

## PSYCHOLOGY

# Memory Transferred?

**RNA extracted from conditioned flatworms was injected into unconditioned worms which responded as if they had been conditioned, indicating memory transfer took place.**

► A NEW INSTANCE of the chemical transfer of memory between animals was reported in what is rapidly becoming one of the most controversial scientific issues of the day.

Portions of "trained" animals, flatworms in this case, were made a part of "un-trained" animals of the same kind by injection. The material injected was the genetic chemical, RNA or ribonucleic acid, extracted from the educated worms.

The new planaria experiment at the University of California, Los Angeles, is more conclusive than any transfer experiment to date, Dr. Allan L. Jacobson, psychology professor, told SCIENCE SERVICE.

The UCLA psychologist has been associated with most of the memory transfer research. He worked at the University of Michigan with Dr. James V. McConnell, the famous "flatworm man," whose tests with planaria Dr. Jacobson claims to have substantiated.

He also participated on the UCLA team that recently reported a transfer of learning between hamsters and rats.

For his most recent experiment, the psychologist conditioned the worms with electric shock and light. Electric shock, which made the worms contract, was followed immediately by a flash of light. Eventually the planaria learned to contract in response to the light alone.

From the trained worms, Dr. Jacobson extracted RNA. The RNA was injected into unconditioned worms which then responded to the light with unusual speed.

Many biologists reject the idea that RNA carries memories. They believe the chemical acts in the brain as it does elsewhere in the body—that is, it facilitates protein formation. In turn, protein synthesis plays an important part in the growth and regeneration of cells.

Dr. Jacobson himself does not insist that RNA is the memory container. His experiments can be interpreted as a "transfer of response tendencies," he said. This means RNA is somehow modified itself as it acts to form new memories, a concept still considered doubtful by many scientists.

To be as certain as possible, Dr. Jacobson used two controls on the experiment besides conducting it blind. Three groups of planaria were used, with 25 worms in each group. One group was untrained; the second was given both shock and light but randomly, so they did not learn to respond to light alone. The third group was conditioned. RNA was extracted from all three groups and injected into separate animals.

Worms receiving RNA "1" responded to the light on an average of 1.6 times out of 25 tries. Those given RNA "2" responded 1.8 times. But worms with "conditioned" RNA contracted at the light flash 8.2 times.

The odds of such a difference occurring by chance are one in a million, he said.

As he conducted the experiment, the psychologist worked blind—he did not know which group was which. Graduate students Clifford Fried and Shelton Horowitz worked as assistants. The experiment will be described in the British scientific journal Nature.

• Science News Letter, 89:39 January 15, 1966

## PSYCHIATRY

## Schizophrenics Helped To Return to Own Homes

► SUCCESS in rehabilitating schizophrenic patients so that they can earn their own living was announced in London.

This is believed to be the first report in Britain on the outcome of purely family or environmental therapy for schizophrenia, the most common form of mental disease.

Drs. A. Esterson and R. D. Laing of the Tavistock Institute of Human Relations, London, and Dr. D. G. Cooper of Shenley Hospital, Shenley, Herts, reported the study in the British Medical Journal, Dec. 18, 1965.

Members of the group were not of low

intelligence, and none had been subjected to brain surgery of any kind. None had any organic problem such as epilepsy or brain injury that could have affected the disturbed state.

None had received more than 50 electric shocks in the year before the present treatment began, or 150 electric shocks in all.

As for the individual's family, at least one parent was alive and available for interview. Patients, however, could be sent to their own "diggings" alone.

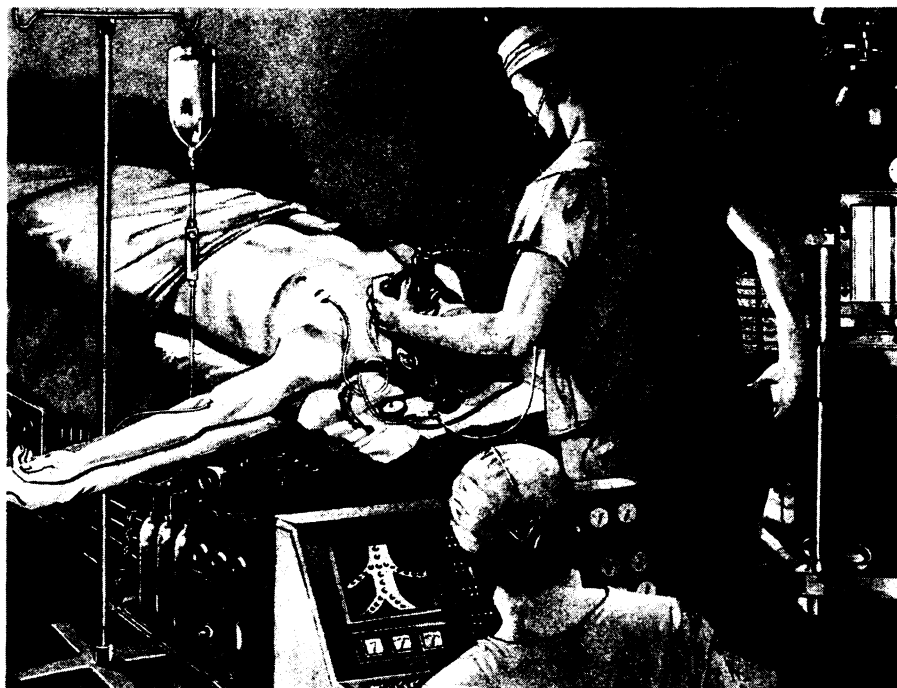
When members of the group were selected, the researchers organized wards so that relationships would be congenial. Each patient was assured of a relationship with at least one other person significant to him. Social therapists were trained, some of them from the patient group, so that a consistent relationship of trust would be possible.

Each one in the group could be sent home within a year, but with the understanding that individuals and families could consult with the researchers in the event of any crisis.

"For socioeconomic reasons," the investigators say, "for a long time to come, patients will have to go back to their families, who will have to put up with one another. We try to help the patient and his family to be less disturbing to each other by intensive work with the whole family, including the patient during his stay in the hospital."

The present research emphasizes therapy that focuses not on the individual patient but on the group or system of communications of which he is part, whether within his family or within the mental hospital.

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Aerojet General Corporation

**FOR TRAINING ANESTHESIOLOGISTS—The "patient" on the operating table is a computer-controlled anesthesiology simulator developed by the University of Southern California School of Medicine, Los Angeles, and Aerojet General Corporation. When completed, it will breathe, have a heartbeat and pulse, cough, twitch its shoulder muscles and respond to drugs.**