

## PHYSICS

**Calcinator Disposes Of Radioactive Waste**

► A TECHNIQUE of carefully-controlled burning in calcinators, indoor incinerators, has proved effective in disposing of bulky combustible radioactive wastes.

This technique, which may be used by radioisotope clinics and laboratories, has proved effective at the Atomic Energy Project of the University of California at Los Angeles, according to Louis B. Silverman, chief of health physics at the project.

Radioactive wastes, which include animal and vegetable matter, are placed in a gas-fired calcinator. Eight to ten loads of waste may be burned before the calcinator ash drawer is removed.

Ashes are wet down and slurried with five to ten pounds of cement which solidifies and gives added weight, and are placed in a plastic-lined 55-gallon drum. When the drum is full, it is sealed and taken out to sea for "burial."

At the U.C.L.A. Atomic Energy Project, where much experimentation with long-lived isotopes is carried out, this technique has reduced sea burials of 55-gallon drums of waste from 50 or more drums to one a year.

Although more than 99% of the radioactive material remains in the ashes, the calcinator stack is monitored to insure that radioactivity remains within permissible levels. Radioactivity of the calcinator area has not been above the normal background radiation, the scientist says.

Science News Letter, July 7, 1956

## PHYSICS

**Japan Should Go Atomic Study Indicates**

► JAPAN should go atomic, the National Planning Association urges.

A comprehensive study released by the Association and authored by Michael Sapir and Sam J. Van Hyning suggests that Japan should take immediate steps "toward developing a nuclear power program in order to secure the most economic advantage from the peaceful atom."

The target date 1960 or even earlier for Japanese planners was suggested by H. Christian Sonne, chairman of the board of the Association.

The study draws the following long-term economic conclusions for a Japan that would utilize the atom for peace:

1. Competitive nuclear power could improve its prospectively difficult balance of payments position by relieving some of the burden of increasing imports of conventional fuel for power plants.

2. Low cost nuclear power could materially decrease the power costs of some power-intensive industries and thus improve Japan's position in world markets.

3. Low-cost nuclear power might constitute a substantial stimulus to overall expansion of national output but it is doubtful

that by itself it would have a revolutionary impact on the Japanese economy.

The study shows that the use of nuclear power is especially favorable in Japan because that nation's power costs are higher than the industrialized countries of Western Europe or the U.S.; costs of Japan's current hydroelectric development projects are high; the cost of domestically produced coal is high; Japan's problems of foreign exchange make oil importation prohibitive; and the erratic character of Japan's power supply in the postwar period has been a factor in limiting economic expansion.

The study is entitled, "The Outlook for Nuclear Power in Japan."

Science News Letter, July 7, 1956

## ENTOMOLOGY

**Codling Moth Proving Resistant to DDT**

► THE CODLING MOTH, which annually costs apple growers more than \$30,000,000, is developing resistance to DDT, findings of an entomologist indicate.

Dr. Edward H. Glass of the Geneva Experiment Station, Geneva, N. Y., reported his conclusions after observing a commercial apple orchard in western New York.

The codling moths in this orchard had been well controlled during the first six years of DDT spraying, but during two succeeding seasons the insects survived the control measures.

Although nine DDT cover sprays were used in the orchard, codling moth damage was much above normal for the area, where four or five DDT cover sprays previously had given nearly perfect control.

During the past three years, many reports of codling moth increases have come from apple growers in several parts of the country, but Dr. Glass said most of these increases resulted from good codling moth weather and lack of spraying.

Before DDT was discovered, lead arsenate was the chief spray used on codling moths.

Science News Letter, July 7, 1956

## BIOLOGY

**Naturalist Appointed For Canal Zone Post**

► A RESEARCH ZOOLOGIST of the University of California, Dr. Carl B. Koford, has been appointed resident naturalist of the Smithsonian Institution's Canal Zone Biological Area.

Dr. Koford received the terrestrial ecology award of the American Wildlife Society and was made an elective member of the American Ornithologists' Union for his monograph on the California condor. He has conducted research at the Hastings Natural History Reservation in California and has collected specimens of birds and mammals in Mexico and South America.

Dr. Koford replaces James Zetek, recently retired because of illness.

Science News Letter, July 7, 1956

**IN SCIENCE**

## BIOLOGY

**Antibiotic Works At Surface of Cells**

► CIRCULIN, a member of the polymyxin family of antibiotics, and one of the most deadly natural substances to bacteria causing typhoid fever, cholera and other diseases, exerts its lethal action at the surface structures of living cells.

This is the finding of Purdue University scientists Drs. Henry Koffler, H. C. Reitz, P. A. Tetrault and D. J. Colasito, who have been engaged in the development of circulin for several years. It is believed the first demonstration of the probable cellular site of action of an unaltered antibiotic.

For this research, these workers used cells of a bacterium that can be readily fractionated into cell wall, cytoplasmic membrane, and cytoplasm.

Radioactive circulin, biosynthesized with carbon-14, was fed to the test cells. After an incubation period during which 99.9% of the cells were killed by the antibiotic, they were separated into their component parts. Checking the location of the radioactivity, the Purdue researchers found all of it concentrated in the cells' surface structures, while none of it showed up in the cytoplasm.

Science News Letter, July 7, 1956

## ENGINEERING

**Summer Atomic College For Engineering Profs**

► AN ATOMIC college for 60 of the nation's engineering professors is under way at the Argonne National Laboratory, Lemont, Ill. It will pave the way for the teachers to set up nuclear engineering courses in their colleges this fall.

The eight-week summer school is known as the American Society for Engineering Education Nuclear Energy Institute. At the school, the college professors will receive:

1. A survey of the available sources of unclassified information in the atomic energy field and of laboratory teaching methods particularly relevant to the field of nuclear power.

2. Some feeling of the interrelations of the many scientific and engineering disciplines involved in the successful design of a nuclear power enterprise.

3. A more detailed knowledge of some one part of the whole field.

The summer Institute is being jointly sponsored by the American Society for Engineering Education, the National Science Foundation, the Atomic Energy Commission and Northwestern University.

Science News Letter, July 7, 1956

# CE FIELDS

## ENTOMOLOGY

### Beetle Puts Bite On Florida Bugs

► A LADY BEETLE from India is going to put the bite on American insect pests in Florida.

The beetle, known scientifically as *Chilomenes*, has a voracious appetite for numerous pests that attack Florida's fruits and vegetables. It particularly likes cotton aphids.

A single lady beetle studied in an Indian laboratory devoured 16,321 aphids in six weeks.

*Chilomenes* has a life span of only just over seven weeks, but it reproduces rapidly. Experiments carried out by Allen G. Selhime at the U. S. Department of Agriculture Insect Field Station in Orlando, Fla., have shown that a few beetles can build to many in a short time. From only 50 beetles, Mr. Selhime developed a brood of 1,000 adults that he released last winter in Florida orchards.

Orange and tangerine groves not under chemical spray treatment are considered best fields of attack for lady beetles, giving them the best chance for survival as well as a maximum opportunity to demonstrate their powers.

Also released in Florida recently was *Brumus*, an Indian lady beetle with an appetite for aphids, psyllids, whiteflies, mites, small scale insects and mealy bugs.

Science News Letter, July 7, 1956

## GENERAL SCIENCE

### Part-Time Science Training Is Urged

► YOUNG SCIENTISTS entering laboratories doing Government research would be allowed to go back to school part-time for graduate training at Government expense, if a proposal made by Dr. Clifford Furnas, assistant secretary of the Department of Defense, to the National Committee for the Development of Scientists and Engineers meeting at West Orange, N. J., is adopted.

Speaking personally, Dr. Furnas, who is chancellor of the University of Buffalo, suggested that the cost of graduate work should be an allowable item of cost on a Government contract for research by industry.

This procedure, if adopted, would be an immediate aid to alleviating the current shortage of scientists and engineers because it would upgrade the people who have only a bachelor's degree, and in two to five years give the nation a crop of Ph.d.'s which it would not otherwise have.

Higher overhead on Government grants for research was urged by Dr. Furnas. These should run about 100% the cost of

the work, instead of the top present figure of 48% now allowed on some contracts by the Navy. Some contracts, such as those granted by the U. S. Public Health Service, carry only an eight to 15% overhead.

Dr. Furnas claimed that every time a university does a research job for the Government, the university loses money and it has to pay for it by forcing students to pay higher fees and by its professors accepting smaller salaries.

Science News Letter, July 7, 1956

## AERONAUTICS

### Foresee Ramprops for Straight-Rising Planes

► THE RAMPROP, a jet-driven propeller turning at supersonic speeds, could give planes that take off or land vertically the speed and load-carrying capacity of modern aircraft, a scientist foresees.

Albert Gail, research engineer at Cornell Aeronautical Laboratory, Inc., Buffalo, N. Y., reports the ramprop performs better than the turbojet, the turbofan or the turbo-prop as a power plant for vertically rising and descending aircraft. It can also attain high speed in level flight.

He told a joint meeting of the American Society of Mechanical Engineers and the American Rocket Society in Cleveland that ramprops have been studied at Cornell Lab for six years, some of the research being sponsored by the Office of Naval Research. The ramprop is a propulsion system consisting of rotor blades driven with supersonic speed by ramjets or ramrockets at the blade tips.

The Cornell Lab scientists found that ramprops are most suitable for heavy vertical take-off and landing craft, or V.T.O.L.'s, because large diameter propellers present fewer structural limitations.

Mr. Gail recommended full-scale development of ramprops on a whirling test stand first, then later in actual flight rather than in wind tunnels.

Science News Letter, July 7, 1956

## HOME ECONOMICS

### Prefer Light Bread To Kind Grandma Made

► PEOPLE LIKE LIGHT, fluffy bread better than the dense, heavy kind, a survey by the U. S. Department of Agriculture of consumers in Rockford, Ill., has revealed.

The consumers tried five different kinds of white bread. They liked the loaves weighing an ounce for every ten cubic inches better than the ones weighing an ounce for only seven cubic inches.

Their results may disillusion persons who cry nostalgically for "the bread Grandma baked." Department of Agriculture scientists say Grandma's bread was usually heavier than modern varieties, but that Grandma used many different recipes, so maybe her bread really was just as good as is thought.

Science News Letter, July 7, 1956

## TECHNOLOGY

### More Automation Will Step Up Oil Production

► MORE OIL can be produced at lower cost if refineries will use more automatic, or feedback, control principles, Albert F. Sperry of Panellit, Inc., Skokie, Ill., told the American Petroleum Institute's division of refining at its meeting in Montreal, Canada.

Feedback control is operation of machines by a device that can receive information from the machines and "know" when to change operating procedure. A good example is a furnace thermostat, which "knows" when to turn the furnace on and off.

Although petroleum production is more highly automatized today than any other industry, very little feedback exists in most refineries except at the lowest levels of operation.

The biggest barrier to effective feedback control at the operator, technical staff and management levels is the time needed to process large amounts of data for effective feedback use. This can be overcome, Mr. Sperry said, by increased use of computers and improved data processing techniques.

Mr. Sperry called feedback control a "more sophisticated" aspect of automation than the complete mechanization the term usually implies.

Science News Letter, July 7, 1956

## MEDICINE

### Find Test Predicts Leukemia Relapse

► A TEST to predict when a leukemia patient is going to have a relapse seems to be coming from studies by Dr. Avery A. Sandberg of Roswell Park Memorial Institute, Buffalo, N. Y.

If the relapse can be forecast well in advance, treatment can be started before the usual signs of relapse appear. If the treatment is effective, even temporarily, the patient would be spared days or weeks of sickness.

The test depends on changes in kidney excretion of an enzyme that breaks down one kind of nucleic acid, called DNA, short for deoxyribose nucleic acid. The enzyme is called DNase I. Normal persons have much DNase I activity, but little if any activity of another enzyme, DNase II, which also acts on deoxyribose nucleic acid.

Leukemia patients often have more DNase II activity than DNase I. Before a leukemia patient goes into relapse, there may be a change in urinary excretion of DNase I, Dr. Sandberg finds.

This might give a test for predicting the coming of a relapse.

Dr. Sandberg's findings were announced by the American Cancer Society, which supported his research.

Science News Letter, July 7, 1956