

PSYCHOLOGY

Damage to Frontal Lobes Fundamentally Alters Mind

Abstract Thinking Is Impaired Even When Damage Is To Only One Lobe; Class System of Rats Also Reported

CHALLENGING the idea that a head wound injuring the frontal lobes of the brain could leave the victim unimpaired in intelligence, Dr. Ward C. Halstead, of the Otho S. A. Sprague Institute of the University of Chicago, told psychologists that such an injury would cause "fundamental alteration" to the personality. Dr. Halstead's report was made to the American Psychological Association meeting at Stanford University.

Scientists have recently claimed that surgical removal of even the whole frontal lobe area left patients with normal or improved I.Q. Such conclusions, Dr. Halstead declared are "based on inadequate methods" or standards.

One type of abstract thinking, involving the sorting of objects into categories on an abstract basis, is "relatively unavailable," Dr. Halstead said, for the person who suffers a frontal lobe injury regardless of which frontal lobe is damaged.

Dr. Halstead's conclusions are based on a four-year study at the University of Chicago Clinics. It is only recently that such experimental studies of brain injury effects have been undertaken, he pointed out, although analyses were made of World War gunshot brain injury cases.

Scores on an object-sorting and memory test obtained by 10 persons with frontal lobe lesions were compared by Dr. Halstead with the scores of 12 persons with lesions in the back part of the brain and with 11 normal individuals.

Those with the frontal lobe injuries found only a few categories into which to sort the objects, found it difficult to shift to alternative ways of grouping, had more difficulty in recalling the grouped objects than did either normal persons or those with other types of brain lesions.

Science News Letter, September 23, 1939

Six Artistic Factors

WHETHER your child will have artistic talent depends upon six factors, only three of which are strictly hereditary, Dr. Norman C. Meier of the University of Iowa told the meeting.

Manual skill or craftsman ability, volitional perseveration, and aesthetic intelligence are the three hereditary factors that set the limits to artistic ability. The other three—perceptual facility, creative imagination, and aesthetic judgment—while primarily acquired are to some extent conditioned in their development by special inheritance which sets the frame for learning.

Science News Letter, September 23, 1939

Braille for Word Blind

BRAILLE, the language of the blind, can open the door of the world of printed literature to those who are blind only in their inability to "see" words, Dr. Grace M. Fernald of the University of California revealed.

In learning Braille, she found, the word blind slightly surpassed the "control group." In all cases, word blind subjects could then learn to read Braille with the use of only the eyes even when they were still unable to read printed words.

Emotional instability is characteristic of all word blind individuals studied, Dr. Fernald said.

Science News Letter, September 23, 1939

Escape From Fear Teaches

RATS scurrying away on hearing a warning signal, as humans have learned to run to shelter at an air raid siren, demonstrated to psychologists at the meeting the potency of relief from anxiety as a means for "stamping in" the learning of certain lessons.

Psychologists have recognized how powerful fear is for inhibiting or restraining the frightened one. Escape from fear, Dr. O. H. Mowrer, of Yale's Institute of Human Relations, told the psychologists, is also powerful in determining the course of new behavior.

When the rats in Dr. Mowrer's experiments were given a warning of impending punishment and allowed to escape from its threat, they learned better than with the aid of the punishment itself.

"Human beings can take either of two

courses of action in a danger situation," said Dr. Mowrer in discussing the human implications of his research with a representative of Science Service. "They can act in such a manner as to reduce the danger, or they can act in such a way as to reduce only their perception of the danger, that is their fear.

"The first type of behavior is rational, the second type is irrational."

Science News Letter, September 23, 1939

Rats Develop Caste System

RATS enacting the drama of a developing class system were the stars of a motion picture film also presented to the meeting by Dr. Mowrer.

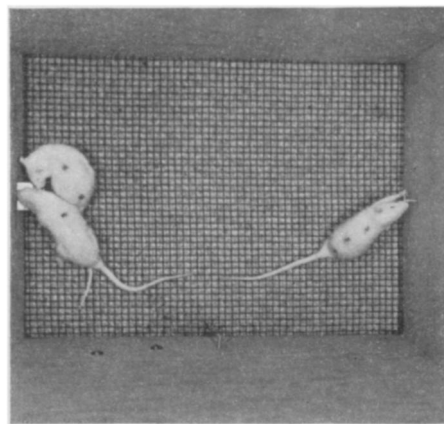
The first scene of the film showed three litter-mate rats taught by Dr. Mowrer to "earn a living" by pushing on a bar which automatically delivered a small pellet of food in a nearby food box.

Next the pay of the worker was reduced by moving the bar to the other end of the cage. Or rather, more work had to be done for the same pay.

When all three rats were placed in the cage together a "social problem" developed, for the animal doing the most work had the smallest chance of securing what he "produced." This discouraged all the animals. Total production was low.

Ravenously hungry on the third day, the animals began angrily to attack the bar, and this led to the solution of the problem. The solution was found when one animal became willing to produce so much that the others were satiated and he was fed, too.

Scores: animal Number 1, pressed bar



"CASTE" AMONG RATS

The rat at the right has become one of a "working class" and repeatedly works the bar to feed the "social parasites" who are eating the rewards of his labor at the feed box on the left.

3 times; Number 2, 0 times; Number 3, 1156 times.

Rat number 3 continued as the worker; the others became completely parasitic.

Science News Letter, September 23, 1939

Birth Injuries Hurt Mind

MENTAL disease in youth and early adult life in many cases is apparently due to brain injuries at birth, Dr. Barney Katz, of the University of Southern California, told the meeting.

Comparing the family histories of 100 mental patients suffering with dementia praecox (schizophrenia) and progressive mental deterioration with those of 100 persons in good mental and physical health, Dr. Katz found that difficulties of birth were much more common among the mentally diseased.

Science News Letter, September 23, 1939

Nervous Breakdown Causes

NOISE and imprisonment, as well as the dilemma of trying to make a correct decision when there is no right way, may be contributing causes to nervous breakdowns in rats. And what is true for rats may be true for men.

Dr. Norman R. F. Maier, University of Michigan psychologist, last winter gained recognition and \$1,000 prize for causing rats to have nervous breakdowns. An animal was forced to take some action when there was no right way to do it. The driving force used in his experiments with rats was a jet of air.

Now Dr. Maier finds the noise of the air jet is a contributing factor in the breakdown. When the rats were placed on a small table and keys were jingled, the noise produced violent activity in 85%; the sound of an air jet caused it in 64%. In some cases convulsions accompanied the extreme activity.

Confinement is also a factor. When the rats were placed during the experiment in a closed wooden box, they were affected more than in a transparent box which, Dr. Maier said, is psychologically less confining.

But Dr. Maier sticks to his original conclusion that only the theory that breakdown occurs when a conflict is faced from which there is no escape but in which it is necessary to take action, is broad enough to cover all the cases.

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Insects prey on other insects for food only, says an entomologist; there is no enmity between different species.



RARE MINERAL "SEES DOUBLE"

Seeing double, usually associated with holiday libations, is possible any time if you have a crystal of Iceland Spar. This photograph shows what it will do to a page of the SCIENCE NEWS LETTER (enlarged). The mineral is widely used in microscopic work.

MEDICINE

Brain Operations Restore Control of Muscles

BRAIN surgery now promises to conquer two distressing kinds of ailments that have hitherto largely defied medical science.

The conditions are: 1. The tremors or palsy of fingers and toes which occurs both in paralysis agitans and as a sequel, sometimes a very late sequel of encephalitis; 2. The uncontrollability of muscles seen in the ailment called athetosis, which frequently is due to injury of the brain at birth.

A brain operation so successful that it enabled five patients suffering from this last condition to seek employment was reported by Dr. Tracy J. Putnam, of Boston City Hospital and Harvard Medical School, at the meeting of the New Hampshire Medical Society in Boston. Dr. Putnam made an incision in the spinal cord severing one of the motor tracts in these five patients and in 33 other patients suffering from the same distressing condition of lack of muscle control. There has been a mortality of less than 4% in recent cases, and the

survivors are well pleased with the result of the operation, even though for some of them the advance consisted of no more than being able to lie quietly in bed or sit up in a chair which was impossible before the operation. The improvement, even if not complete, is permanent.

Treatment of this condition by various drugs has been unsuccessful. Most of these patients had already gone through a slow and tedious process of muscle education and training with little benefit.

Drugs such as hyoscin and some of the new sleeping medicines of the barbiturate group have helped patients with tremors or palsy, Dr. Putnam reports. Cutting the motor tract on one side of the spinal cord or excising its point of origin in the brain helped six out of seven of Dr. Putnam's patients.

Science News Letter, September 23, 1939

A new waterproof finish for cloth is applied in the factory and lasts as long as the goods does.