

PSYCHOLOGY

Radio Control of Minds

Laboratory experiments with monkeys indicate that push-button control of the minds of men by other men may some day be a reality.

► THE DAY when men will control the minds of other men merely by pushing a button is forecast by experiments in a monkey laboratory.

In an air-conditioned cage at the Yale University School of Medicine, four monkeys played a scene involving mental manipulation. This is what happened:

Elsa was always being picked on by Ali, the boss of the small monkey colony. She located a lever next to the food-box. The lever, when pressed, set off a tone and sent electric stimulation by radio waves to a specific area of Ali's brain. Elsa learned that she could control her boss's aggression by pressing the lever.

Elsa, an abused monkey, was smart enough to take advantage of her experimental opportunity. She stimulated Ali's brain occasionally on the first day of the experiment, but she caught on quickly and by the fourth day had pressed the lever 25 times. The other monkeys never stimulated the boss more than seven times.

Significantly, Dr. Jose M. R. Delgado reported, Elsa looked at Ali as she pressed the lever.

"It is unusual," he said, "for lower ranking monkeys to look straight at the boss of the colony because this evokes retaliation."

Analysis of photographs, taken every two seconds for eight hours daily, indicated that

Elsa did not press the lever haphazardly, but often radiostimulated Ali after he had assumed a threatening attitude.

It is not a coincidence that Elsa, to whom Ali was most hostile, pressed the lever a great deal more than any of the other monkeys. She did it, it is implied, to get back at the boss. "Each member of the colony is an interpreter of the reactions of the stimulated animal," Dr. Delgado explained. If stimulating Ali's brain is somehow rewarding to Elsa, she is likely to continue to do it. Thus "social conditioning," Dr. Delgado said, may help in understanding this experiment.

Reporting his research in *Science*, 144:161, 1963, Dr. Delgado said that the tone accompanying the stimulation could hold the same power over Ali. For a short time after radiostimulation was discontinued, merely hearing the tone made Ali hold back his aggressive behavior.

Research by other investigators on humans has shown that self-stimulation of certain areas of the brain can be pleasant and that a human can learn to press a lever to obtain such satisfaction.

The findings on monkeys, Dr. Delgado said, raise "obvious questions" about social and personal factors and "other problems related to human behavior."

• *Science News Letter*, 84:50 July 27, 1963

MEDICINE

Leukemia Cause Sought In Identical Twins

► ALL CASES of leukemia in twins should be reported, three pediatricians advised in the *New England Journal of Medicine*, 268: 1151, 1963.

The researchers reported on identical twin boys, three and a half years old, who both had leukemia, which is cancer of the blood-forming organs. They said occurrence of this so-far incurable disease in identical twins could not be explained by chance.

Since X-ray studies are often performed to confirm twin pregnancies, it has been suggested that radiation might contribute to the development of leukemia in twins, but studies are contradictory. No cause of leukemia has yet been definitely found, although environmental and infectious factors have been suggested, as well as possible genetic influences.

Dr. Howard A. Pearson of the University of Florida, Gainesville; Lt. Cmdr. Frederick W. Grello, U.S. Naval Hospital, St. Albans, N. Y., and Capt. Thomas E. Cone of the U.S. Naval Hospital, Bethesda, Md., where the twins were hospitalized, reported the study.

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PSYCHOLOGY

Help "Forgotten People" Of Middle Age

► HELP is needed for those in the "psychological no-man's land of middle age."

Dr. Milton E. Hahn, professor of psychology at the University of California, Los Angeles, is conducting a psychological crusade for these "forgotten people"—normal, mature, successful individuals in the 30 to 60 age bracket who should have certain psychological services not yet adequately provided.

These people are not emotionally ill, he points out. If left to their own devices, they would probably solve most of their problems eventually. However, especially trained psychologists could save them precious time.

Among the categories of this neglected minority are women who have completed the career of wife and mother; men and women who resign from the military in the 40's and early 50's, and individuals who successfully play career roles but are caught in a professional trap.

There is a crucial period in the lives of most of this group, one in which professional psychological help would be of value. This is that time, usually between the 40th and 60th birthdays, when the personal ladder ends at the ceiling. It is a time for stock-taking, and doubts may creep in. Has the last chance to change or progress gone by?

For such individuals, Dr. Hahn recommends a technique which he calls "psychoevaluation." He defines it as a client-controlled process of structured self-study.

The UCLA psychologist is the author of a new book, "Psychoevaluation: Adaptation-Distribution Adjustment" (McGraw-Hill).

• *Science News Letter*, 84:50 July 27, 1963

MEDICINE

Thymus, Leukemia Linked

► THE THYMUS, which has become one of the hottest of current medical questions, is now seen as a possible link to acute leukemia in a four-year-old boy.

Dr. Robert A. Good of the University of Minnesota Medical School said in New York that the link of thymus abnormality to human leukemia is largely hypothetical, but that the linkage with mouse leukemia is well known.

Dr. Good has found that the thymus is most likely the gland that produces and trains cells that spread through the body carrying on antibody production.

He told the Second International Conference on Congenital Malformations, sponsored by the National Foundation, that up to 1960, the "only reproducible results of thousands of experiments on thymus removal and administration of thymus extracts were those involving the mouse leukemias."

Dr. Albert Szent-Gyorgyi, the 1937 Nobelist in Medicine, was among those who in the past year did important research on the thymus, Dr. Good said. The Hungarian-

born biochemist and his associates have indicated that they isolated three factors from calf thymus.

"One of these enhances the growth of malignant tumors in mice," Dr. Good explained, "another interferes with growth of tumors and the third results in reversible sterility in both male and female mice." These and other factors may be relevant to the immunologic rule of the thymus.

Dr. Good said that some of his unpublished studies have been performed with the hagfish, one of the lowest surviving vertebrate forms.

The possibility of antibody production in these animals was studied intensively, and other studies in the lower fishes have suggested the evolutionary development of the thymus in adaptive immunity in vertebrates.

Thymic abnormality has been associated with myasthenia gravis and a range of clinical diseases, some of which involve immunologic deficiency or such immunologic abnormalities as autoantibodies.

• *Science News Letter*, 84:50 July 27, 1963