

TECHNOLOGY

Sound Guards Secrets

➤ TOP SECRET documents now can be left lying on desks overnight or can be stored regularly in open racks without posting a human guard in the room, thanks to a new electronic device the size of half a grapefruit.

The device greatly reduces the number of human guards needed at maximum security installations. It cannot be attacked and overcome by intruders.

The electronic guard is a ceiling-mounted ultrasonic transmitter that floods a restricted area with sound waves of 19,200 cycles per second, beyond the range of human ears, and sounds an alarm when there is the slightest movement in the protected area.

The equipment, said to be tamper-proof, was developed by Walter Kidde and Company, Inc., Belleville, N. J., engineers to meet the unusual security needs of a West Coast defense contractor.

System Development Corporation, Santa Monica, Calif., conducts the system training program of the Air Defense Command and assists with high-speed computer programming of the new SAGE (Semi-Automatic Ground Environment) system of air defense.

System Development's scientists and mathematicians must have their classified papers, maps and films as readily available "as text books are to a high school student," security chief Robert Dennis said, even though 1,200 employees enter and leave the building daily.

"For convenience and practical efficiency of operation," he said, "it is necessary that much of this material be stored in open racks and in some cases left in project rooms overnight."

Ultrasonic intruder detection alarm systems have been installed in the top secret document control room, the library's classified repository, the war gaming room and two basement areas where classified material is assembled and stored.

Whenever one of the rooms is vacated, its door is locked and the Kidde detector turned on. If anyone should enter the room, his movements alter the frequency and cause alarms to sound at the central guard station, where a control panel indicates the room "invaded." Guards immediately converge on the room.

Science News Letter, May 10, 1958

FOREST PATHOLOGY

Anti-Enzyme May Aid Elm

➤ AN ANTI-ENZYMES weapon to control Dutch elm disease may result from findings reported to the National Academy of Sciences meeting in Washington, D. C.

How the fungus responsible for the fatal tree disease makes enzymes that help it perform its murderous work has been found, Drs. A. E. Dimond and Ahktar Husain of the Connecticut Agricultural Experiment Station, New Haven, Conn., reported.

"It may be a long time before this research finds practical use in control of Dutch elm disease," Dr. Dimond said.

"If these enzymes are very important in helping the fungus to find its food in the tree, then we may be able to find chemicals to inactivate them. To be practically useful, such anti-enzymes will have to be absorbed by the plant and moved into the water-conducting system in sufficient concentration to do the job. Luck is with us because so very little of the enzyme is present, and it will not take very much of the compound—when we find it."

Two enzymes are formed by the fungus that help it attack a tree.

One attacks the cementing substance in the stem, the pectins familiar to the housewife when she makes jelly. The other attacks cellulose wood substance.

Produced in small amounts, the enzymes break down tree components into harmless sugar-like compounds that serve as foods for the fungus.

While this is taking place, the pectic enzyme performs another chore for the fungus by creating dams within the tree to slow down the water supply from roots to leaves.

The two enzymes, in effect, keep the fungus well-fed and the tree starved.

Dr. Dimond said that these recent findings are part of a long program to find an inexpensive and effective means for combating Dutch elm disease.

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ENGINEERING

Safety Measures Are Big Power Reactor Expense

➤ NUCLEAR reactors designed to produce electrical power probably are safer than necessary because engineers do not want to risk human life and health.

As much as \$6,000,000 may be spent just on the safety features of large nuclear power reactors now being built or in the design stage, scientists learned at a regional meeting of the American Institute of Electrical Engineers in Washington, D. C.

The two major types of safety features are "operational safety provisions" and "special safety precautions." The latter are designed for the absolute prevention of unexpected accidents.

Experimental data now being collected through operation of existing reactors may

enable engineers to eliminate some of the enormous safety expenses without sacrificing operational safety, D. Kallman, Babcock & Wilcox Co., and O. G. Hanson, Consolidated Edison Co., New York, predicted.

In the meantime, they said, engineers will continue to plan reactor safety conservatively, even though many feel some of the precautions are not needed.

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PHYSIOLOGY

Severe Stress Caused Heart Change

➤ CONSIDERABLE damage occurred to the heart muscle of animals subjected to severe stress, a research team has reported.

Repeated stimulation caused a significant increase in the weight of the heart, a rise in the fat content, and reduction in the essential metabolites and carbohydrates.

Fifteen male rats were placed in individual cages in a small dark room where, at irregular intervals and for a total of several hours daily, they were subjected to light flashes of high intensity. In addition, an electric vibrator produced highly intense sounds.

During a five-week period the rats consumed daily a quantity of food almost equal to that consumed by a control group. At the end of the five-week period, both the experimental and control groups were killed. Their hearts were examined and compared. The results demonstrate the effect of repeated stimulation, the scientists say.

It is well known that psychological factors affect the normal cardiac function of humans. Some scientists attribute many of the cardiovascular diseases to this very reaction to stress. E. Mascitelli-Coriandoli, R. Boldrini and C. Citterio of the research department of Farnavigor, S.p.A., Milan, Italy, report their results in *Nature* (April 26).

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GERIATRICS

Aging in Human Beings Gets New Research Grant

➤ A CONCERTED attack on the problem of aging in human beings is being launched with U. S. Public Health Service-National Institutes of Health grants of \$1,510,000 over five years given to the Albert Einstein College of Medicine at Yeshiva University.

"The health and medical aspects of old age have received less intensive study than the economic and social aspects," Surgeon General Leroy E. Burney of the U. S. Public Health Service said in announcing the grants.

Research on the aging process in the circulatory, nervous and respiratory systems will be conducted by a dozen senior investigators backed up by post-doctoral fellows and other personnel. A 90-bed section of Bronx Municipal Hospital will be used for clinical research and teaching.

The program supplements research in the seven institutes of the NIH and 120 research projects on gerontology supported by annual grants totaling over \$2,000,000.

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