

## PSYCHOLOGY

# Rat Is Not So Dumb

**Intelligence of white rat has been underestimated, tests show. Telling body's physiological age by measuring blood flow to muscle tissue reported to psychologists' meeting.**

► A WHITE rat is much brighter than people have thought. Taught to recognize a magazine advertisement, not for cheese, but for strawberry ice cream, he can then pick it out from five other ads showing a pretty girl, a baby, printed matter, etc.

He does this by jumping toward the doorway marked with the right ad. Behind the door, he finds a reward of food.

The reason why the intelligence of the rat has been so underestimated, Dr. Paul E. Fields, professor of psychology at the U. S. Air Force School of Aviation Medicine, San Antonio, Tex., told the American Psychological Association meeting in Washington, is because psychologists testing rats have not made it clear to the animal what they wanted it to do.

Humans make a mess of the rat problems, too, when they have no more instructions than the rat does.

When the rat has a little advance coaching in recognizing one magazine advertisement, he can then pick it out from a whole row of ads and do it very accurately. He can also tell one letter of the alphabet and single it out from a row of others. He can pick one ink-blot from other splotches, and can distinguish a pattern of stripes from others a hairsbreadth wider or narrower.

The rat does better, in fact, on the complicated problem of picking one advertisement out of five similar ads than he does on a simple two-way choice. That is because, Dr. Fields said, the rat attends better to the more complicated problem, and does not get "bored" so quickly.

Once the animal learns to look for one particular ad, it does not matter where it is placed along the panel. The rat will run along the panel looking for the right one. When he finds it, then he jumps.

Actually, the rat is bright enough to serve as a stand-in for human flyers in measuring what the hazards of future flying will do to a man's mind and ability in combat, Dr. Fields told the meeting. Thus rats can be substituted for men in tests of the effects of exposure to radiation, certain gases, drugs and extremes of temperature, altitude and acceleration.

## Blood Flow Tells Age

► WHAT MAY lead to a good test of the real physiological age of the human body was reported to the American Psychological Association meeting by Dr. Hardin B. Jones of the Donner Laboratory at the University of California.

Further development of the method may yield a better yardstick of retirement for

workers than the present arbitrary chronological age, usually around 65.

Scientists long have known that people's bodies age at different rates. Some individuals at 40 may have bodies that are effectively as old as the bodies of others at 60. Some men at 65 are capable of many more years of fruitful work, while others might profitably be retired at 60. But no accurate measure of these differences has ever been found.

Dr. Jones and his colleagues selected the circulation of blood to muscle tissue as a possible test. The blood provides nourishment for tissue, and the amount of blood going to the tissues determines how efficiently the tissue works. Inefficiency is a sign of aging.

The scientists found that there is a progressive reduction with age in the circulation of blood to the muscles. Between 18 and 25 years of age, the blood circulation to the muscles in the average person is reduced 40%. Between 25 and 35, there is another reduction of about 33%. And the reduction continues progressively.

In the average 18-year-old, 25 cubic centimeters of blood passes through one liter of tissue each minute. In the average 25-year-

old, the figure is 15 cubic centimeters; in the average 35-year-old, 10 cubic centimeters.

Dr. Jones found wide variations in individuals in the same age group. Thus, some 20-year-olds with the lowest circulations to muscles were about on a par with the 60-year-olds with the highest circulations.

The studies were made with the aid of radioactive gases—argon, krypton and nitrogen. Subjects inhaled the gases, and a Geiger counter was placed over muscle tissue to determine the circulation of the radioactive atoms.

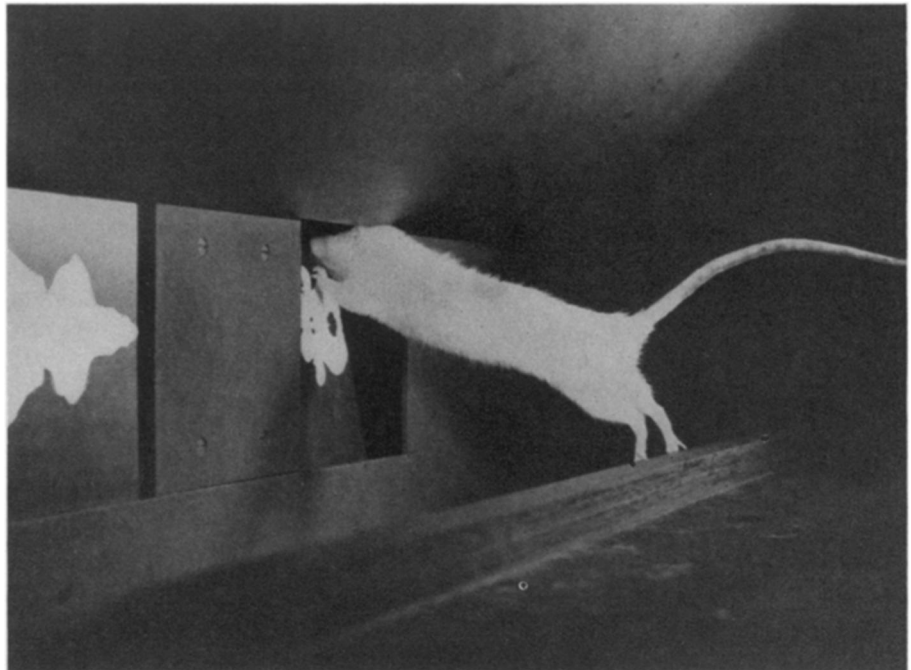
Dr. Jones said that progressive reduction of blood through muscles is clearly associated with the aging process. Whether the reduction itself is the cause of aging, or whether some aging mechanism cuts down on the need for blood by the muscles is not yet known.

## Mental Illness Duration

► JUST BECAUSE a patient has been mentally ill for a long time is no reason why the family should give up hope that he will get better.

This reassurance was obtained from a study of all the cases admitted to Western Psychiatric Institute and Clinic during the eight years from 1942 to 1950, excepting cases with organic involvement of some sort. The study was described to the American Psychological Association by Dr. Clifford H. Swensen, Jr., of the University of Pittsburgh.

The 486 cases studied were divided into two groups: improved and unimproved. Then cases were dropped from each group until there were no differences between them on any of the other factors which in-



**SMART RAT**—Picking out the ink blot behind which lies his food, this white rat in tests has shown psychologists that such an animal is smarter than was previously thought.

fluence recovery, such as type of treatment. By this time there were only 94 cases left in each group. But there was no difference between the two groups in duration of illness.

Certain personality traits characterize those psychoneurotic patients who are going to respond to treatment, Dr. Selig Rosenberg of the Brooklyn (N.Y.) Veterans Administration Regional Office told the same meeting.

Veterans who improved under treatment had higher intelligence, greater productivity, less resistance to change, greater range of interests, greater emotional depth, more sensitivity, higher energy level and less concern over their own aches and pains than did the psychoneurotics tested who failed to improve.

What makes the difference, Dr. Rosenberg believes, is that the patients with these personality traits had more ability and desire to do their part toward getting well.

## 8 Out of 100 Maladjusted

► WHEN TEACHERS pick the children in their care who need the help of a mental health clinic they select eight out of every 100. But these eight are not necessarily those most in need of help.

This is shown by a survey reported to the psychologists by Dr. Charles A. Ullmann, who worked in the Prince Georges County, Md., Mental Health Clinic, a demonstration clinic of the U. S. Public Health Service.

Four boys to every one girl were picked by teachers as being seriously maladjusted. That is about the same proportion of boys and girls as are taken before the juvenile courts. Classmates picked an even higher proportion of boys as maladjusted.

That is because the mental health problems of boys are the kind that get them into trouble—restlessness, sex drives, and a resentment of authority and school demands.

Girls are more likely to suffer from inner conflict, worry, over-dependence on others, timidity and concern over bodily ailments.

Teachers are likely to regard the polite, obedient child as mentally healthy.

Thus it is the sullen, defiant boy who is likely to be taken to juvenile court. Nothing is done for the shy, worried girl until she finds her way eventually as an adult to a mental health clinic or mental hospital.

And the doctor at the children's mental health clinic is most likely to see the unwilling, antagonistic patient who is least likely to cooperate and benefit from treatment.

It may be desirable, Dr. Ullmann suggested, to develop a new technique for referring patients so that cases will be picked that will give the greatest return in community mental health for the least expenditure of professional time.

Science News Letter, September 13, 1952

An estimated 15% of America's motorists have *vision* so far below standard that it is dangerous for them to drive a car.

## SOCIOLOGY

# Loyalty Oaths Lashed

Society for the Study of Social Problems charges loyalty oaths being used by some groups to make their ideas about democracy the only acceptable view.

►HITTING OUT against "loyalty oaths" and against a continuing trend of encroachment of religious sects in the schools, an organization of sociologists has called for vigorous fights against both.

Loyalty oaths, said a committee of the Society for the Study of Social Problems, meeting in Atlantic City, have become the method used by organizations and groups with a narrow view of democracy to make their view of loyalty the only view. This, the group said, makes it possible for all forms of bigotry, intolerance, totalitarianism and organized ignorance to use organized power to substitute another concept of loyalty for the democratic concept.

The trend toward increasing use of public tax money to pay for education under religious auspices is a direct threat to the basic fundamentals of sociology, the group declared. Sociologists base their beliefs on natural fact, it was said; where the facts are not demonstrated, the sociologist is agnostic.

Religious beliefs are based on faith and, as such, are therefore, antagonistic to sociological concepts of the family and society. If the sociologist wishes to supplant that which cannot be demonstrated from the facts with a faith, that is his private right, but it has nothing to do with sociology, the group said.

The committee of sociologists pointed out that the framers of the American constitution argued long about the relation of the church to the state. They decided, the committee said, that the two must be completely separated. The committee said that the fight to maintain this separation is a practical fight in which all sociologists must participate.

Even before the appearance of the loyalty scare, the committee said, sociology was looked upon as a subversive science, because of its desire to find the truth concerning sex, race, crime, propaganda, power and the forces of ignorance and superstition. There is already a tendency among teachers and even scholars, the committee pointed out, to preface their remarks on a subject by disowning communism, Marxism, Russia and other things which they never owned, in order that their positions may not be misconstrued.

Sociology, the group concluded, has an inherently rebellious aspect in that its aim is to ask questions involving the very way in which society is organized; and if that be disloyalty, it will simply be necessary for us to see that ignorance and bigotry do not make the most of it.

The Society for the Study of Social Prob-

lems was organized to promote and protect sociological research and teaching on significant problems of social life.

Science News Letter, September 13, 1952

## SCIENCE NEWS LETTER

VOL. 62 SEPTEMBER 13, 1952 No. 11

The Weekly Summary of Current Science, published every Saturday by SCIENCE SERVICE, Inc., 1719 N. St., N. W., Washington 6, D. C., North 2255. Edited by WATSON DAVIS.

Subscription rates: 1 yr., \$5.50; 2 yrs., \$10.00; 3 yrs., \$14.50; single copy, 15 cents, more than six months old, 25 cents. No charge for foreign postage.

Change of address: Three weeks notice is required. When ordering a change please state exactly how magazine is now addressed. Your new address should include postal zone number if you have one.

Copyright, 1952, by Science Service, Inc. Reproduction of any portion of SCIENCE NEWS LETTER is strictly prohibited. Newspapers, magazines and other publications are invited to avail themselves of the numerous syndicate services issued by Science Service. Science Service also publishes CHEMISTRY (monthly) and THINGS of Science (monthly).

Printed in U. S. A. Entered as second class matter at the post office at Washington, D. C., under the act of March 3, 1879. Acceptance for mailing at the special rate of postage provided for by Sec. 34.40, P. L. and R., 1948 Edition, paragraph (d) (act of February 28, 1925; 39 U. S. Code 283), authorized February 28, 1950. Established in mimeographed form March 18, 1922. Title registered as trademark, U. S. and Canadian Patent Offices. Indexed in Readers' Guide to periodical literature, Abridged Guide, and the Engineering Index.

Member Audit Bureau of Circulation. Advertising Representatives: Howland and Howland, Inc., 393 7th Ave., N.Y.C., Pennsylvania 6-5566, and 360 N. Michigan Ave., Chicago, State 2-4822.

## SCIENCE SERVICE

The Institution for the Popularization of Science organized 1921 as a non-profit corporation.

Board of Trustees—Nominated by the American Association for the Advancement of Science: Edwin G. Conklin, Princeton University; Karl Lark-Horowitz, Purdue University; Kirtley F. Mather, Harvard University. Nominated by the National Academy of Sciences: Harlow Shapley, Harvard College Observatory; R. A. Millikan, California Institute of Technology; Homer W. Smith, New York University. Nominated by the National Research Council: Ross G. Harrison, Yale University; Alexander Wetmore, Secretary, Smithsonian Institution; Duane Roller, Hughes Aircraft Co. Nominated by the Journalistic Profession: A. H. Kirchhofer, Buffalo Evening News; Neil H. Swanson, Baltimore Sun Papers; O. W. Riegel, Washington and Lee School of Journalism. Nominated by the E. W. Scripps Estate: Frank R. Ford, San Francisco News; John T. O'Rourke, Washington Daily News; Charles E. Scripps, E. W. Scripps Trust.

Officers—President: Harlow Shapley; Vice President and chairman of Executive Committee: Alexander Wetmore; Treasurer: O. W. Riegel; Secretary: Watson Davis.

Staff—Director: Watson Davis. Writers: Jane Stafford, A. C. Monahan, Marjorie Van de Water, Martha G. Morrow, Ann Ewing, Wadsworth Likely, Allen Long. Science Clubs of America: Joseph H. Kraus, Margaret E. Patterson. Photography: Fremont Davis. Sales and Advertising: Hallie Jenkins. Production: Priscilla Howe. In London: J. G. Feinberg.