

## ANIMAL PSYCHOLOGY

# Obese Laboratory Rats

► RATS, animals that ordinarily eat and drink only what they need to maintain normal body weight and health, can be "conditioned" to step up their intake of a nourishing liquid until they become markedly obese.

This was found when rats were trained in an experiment at Harvard University conducted by Drs. David R. Williams and Philip Teitelbaum. Dr. Williams has since moved to the department of psychology, Yale University.

One normal female rat was taught by conditioning to increase her weight almost 70%—from 240 to 406 grams. This would be equivalent to a gain of over 100 pounds in a 150-pound woman.

During the experiment the rat drank a daily average of 89 milliliters (ml.) of the nourishing liquid. Normally she would drink only about 48 ml. a day and she would show little or no gain in weight.

This is how the rats were taught to make pigs of themselves: First the rats were made thirsty. Then they were placed in an experimental cage where they were given a

mild electric shock every .9 second. A tube filled with a sugar solution was placed so that the rats could lick it by sticking their tongues through an aperture. A single lick on the tube would postpone the next shock for five seconds.

The rat soon learns that if he keeps on licking the solution, he can avoid the shock.

When the sugar solution was replaced with a quinine solution, the rat would lick the tube immediately after receiving a shock but did not learn to step up further his rate of licking the bitter stuff.

When plain water was used, the rats would take about 30 ml. in five consecutive hours even though they were not thirsty.

By using this technique, it is possible for scientists to control the amount and rate of liquid intake of rats when used as laboratory "guinea pigs." It is also possible to produce obesity at will in rats. Thus the rats could serve as "guinea pigs" in experiments designed to disclose the effects of obesity on the functioning of the body.

Details of the experiment are reported in *Science* (Dec. 28, 1956).

*Science News Letter*, January 12, 1957

then unable to clot or gel, a condition necessary before the cells can divide and multiply.

Within 15 minutes after injection of the drugs, the viscosity or stickiness of the cells had dropped from one-third to one-half of its normal value, although the rate of cell division was not affected for five or six hours. Normal viscosity returned in less than 24 hours.

The drugs apparently affect only cells that are dividing or about to divide, the researchers reported. Cells not dividing at the time the drug is given can divide later and perpetuate the cancer, they found.

*Science News Letter*, January 12, 1957

## SCIENCE NEWS LETTER

VOL. 71 JANUARY 12, 1957 NO. 2

The Weekly Summary of Current Science, published every Saturday by SCIENCE SERVICE, Inc., 1719 N. St., N. W., Washington 6, D. C., North 7-2255. 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 © 1957 by Science Service, Inc., Republication of any portion of SCIENCE NEWS LETTER is strictly prohibited. Newspapers, magazines and other publications are invited to avail themselves of the numerous syndicated 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 mimeograph form March 13, 1922. Title registered as trademark, U. S. and Canadian Patent Offices. Indexed in Reader's Guide to Periodical Literature, Abridged Guide, and the Engineering Index.

Member Audit Bureau of Circulation, Advertising Representatives: Howland and Howland, Inc., 1 E. 54th St., New York 22, Eldorado 5-5666, and 435 N. Michigan Ave., Chicago 11, Superior 7-6048.

### 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: Paul B. Sears, Yale University; Karl Lark-Horowitz, Purdue University; William W. Rubey, U. S. Geological Survey. Nominated by the National Academy of Sciences: Harlow Shapley, Harvard College Observatory; George W. Corner, Rockefeller Institute for Medical Research; Edward U. Condon, Washington University. Nominated by the National Research Council: Leonard Carmichael, Smithsonian Institution; Jerome Hunsaker, Massachusetts Institute of Technology; I. I. Rabi, Columbia University. Nominated by the Journalistic Profession: Michael A. Gorman, Flint Journal; Neil H. Swanson, Garrison, Md.; O. W. Riegel, Washington and Lee University. Nominated by the Scripps Estate: John T. O'Rourke, Washington Daily News; Charles E. Scripps, Cincinnati, Ohio; Edward J. Meeman, Memphis Press-Scimitar.

Officers—President: Leonard Carmichael; Vice President and Chairman of Executive Committee: Charles E. Scripps; Treasurer: O. W. Riegel; Secretary: Watson Davis.

Staff—Director: Watson Davis. Writers: Marjorie Van de Water, Ann Ewing, Howard Simons, Dorothy Schriver, Helen M. Davis, John W. Robinson. Science Clubs of America: Joseph H. Kraus, Margaret E. Patterson. Photography: Fremont Davis. Production: Priscilla Howe, Marcia Nelson. Interlingua Division in New York: Alexander Gode, 80 E. 11th St., GRamercy 3-5410.

## MEDICINE

# Music Is Wonder Drug

► MODERN MEDICINE is reviving an age-old healer, music, to bring new health to the sick.

Surgery, psychiatry, and just plain hospital boredom are benefiting from the new music therapy, according to a special report in the *Journal of the American Medical Association* (Dec. 29, 1956).

At Billings Hospital, in Chicago, a special sixth floor studio pipes in music to the operating rooms and patients can listen to their favorite selections through earphones. The night before the operation the patient gets to choose his "music for surgery," whether its classical, semiclassical or popular.

Music therapy helps children at the Denver, Colo., Children's Hospital whose arms are affected with polio and other diseases. They learn to play a piano by using one finger, their elbows, their fists, or their knuckles, the report states.

The new music therapy finds one of its greatest uses with the mentally ill. Music, "the ancient tranquilizer," brings response from many patients when nothing else will. Properly selected, it helps to relieve tensions and allay fears, and is widely used in many Veterans Administration hospitals.

Even so, it is still not recognized as "therapeutic in the true sense of the word" by most doctors.

"Music is only one of many avenues of approach to the patient when words alone, as is often the case, are inadequate," Dr.

Jules H. Masserman, professor of nervous and mental diseases, Northwestern University, reports.

However, true music therapy still does not exist, Dr. Emilian A. Gutheil, a New York City psychiatrist, states. No institution has yet gone through the careful step-by-step research to see just what effect certain types of music have, he said.

These causes and effects must be known "if we wish to write prescriptions for therapeutic music selections," the psychiatrist reported.

*Science News Letter*, January 12, 1957

## MEDICINE

## Anti-Cancer Drugs Make Cells Less Sticky

► TWO POTENT ANTI-CANCER drugs work by preventing cancer cells from clotting, the American Cancer Society has reported.

The two drugs, colchicine and bacterial polysaccharides, have been used experimentally to treat animal and human cancer cells, but up to now no one has known exactly why they work.

Dr. Edwin T. Nishimura and Joseph H. Baum, Northwestern University Medical School, have discovered that, when the drugs were injected into cancer-bearing mice, the individual cancer cells became less sticky. The protoplasm of the cells was