



FOOD RADIATION STUDIES—A new type of experimental radiation source using radioactive waste products, developed at Argonne National Laboratory for food sterilization studies at Massachusetts Institute of Technology, is checked on arrival as a safety precaution.

TECHNOLOGY

Sterilization of Food

➤ A BY-PRODUCT of atom-bomb manufacture some day may sterilize cans of pork and beans and whole kernel corn before they are shipped to your grocer.

Scientists at the Massachusetts Institute of Technology are planning experiments to harness nuclear reactor waste products for commercial food sterilization.

Radioactive waste must now be stored in tanks, since otherwise it might pollute drinking water or endanger human life. If a commercial food-sterilization process can be devised, the disposal problem should be lessened.

Sponsored by the Atomic Energy Commission, Prof. Bernard E. Proctor and his assistant, Dr. Samuel A. Goldblith, will measure the strength of the food-sterilizing gamma rays produced by the atomic waste, and study the effect these rays have on various foods.

The source is a radioactive liquid that has been mixed into the cement walls of a small hollow cylindrical block. Its strength equals several pounds of uranium. The cylindrical cement block is surrounded by several inches of ordinary concrete. A thick lead lining also helps to prevent the deadly X-rays from injuring persons who work around the unit.

An opening into the center of the unit permits foods to be lowered into the "hot" radioactive region for sterilization. Although the new radioactive source is not as powerful as a previously studied cobalt

source, it is "the material which we will actually have for commercial purposes," Dr. Goldblith said, "so we must learn how to use it."

Radioactive cobalt is not available in commercial quantities.

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ASTRONOMY

Scientists Measure Length of a Second

➤ THE LENGTH of a unit of time is now known with an accuracy of about a twenty-billionth of a second, Dr. Dirk Brouwer, director of Yale University Observatory, has reported.

This measurement is based on the moon's motion in its path around the earth. To get an accurate value of a time unit, astronomers for hundreds of years have checked the positions of the moon and the stars.

Efforts to use the earth's rotation to measure time have been thwarted by variations in the day's length. Scientists recently have put the blame for these variations on turbulent motions in the earth's liquid core.

Attempts to measure time with an atomic clock are now in progress at the National Bureau of Standards, Dr. Brouwer reported. The atomic clock is controlled by the frequency of vibrations in the molecules of ammonia gas.

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BOTANY

Fats in Plants Made in Chloroplast

➤ WHERE IS fat produced in plants?

The answer to this question, long a puzzle to botanists, is suggested in recent studies by Dr. Flora Murray Scott, professor of botany at the University of California at Los Angeles.

She believes that fat is produced in the chloroplast, the site of photosynthesis, the process by which chemical compounds are made in the plant with the aid of radiant energy, particularly light. (See SNL, Jan. 30, p. 67.)

Microscope studies by Dr. Scott have revealed that fatty substances collect around chloroplasts as tiny oil droplets in protoplasmic strands, giving a corona-like appearance.

In a few plants, fats have been observed within chloroplasts, but this is the first time the corona-like collection around the chloroplast has been reported.

That the concentration of fats around the chloroplasts had not been previously noticed may be due to various chemical processes by which the oil was dispersed during preparations for microscopic examination. Dr. Scott's investigation was performed with fresh material under ordinary and phase microscopes, using microchemical tests.

Fats are important food sources to plants. They are concentrated in seeds and furnish a large part of nourishment for plant embryos.

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AERONAUTICS

New Jet Trainer Created For Navy and Air Force

➤ A SPEEDIER and safer version of a standard jet trainer used by the Air Force and Navy to train pilots has been created by Lockheed Aircraft Corporation engineers, Burbank, Calif.

The 38-foot-long plane is capable of flying 600 miles an hour while carrying a student and an instructor in its large cockpit. It is designed to give students a taste of swishy jet flying without sacrificing some of the safety inherent in slow-speed planes.

Some of the features of the plane include a landing-slowdown parachute, fast climb, duplicate navigational and electronic aids, wide visibility through its clear plastic cockpit canopy, improved controllability and ejection seats.

Powered by a J33-A-16A Allison engine, the plane can be used for instruction in advanced navigation, gunnery, rocketry, dive bombing and all-weather flight, as well as for basic flight indoctrination.

The Lockheed trainer first flew Dec. 15, 1953, and has successfully completed a two-month shakedown. It is the outgrowth of a company-sponsored \$1,000,000 research and development program.

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