

NUTRITION

Emigration and Food

Running rats lead to new view that emigration among mammals is the result of food scarcity or deprivation but is not a planned response.

► A NEW view of the relation between food scarcity and emigration comes from a study of the activity of rats deprived of food. The study was reported by Dr. George Wald and Dr. Blanche Jackson, of Harvard University, to the National Academy of Sciences and is reviewed, in *Nutrition Reviews* (February).

Emigration among mammals, the Harvard studies suggest, is the result of food scarcity or deprivation but it is not a planned response. Animals do not, as has been generally assumed, emigrate in order to find food. They emigrate because the lack of food forces them into increased activity. Ancient history suggests that man may share in this pattern of response to food scarcity.

The real purpose of the emigration, or its "essential biological function," as the Harvard scientists put it, "is not to rescue the emigrating animal, though this may occur, but to relieve nutritional pressure on the home population."

The individual emigrant wanders aimlessly and persistently. Usually his wanderings end in disaster. If he survives, it is because he has happened to wander in the direction of a food supply.

The study supporting this new view was made with rats kept in activity cages in which they had free access to a running wheel. Normally, they ran an average of slightly under half a mile to slightly over a mile daily, or something under 2,000 revolutions of the wheel.

When the rats were deprived of food

or of water, their activity greatly increased. The revolutions of the wheel went up to about 10,000 daily. The same increased activity occurred when the rats were deprived of thiamin (vitamin B₁) or of another B vitamin, riboflavin. Deprivation of vitamin A and of various minerals in the diet did not have this effect.

The rats deprived of thiamin for long enough to result in polyneuritis finally ran much less than normally. If they are then given thiamin and allowed to eat freely, they quiet down and do not run much, meanwhile eating enormously and gaining weight. If they are given thiamin without increased food, they run enormously, because they are hungry for bulk food.

"High running," the scientists state, "is not, therefore, a reliable sign of well-being and optimal performance. It may be a sign of want. When healthy, intact animals are most completely provided with their needs they run minimally. This relation may be used as a criterion of dietary adequacy."

Running, they report in this connection, was consistently higher in a large group of animals kept on a synthetic diet containing all the factors known to be required by rats than when on a complete diet consisting largely of natural foods. This suggests that the synthetic diet still lacked factors which rats require and which have not yet been identified.

Science News Letter, February 17, 1945



ARTIFICIAL CLOUDS—Created in a bottle from liquid air and warm water, they are used to test insulating materials for the electrical systems of new bombing planes at the Westinghouse Research Laboratories.

usually brilliant or eminent men and women.

The brains are kept in glass jars on the shelves of his laboratory. On nearby tables on occasion may be seen hundreds of glass slides containing .031-inch slices from human brains. In the process of analyzing or "running through" a brain, 2,000 slices are made from one human brain. Every tenth one is mounted on a slide so it can be scanned under the microscope.

Condition of the brain cells and the structure are correlated with facts about the person's physical and mental characteristics. The information is important to brain specialists in treating their patients.

Dr. Papez says brains should be removed as soon as possible after death to be of value to the scientist.

The present collection was started many years ago by Dr. Burt G. Wilder, first professor of animal biology at Cornell. Latest acquisition is that of Prof. Simon H. Gage, who died last Oct. 20 at the age of 93.

Dr. Wilder retired in 1910 and the collection was more or less at a standstill until Dr. Papez joined the faculty in 1920. Where Dr. Wilder was more concerned with the anatomy of the brain, Dr. Papez is more interested in the microscopic work giving neurological information, and consequently in brains which present problems.

Dr. Papez says there are 26 basic items

MEDICINE

Brains For Study

Those of abnormal persons are more interesting to science than normal ones, head of Cornell Brain Association says.

► IF YOU are abnormal, the chances are science will be more interested in your brain than if you are a perfectly normal human being.

Cornell University has a collection of nearly 1,000 human specimens, and Prof. James W. Papez, curator of the collec-

tion and secretary of the Cornell Brain Association, says they are interested only in those brains that contribute most to science. These are the brains which present problems such as faculties that have been lost and recovered, brain diseases, congenital cripples, or the brains of un-

to study in a brain, and that it takes considerable time and costs several hundred dollars to "run one through."

The originator of the collection, Dr. Wilder, so inspired his students that many of them voluntarily signed a bequest form which he drew up as follows:

"Recognizing the need of studying the brains of educated persons rather than those of the ignorant, criminal, or insane, in order to determine their weight, form, and fissural pattern, the correlations with bodily and mental powers of

various kinds and degrees, and the influences of sex, age, and inheritance, I hereby declare my wish that, at my death, my brain should be intrusted to the Cornell Brain Association or to the curator of the collection of human brains in the museum of Cornell University for scientific uses, and for preservation, as a whole or in part, as may be thought best. It is my hope that my family and friends may not oppose the fulfillment of this my earnest wish."

Science News Letter, February 17, 1945

MEDICINE

Beriberi Cure Rapid

Americans rescued from Jap prison camp should recover quickly from this poor-diet disease; treatment will probably be doses of thiamin.

➤ CURE of beriberi, from which Americans rescued from the Cabantuan prison camp are said to be suffering, is usually very rapid. Improvement will come in a matter of hours after treatment is started, if the rescued men have not suffered irreparable damage to nervous system or heart.

The treatment will doubtless consist in giving large doses of thiamin, also known as vitamin B₁. This chemical, which is both cure and preventive of beriberi, was first synthesized by an American scientist, Dr. Robert R. Williams of the Bell Telephone Laboratories, as a result of studies on beriberi which he started in the Philippines in 1910.

Long before the vitamin had been isolated and synthesized, it was known to occur in foods and beriberi was known as a disease resulting from a poor diet. Ironically, one of the first persons to advocate that beriberi resulted from poor diet was the Surgeon General of the Japanese Navy, Takaki. In 1884 he was able to wipe out beriberi in that navy almost completely by changing the ration. It is reasonable to assume that the rations of Japanese sailors and soldiers today contain plenty of the anti-beriberi vitamin.

Oriental living chiefly on rice are likely to get beriberi because they eat polished rice. The polishing removes the thiamin from the rice, just as thiamin is removed from wheat in the processing of our fine white flour. To overcome this, our bread is now enriched by addition of thiamin as well as other vitamins and iron.

Beriberi has been considered relatively rare in the United States, but one au-

thority writing in 1943 stated that this is not true. The symptoms of the disease vary greatly. They include neuritis, muscle weakness and wasting, loss of coordination and of sensation, dropsy, and, when the heart is affected, difficulty in breathing, pain around the heart, blue color of the skin and rapid pulse.

Treatment of beriberi includes feeding a good diet as well as giving doses of the vitamin, thiamin. In this country, persons who had been eating such a poor diet that they got beriberi would probably also suffer from lack of other B vitamins. In the Orient, the poor diet that leads to beriberi apparently does not lead to other vitamin deficiencies.

For the people rescued from Cabantuan, the diet may consist in frequent small feedings of concentrated foods, but they are more likely to be given as much as they can eat. The danger of overfeeding is not the same for these malnourished persons as for men rescued from a life raft who have had nothing to eat for 30 days. Such persons cannot eat a lot all at once, probably because their digestive functions have been impaired. That is not so true in cases of vitamin deficiency and general malnutrition.

Science News Letter, February 17, 1945

INVENTION

Casein Curds Floated Out By Use of Carbon Dioxide

➤ FOR AN improvement in the method for extracting casein, milk's principal protein, E. L. Fritzberg of Minneapolis has been granted patent 2,368,919, which he has assigned to General Mills, Inc.

The conventional way of getting case-

in out of milk involves adding acid, which produces heavy curds that sink to the bottom. Subsequent handling renders the casein unfit for human food, so that it has to be diverted to lower-priced industrial uses. In Mr. Fritzberg's method, carbon dioxide or some other gas is introduced into the milk during the acidulating process, which results in the formation of bubbly curds that float to the top and can be mechanically skimmed off in cleaner condition, suitable for eventual incorporation into food products.

Science News Letter, February 17, 1945

SCIENCE NEWS LETTER

Vol. 47 FEBRUARY 17, 1945 No. 7

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.

Subscriptions—\$5.00 a year; two years, \$8.00; 15 cents a copy. Back numbers more than six months old, if still available, 25 cents. Monthly Overseas Edition: By first class mail to members of the U. S. armed forces, \$1.25 a year. To others outside continental U. S. and Canada by first class mail where letter postage is 3 cents, \$1.25; where letter postage is 5 cents, \$1.50; by airmail, \$1.00 plus 12 times the half-ounce airmail rates from U. S. to destination.

Copyright, 1945, 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.

Entered as second class matter at the post-office at Washington, D. C., under the Act of March 3, 1879. 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.

The New York Museum of Science and Industry has elected SCIENCE NEWS LETTER as its official publication to be received by its members.

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 4439.

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, American Philosophical Society; Otis W. Caldwell, Boyce Thompson Institute for Plant Research; Henry B. Ward, University of Illinois. Nominated by the National Academy of Sciences: Harlow Shapley, Harvard College Observatory; Warren H. Lewis, Wistar Institute; R. A. Millikan, California Institute of Technology. Nominated by the National Research Council: C. G. Abbot, Smithsonian Institution; Hugh S. Taylor, Princeton University; Ross G. Harrison, Yale University. Nominated by the Journalistic Profession: A. H. Kirchhofer, Buffalo Evening News; Neil H. Swanson, Executive Editor, Sun Papers; O. W. Riegel, Washington and Lee School of Journalism. Nominated by the E. W. Scripps Estate: Max B. Cook, Scripps Howard Newspapers; H. L. Smithton, Executive Agent of E. W. Scripps Trust; Frank R. Ford, Evansville Press.

Officers—President: Edwin G. Conklin. Vice President and Chairman of Executive Committee: Harlow Shapley. Treasurer: C. G. Abbot. Secretary: Watson Davis.

Staff—Director: Watson Davis. Writers: Frank Thone, Jane Stafford, Marjorie Van de Water, A. C. Monahan, Martha G. Morrow, Robert N. Farr. Science Clubs of America: Joseph H. Kraus, Margaret E. Patterson. Photography: Fremont Davis. Sales and Advertising: Hallie Jenkins. Production: Dorothy Reynolds.