

PSYCHOLOGY

Stress Build-Up Ends Isolation

► A BUILD-UP of stress and strain brought an end to five months of solitary confinement for Whilden P. Breen Jr.

In the longest known study of a man in isolation, Mr. Breen was helping scientists discover how to ward off stresses that would develop in the cramped, confining conditions of space travel.

When, in the experimental environment designed to minimize stress, stress accumulated, there was little to be gained from the experiment and Mr. Breen ended his confinement.

Toward the end, he lost his friendly attitude toward the experimenters, Mr. Breen said. He became tired, bored and lonely. He was unable to drive himself in his painting and writing, he said.

Although originally sustained by interest in the experiment and the hope of showing science how to make things easier for future astronauts, as time wore on he began to lose motivation. There was no "definite promise of something in the future" to keep him going, Mr. Breen said.

The experiment showed the "feasibility of bringing humans into the laboratory," Dr. Jack D. Findley, University of Maryland psychologist and director of the experiment, said.

In future experiments, Dr. Findley said, the environment would be planned to come "closer to the space situation." In this program, fresh laundry, food and other services came to Mr. Breen from the outside. The "spaceship" tasks were not difficult enough. Future men in isolation would be "more required to take care of themselves."

• Science News Letter, 83:280 May 4, 1963

ENTOMOLOGY

Plant and Animal Pests May Be Entering Cuba

► INSECTS and agricultural diseases may be establishing themselves in Cuba, riding in free on imports from countries where these pests exist.

Agriculturalists at Washington, D. C., have no way of knowing what dangerous pests are being introduced into Cuba at this time, Dr. Eugene P. Reagan, director of the U. S. Department of Agriculture's plant quarantine division, stated. There may be imports of the Mediterranean fruit fly, the oriental and melon fly, the golden nematode and other undesirable guests from Asia, Africa and Europe.

However, there is not much danger of these insects, flying or being carried on winds across the 90 miles of water separating Cuba from Florida.

Florida used to be plagued with the Mediterranean fruit fly, but agriculturalists hope that the large eradication campaign has eliminated the destructive pest.

All trade was discontinued between Cuba and the United States when diplomatic relations were broken off. The United States used to import products such as citrus fruits,

avocados and tomatoes, as well as racing horses and poultry used for fighting games.

Cuba might have hoof-and-mouth disease, as well as tick fever, hog cholera and other animal diseases, stated Dr. Louis C. Heemstra, director of the Department of Agriculture's animal quarantine division here. Other diseases might be coming in on imports, he said. As far as the United States knows, there are no quarantine precautions taken on agricultural products coming into Cuba.

Both men agreed that when the trade embargo is lifted between the U. S. and Cuba, agricultural products would not be allowed to enter until a thorough inspection could be made of animal and plant pests on the island.

• Science News Letter, 83:280 May 4, 1963

GEOLOGY

Moon's Surface Seen "Fuzzy" to Inch Depth

► THE MOON'S surface is "fuzzy" to a depth of about one inch, Dr. Charles R. Warren of the U.S. Geological Survey reported in Washington, D.C.

He believes the fuzz consists mostly of open spaces arranged in a miniature, Tinker-Toy-like structure. However, it might also resemble snowflakes or reindeer moss.

This kind of skeletal fuzz explains most of the known properties of the lunar surface, Dr. Warren reported in *Science*, 140:188, 1963.

Dr. Warren bases his conclusion of a fuzzy surface on changes in the moon's brightness during a lunar month. The characteristics of the sun's reflected light are best explained, he found, by assuming that the moon's surface is extremely rough.

"The presence on the moon of a material unlike anything we know on the earth should not surprise us, because the lunar environment is so very different from our own," he concluded. The skeletal fuzz could result from the bombardment of lunar rocks by protons of the solar wind.

• Science News Letter, 83:280 May 4, 1963

MEDICINE

Suicide Attempt Fails as Surgery Saves Woman

► A WOMAN who attempted suicide by drinking a third of a cup of household ammonia was saved by total replacement of the stomach and esophagus, four physicians reported.

This is thought to be the first time a patient swallowing sufficient alkali to destroy the stomach lining survived, and also the first time this type of surgery was performed.

Parts of the intestines were used to make the replacement in a series of three operations. Drs. Richard W. Ernst, Milton Leventhal, Ronaldo Luna and Henry Martinez of the University of Texas Southwestern Medical School, Dallas, reported the case in the *New England Journal of Medicine*, 263:815, 1963.

• Science News Letter, 83:280 May 4, 1963

IN SCIEN

RADIOLOGY

Baby Teeth Show Body Radiation Level

► OUT OF THE MOUTHS of babes comes strontium-90.

Baby teeth tell the level of radiation in the body, since teeth accumulate strontium-90 at the same rate as children's bones, Drs. Harold L. Rosenthal, John E. Gilster and John T. Bird of the School of Dentistry, Washington University, St. Louis, Mo., have found.

Tests on teeth of babies born between 1949 and 1958 show a strontium-90 count almost identical to the counts done for bones for those years.

Baby teeth and bones show a sharp rise in radioactive content for the years 1954 and 1955. This coincides with a period of extensive nuclear testing, the scientists pointed out.

Since 1955, the level has continued to increase, but at slower rates, they reported in *Science*, 140:176, 1963.

• Science News Letter, 83:280 May 4, 1963

PHYSIOLOGY

Brunettes Turn Blond After Taking Sedative

► FROM BRUNETTE to blond in three months was the experience of several women in Cardiff, Wales, who had been taking large doses of a muscle relaxant.

When the drug, mephenesin carbamate, was stopped, their hair returned to its normal color in about the same time. Dr. John D. Spillane of the Cardiff Royal Infirmary, reporting in the *British Medical Journal*, April 13, 1963, said the light golden tint of the hair was "very pleasing."

Two men and three women, all of whom were suffering from multiple sclerosis, showed the hair color change after taking the drug. The men were graying and it was impossible to be certain about the effect of the drug, but in the case of the women the change was obvious.

A sixth patient, a woman with spasmodic muscular contractions of a paralyzed arm caused by a head injury in infancy, took 10 to 12 grams of the drug daily without ill effect, unless the hair change could be considered bad. When she changed drugs after four years of mephenesin, her hair became dark again in three months.

Dr. Spillane philosophized on the effect of drugs that have pleasing effects and are not mentioned even to the doctor.

"The hazards of modern medical treatment are now so real and diverse," he said, "that it is wise to inquire routinely not only about the patient's symptoms but also about previous treatment—including that prescribed by oneself."

• Science News Letter, 83:280 May 4, 1963

CE FIELDS

MEDICINE

Electric Wires in Brain Aid Epilepsy Surgery

► **SUCCESSFUL** surgical treatment of epileptics previously considered inoperable is now possible by placing electric wires deep in brain centers.

Drs. Robert W. Rand, Paul H. Crandall and Richard Walter of the University of California, Los Angeles, Medical School have summarized their new techniques in this field in an exhibit presented at two medical meetings, the Harvey Cushing Society in Philadelphia and the American Neurological Association in Minneapolis.

The wires are implanted deep in the brain through tiny holes in the skull. They are left there for periods of several weeks without causing distress to the patient. Periodic studies of the patient, involving two-way communications with brain centers, are made.

Recordings of electrical activity from within the brain and electrical stimulation from outside help to focus on the cells responsible for the abnormal discharges characteristic of the disorder. Once these abnormally functioning cells are precisely located, their surgical removal may be feasible.

Eight patients have been studied in this manner. All eight had uncontrolled psychomotor epilepsy for average period of 12 years. This is a severe form of the disorder characterized by amnesia as well as convulsions.

Seven of these patients have had the portion of their brain known as the temporal lobe removed. In only one instance has there been convulsion during an 18-month period following surgery.

• Science News Letter, 83:281 May 4, 1963

PHYSICS

H-Bomb for Power Seen In New Research

► **IT IS NOW** ten times as hot as the sun's heart here on earth for the extraordinarily long time of half a second—a matter of 200 million degrees.

This fleeting success in harnessing even for this short interval the fiery reactions of the thermonuclear bomb is being hailed as a real step toward getting power out of the fusion of the light chemical elements.

Importance of the research on reacting hot gas, or plasma, is that it indicates a loophole in what was previously believed to be a barrier to the use of "magnetic mirrors" in controlling thermonuclear reactions. Discovery of the loophole will allow scientists to conduct future research at a new level of understanding even if the number of reacting particles, or density, is too low for a true thermonuclear, or H-bomb, reaction.

The research was part of a national effort

conducted by the Atomic Energy Commission under the name Project Sherwood. It was reported in *Physical Review Letters*, 10:323, 1963, by C. C. Damm, J. H. Foote, A. H. Futch and R. F. Post of the University of California Lawrence Radiation Laboratory, Livermore.

They reported the first results from the operation of Alice, a mirror-type machine for exploring the behavior of plasmas confined by strong magnetic fields. Energetic neutral atoms of heavy hydrogen are injected into a chamber where they are ionized and trapped. The strong fields reflect back toward the plasma particles that try to escape.

For years scientists have believed that plasmas in mirror machines would automatically become unstable above a very low density. However, a new theory developed by M. N. Rosenbluth, N. A. Krall and N. Rostoker and extended by the Livermore scientists showed that the instability occurs only at intermediate densities and at high densities stability should return.

The new experiments appear to confirm the modified theory. In particular, the scientists noted stable oscillations, or pulsations, of the plasma, which are called cooperative effects. The observed frequencies of these stable oscillations fit the theory.

The theory also predicts that stable plasmas with long confinement times may be achieved at high densities beyond the instability region.

• Science News Letter, 83:281 May 4, 1963

PSYCHOLOGY

More Risks Taken When in Group

► **A MAN** tends to take more risks when in a group than when he is alone, the Eastern Psychological Association meeting in New York was told.

The greater willingness to take risks comes from a decrease in personal responsibility, psychologists explained. When in a group, responsibility spreads out among the members; no man bears the burden of making decisions and suffering the consequences by himself.

An experiment with college students showed how a thinned-out sense of responsibility fostered risk-taking. The 168 men worked singly and in groups to solve intellectual problems for a monetary reward. The harder the problem, the higher the reward, or the loss, would be.

The risks of not making money and not succeeding intellectually were taken more often by the students in groups. They chose difficult problems to solve, chancing to make or lose a great amount of money.

When alone, the 168 men were more cautious. They tended to choose simpler problems and not to risk losing any money.

Group support of risky behavior has been shown in this situation where the risks were real and in others where the risks were pretended. Dr. Michael A. Wallach of Duke University, Durham, N.C., Dr. Nathan Kogan of the Educational Testing Service, Princeton, N.J., and Daryl J. Bem of the University of Michigan found.

• Science News Letter, 83:281 May 4, 1963

TECHNOLOGY

World's Smallest Incandescent Lamp

► **ONE OF THE WORLD'S** smallest incandescent lamps, a microminiature lamp only three-hundredths of an inch in diameter by eight-hundredths of an inch long has been made for use in electronics. Consuming only four milliwatts of power and operating on one and one-fourth volts, the lamp has a life expectancy of more than 500 hours.

The lamp, developed by the Pinlite Division of Kay Electric Company at Pine Brook, N. J., draws only three milliamps of current but its light is increased ten times its normal intensity by being concentrated forward. Its applications include use in photoelectric devices, transistor indicators and meter scale illuminators.

• Science News Letter, 83:281 May 4, 1963

ARCHAEOLOGY

Business Competition In Early America

► **THE UNITED STATES** and Europe were competing for business nearly 200 years ago.

One eighteenth century American glass factory was as large as any European factory at the time, archaeological excavations near Frederick, Md., have shown.

Five hundred workers were employed. The stock of manufactured goblets, dishes and window glass totaled more than a ton. Double ovens, probably used for heating the glass in preparation for modeling it, have been excavated.

Fragments of dishes, wine glasses, bottles and bowls in clear and tinted tones have been recovered, I. Noel Hume, chief archaeologist at Williamsburg, Va., and supervisor of the excavation, reported in the journal *Archaeology*, 16:63, 1963.

The factory, owned by John Frederick Amelung, is famous for its engraved goblets now in museums and private collections. The excavations are sponsored by the Corning Museum of Glass, in association with the Smithsonian Institution and Colonial Williamsburg.

• Science News Letter, 83:281 May 4, 1963

AGRICULTURE

Automatic Weather Recording for Farms

► **THE FIRST** completely automatic weather station devoted exclusively to agriculture is now in operation around the clock.

Basic reports on temperature, wind speed and direction, radiation from the sun, difference between ground and sky radiation, and other weather factors are automatically recorded every 30 minutes by this equipment, recently built at the University of Georgia at Athens, in cooperation with the Georgia Agricultural Experiment Station.

• Science News Letter, 83:281 May 4, 1963