, Ohio, the reading device is still in the experimental stage. But its essential features have been developed, and if the device reaches commercial production some two or three years from now, it promises to free blind people from the confines of braille.

The Mauch Visotactor is a basic instrument consisting of photocells and finger vibrators. By slipping fingers of the right hand into four slots and moving the Visotactor across a printed or written page, the blind receive vibrations that signify letters.

More advanced than this is the Recognition Machine, a combination Visotactor, memory and magnetic tape that will read letters out loud in a technique called "spelled speech." The Recognition Machine probably will not be ready for five years, reported Mr. Mauch at a two-day session on reading machines held in Washington, D.C., by the Veterans Administration.

The new reading instruments would not have been possible without the development of miniature transistors, Mr. Mauch told SCIENCE SERVICE. Twenty-six tiny transistors

lodged in the handle of the Visotactor translate pictures from photocells into electro-mechanical vibration.

As a blind person moves the instrument across a line of type, its optical system projects letters onto an array of photocells which then register the alternating light and dark spaces. Small type as in newspapers or magazines is magnified five times, so that the cells actually see letters one-half inch high.

When the photocells encounter dark lines, finger vibrators begin to work. Vibrations will continue as long as one or more of the cells see black. But, and this is the key, the amount of vibration and the time it occurs combine to produce a tactile impression of the letter.

It is as if the blind person were dragging his fingers across a relief map, with dark spaces equivalent to mountains and light spaces to valleys.

No one is sure yet, but Mr. Mauch and other scientists working with tactile vibration suspect that the optimum reading speed is about 30 words per minute, one-seventh of the average reading speed of a sighted person.

But compensation lies in the fact that the Visotactor will read any symbol not more than one-half inch in height. This means numbers, punctuation, longhand, French and Chinese can all be read by the blind

individual—if he knows what the "lines" playing on his fingers represent.

Ultimately Mauch Laboratories hope to perfect the Recognition (speaking) Machine, using the Visotactor as an auxiliary tool. Reading rates could then be raised to 80 words per minute, average for a good braille reader, said Mr. Mauch.

Besides the Visotactor, the speaking machine uses a second device the size and shape of a portable phonograph. It contains a memory, plus magnetic tape fragments, on which are recorded letters of the alphabet, and a few other sounds.

By absorbing information from the photocells, the machine's memory can call up the tape fragment containing the letter just seen. The result is spelled speech.

English-speaking people have considerable experience in spelling their language, said Mr. Mauch. The sound of a word and its spelling are often so unrelated that an education in spelling is imperative. Not so for a German, for example, who spends virtually no time spelling his language. In German, letter groupings always have the same sound wherever they are found in a word.

Because of these spelling peculiarities, the switch from hearing words to hearing words spelled is not a major one in English, said Mr. Mauch. An individual can understand spelled speech at about 30 words per minute without any training.

When and if the Visotactor and Recognition Machine are marketed, each will perform a special function for the blind. With its handy size and flexibility, the Visotactor can be carried anywhere in a coat pocket.

The faster-reading Recognition Machine, more expensive and cumbersome, would probably be kept at home for books and newspapers.

Development of the two machines is being supported by the Prosthetic and Sensory Aids Service of the Veterans Administration.

• Science News Letter, 89:99 February 12, 1966

## APPOINTMENTS

## L. D. Young Appointed New Advertising Head

► LOUIS D. YOUNG has been appointed advertising director of SCIENCE NEWS LETTER.

This announcement was made by Dr. Watson Davis, editor and director of SCIENCE SERVICE, Inc., publishers of SCIENCE NEWS LETTER. Mr. Young, associated with Scripps-Howard for 30 years, was formerly the advertising director of the Indianapolis Times.

Dr. Davis also said Scripps-Howard Newspapers, General Advertising Department, with offices in New York, Chicago, Detroit, Philadelphia, Cincinnati, Dallas, Los Angeles and San Francisco, would henceforth be the advertising representatives for SCIENCE NEWS LETTER.

Mr. Young has offices at SCIENCE SERVICE, 1719 N St., N.W., Washington, D.C., and Scripps-Howard Newspapers, 200 Park Ave., New York, and resides at 120 Bow Lane, Indianapolis, Ind.

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Mauch Laboratories, Inc.

**ELECTRONIC READER**—The Visotactor, a compact instrument for the blind, translates written images into tactile vibrations received through the fingers. The device can be carried conveniently in a pocket.