

## BIOCHEMISTRY

# Memory Transfer Unlikely

Animal experiments testing the possibility of biological memory transfer through RNA molecules indicate that this phenomenon is limited, if it exists at all—By Patricia McBroom

► **STRONG DOUBT** that memory can be physically transferred from one animal to another was reported in studies by five California researchers.

Their aim was to reproduce the results of earlier, widely-publicized experiments claiming to have transferred learning between two groups of animals—rats in one case, rats and hamsters in the other.

The technique used in all cases was to grind the brains of animals trained by some stimulus such as food, extract from them a chemical called ribonucleic acid (RNA) and inject this into untrained animals. The theory is that RNA molecules carry memories in coded form and that these molecules can be transplanted from one animal to another, thereby transferring memory and learning.

Drs. Marvin Luttges, Terry Johnson, Clayton Buck, John Holland and James McGaugh of the department of psychology and the department of molecular and cell biology of the University of California at Irvine approached the transfer task from several angles.

They trained animals on many levels

of complexity, teaching both simple tasks and difficult ones. They used electric shock, water and light as conditioners in as many different tests.

In addition they tested the RNA-injected animals for learning transfer at various times during the experiment—from eight to 40 hours after injection.

No evidence of memory transfer was found in any of the experiments.

To test the possibility that foreign RNA can even cross the blood-brain barrier of another animal, they ran a final test with injections directly into the brain. In previous experiments, others had administered the "trained" RNA through other parts of the body.

Again there was no evidence of memory transfer. In other words the injected animals did not perform better at the task than animals not injected with RNA or those given RNA from untrained animals.

The biologists concluded in *Science*, 151: 834, 1966, that "such negative findings suggest that the reported 'transfer' effect, if it exists, is either a very limited phenomenon or a very difficult one to reproduce."

• *Science News Letter*, 89:151 March 5, 1966

## PSYCHOLOGY

# Disturbed Mute Children Can Learn to Speak

► **MUTE SCHIZOPHRENIC** children have been taught to speak by four California psychologists.

One of the greatest obstacles to treating children suffering from schizophrenia is that many of them are mute. If the muteness is a result of the schizophrenic's inability to imitate adults, he can be trained to speak, reported psychologists O. Ivar Lovaas, John P. Berberich, Bernard F. Perloff and Benson Schaeffer of the University of California at Los Angeles.

Two six-year-old boys, so disturbed the trainers had to hold their legs to keep them still, were used in the study.

Training continued for 26 days—six days a week, seven hours a day, with a 15 minute break each hour.

At first the psychologists attempted to reward the boys with approval whenever they imitated adult sounds. But the boys were so insensitive to this type of reward, the trainers had to offer food instead.

Lessons were structured in four steps. In the beginning the child was rewarded whenever he made a sound and when he fixed his eyes on the trainer's mouth.

Next the trainer began speaking, saying one word again and again. If the child made any sound within six seconds of the adult's word, he was rewarded.

In the third step, the trainer began requiring close imitation of his words before giving the food. Step four included new sounds, phrases and words.

At the end of 26 days, the two boys had learned to imitate new words easily and quickly, the psychologists reported in *Science*, 151:705, 1966. Education was then begun on using the language appropriately.

Three other schizophrenic children are now enrolled in the program at UCLA's Neuropsychiatric Institute. One of the children was as good at imitation in three days as the first two boys were in 26.

• *Science News Letter*, 89:151 March 5, 1966

## GENERAL SCIENCE

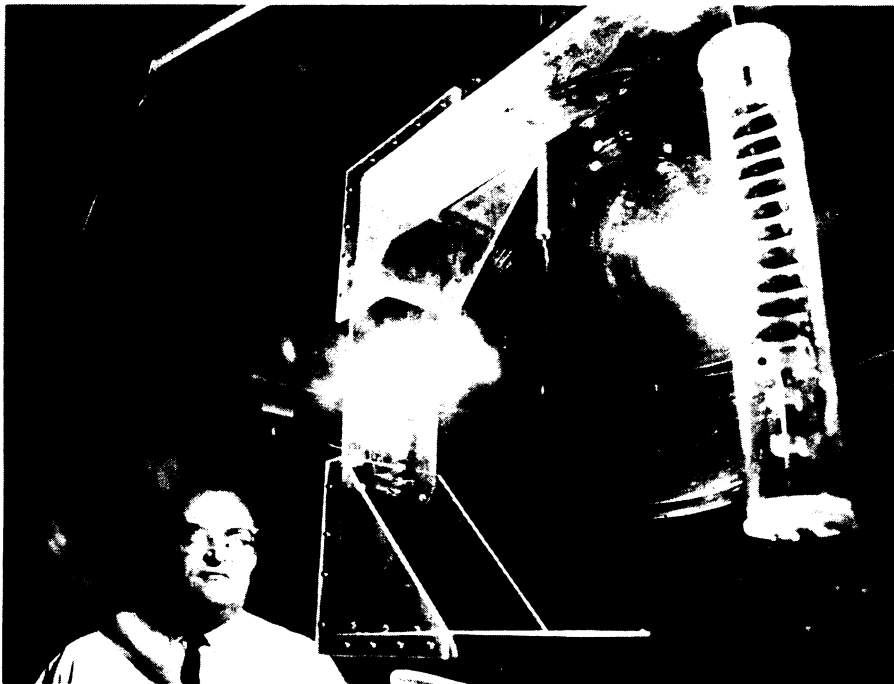
# Universities Join To Expand Research

► **MULTIVERSITY** is the new word these days. It is a composite group of many universities and institutions joined together to expand science and engineering research.

Seven educational and research institutions in North Texas have chartered a cooperative program for joint use of facilities such as computers and libraries to educate more engineers and scientists.

TAGER, The Association for Graduate Education and Research of North Texas, was chartered in August 1965, by Southern Methodist University, Texas Christian University, and the Graduate Research Center of the Southwest. Other participating institutions are Austin College, Bishop College, Texas Wesleyan College and the University of Dallas.

• *Science News Letter*, 89:151 March 5, 1966



Lockheed-California Company

**SUPERSONIC ANTENNA**—An advanced antenna being developed for the Lockheed 2000 supersonic transport undergoing high-altitude tests in a transparent vacuum chamber at the Lockheed Rye Canyon Research Laboratory near Saugus, Calif., is observed by F. R. Zboril. Lockheed airliners of the 1970s will have stand-by antenna systems to replace instantly any malfunctioning communications sensors.