BIOLOGY

Underfed Animals Have Longer Lives

FULL feeding means shorter life. If you would have many days upon the earth, be abstemious.

This would seem to be the conclusion to be drawn from experiments on laboratory animals, reported to the American Association for the Advancement of Science by Dr. Clive M. McCay and Miss Mary F. Crowell of Cornell University.

Dr. McCay and Miss Crowell used 106 rats in their research. They divided the animals into approximately equal groups. All were fed diets qualitatively complete.

"Two groups were retarded in growth by inadequate calories only, while the third group matured rapidly with ample calories," the experimenters reported. "This experiment is in progress and in its fourth year but the results are conclusive in showing that the animals that mature slowly have a much greater life span than the rapidly growing ones.

"This extension of the life span by means of retarded growth indicates that the potential life span for a given species is much longer than has been anticipated. Furthermore these data suggest that the longer life span of the female may be related to the slower growth rate of the female sex as the animal approaches maturity."

Science News Letter, January 13, 1934

ENTOMOLOGY

Persecuted Cockroach Serves Vitamin Testers

FOUND: a use for the cockroach.

This humble hunted insect, millionfold victim of brooms, poisons and scalding water wherever he shows his persecuted head, was recommended as a sensitive living test-tube for vitamins, in place of the bigger, more expensive and heartier-eating laboratory animals such as mice and rats, by Dr. Clive M. McCay of Cornell University.

Insects, Dr. McCay pointed out, can be kept in larger numbers in a given laboratory space than can any other animal, and because they eat so little they can be used in "micro-tests" where the amount of vitamin or other substance to be tested is very small. And since the cockroach is as omnivorous as a rat or a man, and thrives perfectly under ordinary house or laboratory conditions, it makes an almost ideal test animal.

Dr. McCay's first feeding experiments with these scuttling insects showed the older ideas, that insects do not need vitamins, to be incorrect. Other experiments have shown what some of the normal vitamin requirements of the cockroach are.

"Archie" has been admitted to the best scientific circles. We may now expect at least an ode from him on the subject.

Science News Letter, January 13, 1934

METEOROLOGY

Los Angeles Was Far From Center of Storm

THE CENTER of the meteorological disturbance which caused such flood havoc in Los Angeles was far to the north of that city in the region of Alaska, Charles L. Mitchell, forecaster of the U. S. Weather Bureau, told Science Service.

The most unusual downfall of rain, which was far greater than the previous record for that part of the country, was caused by unusual local atmospheric conditions. Exactly what these were cannot be known until data are gathered, from airplane observations or otherwise, throwing more light on the upper air conditions.

It is known that the moisture in the air was great and that some condition, perhaps the convergence of air currents, caused the air to rise. As it was forced upward, the air was cooled by expansion causing the previously invisible moisture to form into clouds and rain drops—in this case plenty of drops.

During one 12-hour period the rainfall amounted to about 3 inches and during the next 12-hour period it reached about 4 inches, totalling more than 7 inches in the 24 hours. The previous record for Los Angeles, set in February, 1913, was 5.12 inches.

The rainfall was not what is technically called a cloudburst, however. A cloudburst is a sudden extremely heavy downpour, amounting perhaps to a rate of several inches of precipitation an hour, and producing a veritable wall of water.

A remarkable feature of the California storm is that there was so little rain in San Diego, a relatively short distance from Los Angeles, and other nearby points.

Science News Letter, January 13, 1934

IN SCIEN

BOTANY

Jimsonweed Seeds Sometimes Sprout Twins

WEEDS are notorious for the rapid rate at which they multiply. Sometimes they have twins.

Jimsonweed, one of the rankest of all familiar but undesired plants, have an exceptionally high germination rate, Miss Sophia Satina told the Genetics Society of America. Working with Dr. A. F. Blakeslee and A. G. Avery of the Carnegie Institution of Washington at the station for experimental evolution at Cold Spring Harbor, N. Y., she found that germination tests with this plant sometimes yielded more seedlings than there were seeds.

This apparent paradox is resolved by the fact that some of the seeds are twins —two infant plants folded up inside a seed-coat instead of the usual one.

Science News Letter, January 13, 1934

PHYSICS

Intense Sounds Curdle Proteins

TO DESCRIBE an intense sound as "blood-curdling" has more basis in scientific fact than has been known until recently.

Sounds well within the audible range, if they are intense enough, will produce a chemical change in various substances, Drs. Earl W. Flosdorf and Leslie A. Chambers, of the University of Pennsylvania School of Medicine, have found.

An egg was coagulated as though soft boiled by these audible sounds. Ethyl acetate was broken down to produce acetic acid, vegetable oils were "cracked" with the generation of acetylene gas, and starch was to a slight extent decomposed to produce glucose. The sound vibrations used ranged in frequency from 1,000, about two octaves above the middle C on the piano, to 15,000, a very shrill squeak.

This article corrects an item in the science review of the year for 1933. (*See SNL, Dec.* 23, '33, *p.* 408, *and June* 24, '33, *p.* 395.)

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CE FIELDS

BIOCHEMISTRY

Dilute "Heavy Water" Not Poisonous to Yeast

YEAST cells thrive on "heavy water" if it is dilute enough, Dr. Oscar W. Richards of Yale University found in experiments reported before the meeting of the Botanical Society of America. This is not in agreement with earlier experiments by other scientists, who found that "heavy water" is poisonous to tadpoles, guppy fish, and worms. However, the disagreement may be only on the surface, for many poisons are tonics when they are taken in minute doses.

The "heavy water," containing enough double-weight hydrogen atoms (deuterium) to give it a specific gravity of 1.000061, instead of the 1.0 of ordinary water, produced no difference between number of yeast cells per unit volume in cultures grown in this dilute solution and in ordinary water. The number of actively budding cells was also about the same in both cultures.

The total volume of cells was 20 per cent. greater in the dilute "heavy-water" solution, although the mean cell size was only 3 per cent. greater. The dry weight was 26 per cent. greater in the "heavy-water" culture, and the cells were more uniform in size.

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ARCHAEOLOGY

To Speed Rescue Of Tennessee Ruins

IN A HOT race with time, archaeologists are speeding arrangements to rescue Indian mounds and villages in the danger path of Tennessee Valley Authority constructions. Land which will be flooded as the building of dams proceeds, is pronounced by archaeologists rich in remains of American prehistory which should be examined before they are lost under water.

The National Research Council has received funds to aid the project and, with additional aid from the CWA in funds and labor for excavations, the rescue of the Indian remains is begun. Prof. W. S. Webb of the University of Kentucky has taken charge.

Following a visit to the region, Neil M. Judd, Curator of Archaeology of the U. S. National Museum, stressed the need for haste if science is to study this part of America's ancient buried record.

Wheeler Dam above Muscle Shoals in Alabama is now under construction, and will be completed within eighteen months. Through the aid of a grant from the National Research Council, eighty miles of this area along the river have already been surveyed archaeologically by Dr. W. B. Jones of the University of Alabama, state geologist. In this survey Dr. Jones found over 300 mounds and village sites marking places where Indian history might be studied.

The archaeological problem in the Tennessee Valley is larger than has been anticipated, Mr. Judd said. Even though the winter months are the worst of the year for archaeological digging, it will be necessary to set to work, he reported, if the buried history of the region is to be, even in a measure, recovered.

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ELECTRONICS—BOTANY

"Electric Eye" Built To Tell Area of Leaves

THE PHOTOELECTRIC cell, or "electric eye," had a new role added to its already long list of versatilities at the meeting of the American Society of Plant Physiologists by R. B. Withrow of Purdue University. He uses it to measure the area of leaves, which is a datum of considerable importance in estimating the efficiency of various plants in the capturing of sunlight for the manufacture of food. Methods hitherto in use have been exceedingly tedious and time-consuming; but the adaptable "electric eye" does the job literally at a glance.

The apparatus is very simple. The photoelectric cell is put inside a box. Over it is placed a ground glass plate. Above the plate is a circle of twelve 100-watt frosted electric lamps.

When the lamps are turned on, the cell responds to their stimulus and generates a current which is read with a suitable instrument. Then the leaves to be measured are laid on the glass, cutting off part of the light. The response of the cell is diminished in proportion to the amount of light cut off, and therefore also in proportion to the area of the leaves causing this eclipse.

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LINGUISTICS

New England Speech Studied For Atlas

PROGRESS in preparing a linguistic atlas of the United States and Canada was reported before the American Association for the Advancement of Science at Boston.

Features of New England dialects have been collected, and maps showing how a given item of speech is distributed geographically are now being made. Most of the maps will be ready for publication in a year and a half, Prof. Hans Kurath of Brown University, reported.

Eventually the mapping of speech will be extended to include all the territory settled by 1850. There will be about 800 maps.

The maps show local forms of speech dealing with the weather, the dwellings, farms buildings, calls to animals, foods and their preparation, diseases, and other everyday matters.

In a number of the New England speech items that have been analyzed, the influence of the original colonies is still in evidence, Prof. Kurath has found. The spread of the early population from Massachusetts up the Merrimac Valley, and the expansion from river towns on the Connecticut and from western Connecticut to the Berkshires and up into Vermont, are reflected rather clearly in the distribution of many speech features.

In some areas secluded until recent times there are archaic speech forms preserved, showing a lack of avenues of communication.

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SEISMOLOGY

Northeast Asia Feels Strong Earthquake

THE VICINITY of Kamtchatka peninsula in northeast Asia was the center of a deep-seated strong earthquake shock that was recorded early Wednesday morning, Jan. 3, on seismographs throughout the world. Although this shock was a world-shaker, due to the uninhabited nature of the region it is probable that no material damage or loss of life was caused.

The exact time of the shock was 4:42 a. m., EST, Jan. 3, and the approximate epicenter was 53 degrees north latitude and 155 degrees east longitude.

Science News Letter, January 13, 1934