

With new optical device

Some language ability found in the right brain

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The right hemisphere of the brain of an adult—once thought to be severely lacking in language ability—has the vocabulary of a 14-year-old and can read simple sentences.

These are the findings of Caltech scientists based on their experiments with a new optical device that allows them to communicate visually with either hemisphere of the brain.

Its inventor is Eran Zaidel, a Caltech research fellow who works with a pioneer in split-brain research, Roger W. Sperry, Hixon Professor of Psychobiology.

The discoveries support an emerging view that the two halves of the brain are not as specialized as researchers had once thought. And the current experiments raise the hope that patients whose left hemispheres have been damaged by a stroke or other disability will be able to regain considerable language ability.

In the past, scientists have learned most of what they know about the functions of the two hemispheres by studying those people whose brains have been split because the nerves that join the two halves had been severed.

One of the difficulties in this research is that part of the image perceived by each eye is transmitted to both hemispheres of the brain. Formerly, in order to send a visual signal to only one hemisphere, research subjects would have to stare at a dot on a screen while a word or picture was flashed beside it for a tenth of a second. The image they perceived would fall on only one side of their retina, and thus would be transmitted to only one side of the brain.

This system was flawed and cumbersome because people's eyes move almost constantly. The new optical device used at Caltech passes images

through a contact lens and so makes research conclusions more reliable.

The experiments were conducted in Church Laboratory, utilizing two individuals whose brain hemispheres have been severed and who have been subjects in many of Sperry's split-brain experiments. A Caltech graduate student acted as a control.

Zaidel explained that the contact lens is attached to a small tube through which the right eye looks, and also to a patch that blocks any light from entering the left half of the right eye.

The left eye is completely blocked by an ordinary patch. No matter which way the eye looks, it can't see images with the part of the retina that is connected to the left hemisphere of the brain. Only the right hemisphere can register sight.

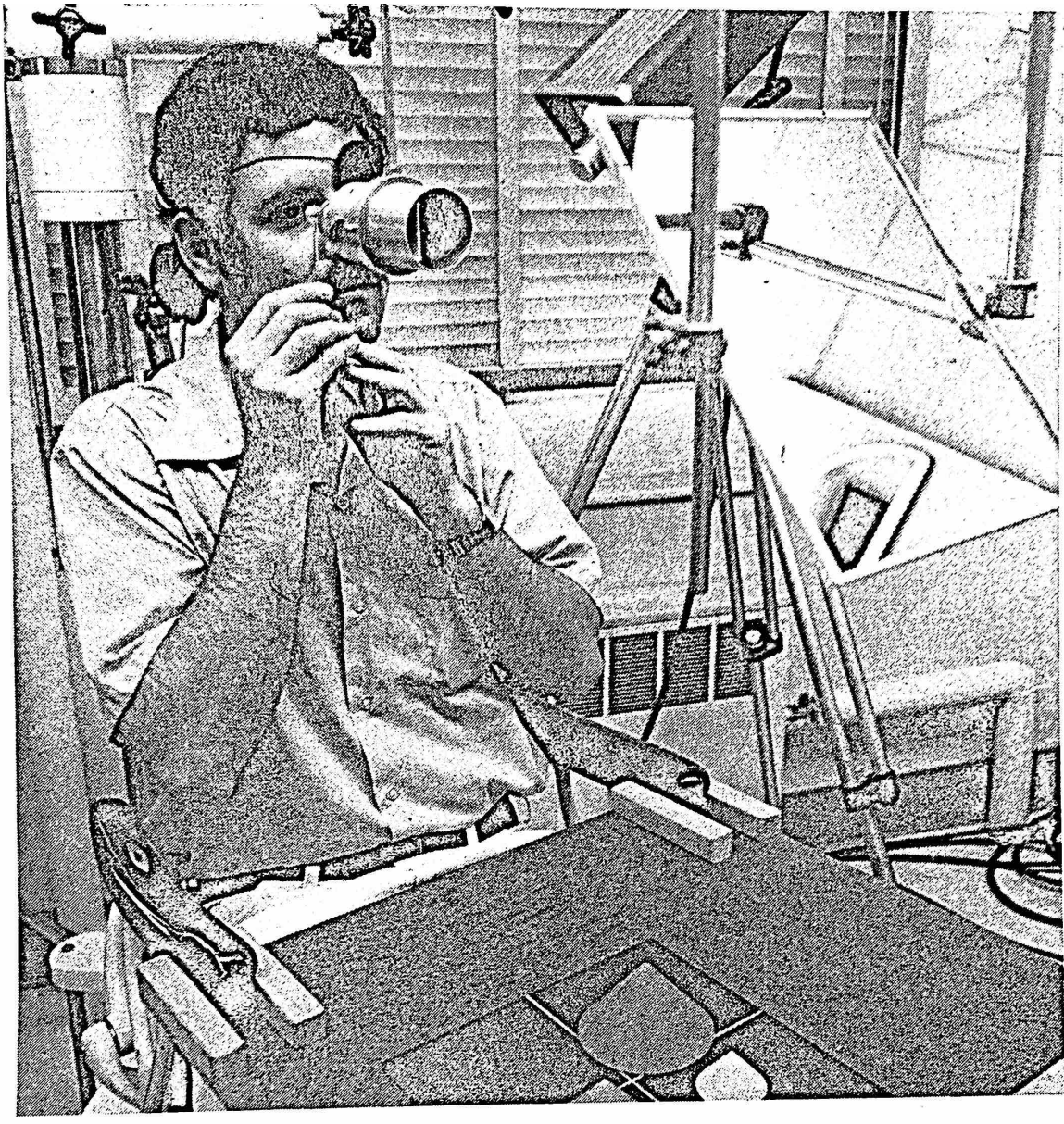
"Our conclusions indicate that the right hemisphere can support much more language than we had believed it could, but it has to be trained in special ways that fit its own mode of processing information," Zaidel said.

Becklin given Astronomical Society honor

Eric E. Becklin, research associate in physics at Caltech, is recipient of the second Newton Lacy Pierce Award presented by the American Astronomical Society.

The award consists of \$1,000. It is given to young astronomers under the age of 35 to encourage their interest in instrumentation or observational work. Becklin received the honor for his research in infrared astronomy.

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Eran Zaidel demonstrates use of the Z lens, a new optical system that makes it possible to show pictures or printed words to only one hemisphere of the brain at a time. With the new lens, researchers can use visual tests for precise studies of the capabilities of the mute right hemisphere of the brain.