AERONAUTICS

Astronauts Have Illusions In Adapting to Spin

AFTER INITIAL ILLUSIONS and nausea, astronauts probably can adapt to the spinning of a satellite, an experiment by the medical officer in charge of the Able-Baker monkey flight has demonstrated.

The medical officer, Dr. Ashton Graybiel, director of the U. S. Naval School of Aviation Medicine in Pensacola, Fla., put volunteers to this test:

Four at a time they were locked into a circular room that rotated the men at a constant speed for two days. In the slowest rotation of the six separate tests, the room went around 1.71 times a minute. In the speediest test, the room rotated 10 times a minute.

An official of the National Aeronautics and Space Administration said large satellites for men might be rotated at similar speeds as they are launched and travel toward orbit. Satellites might also be rotated in orbit so that centrifugal force would tend to offset the expected feeling of weightlessness in orbit.

In the rotation tests, one of six volunteers lost the function of sensory organs of his inner ears. But this same subject was the only one that did not develop other unpleasant symptoms such as apathy, illusions and nausea. These symptoms sometimes prevented the subjects from performing simulated space tasks. But the troubles rapidly disappeared—only to reappear to a more moderate extent when rotation ended.

Drs. Graybiel, Brant Clark and J. J. Zarriello report in the Archives of Neurology, 3:55, 1960, that the rotating room method promises to help reveal the causes of motion sickness and point to its control.

The rotating room moved around at speeds similar to those of manned radar platforms and could be useful in the selection, indoctrination and preconditioning of both radar personnel and astronauts.

• Science News Letter, 78:72 July 30, 1960

BIOLOGY

Largest Scallop Bed Is Near Cape Canaveral

THE LARGEST SCALLOP BED known in the world has been discovered along the east coast of Florida near Cape Canaveral. It contains millions of calico scallops, an edible variety not presently available on the world market.

The discovery was made during routine exploration from the *Silver Bay*, a research vessel operated by the U. S. Fish and Wildlife Service. Calico scallops inhabit coastal waters from North Carolina to South America, but the place where these creatures thrive best is at depths of 60 to 192 feet between Daytona Beach and Fort Pierce—an area of 1,200 square miles.

Scallops are a bivalve mollusk of the same class as oysters, clams and mussels. The main edible varieties are the deep-sea scallops of New England and the bay scallops of the middle Atlantic coast.

The calico scallop, *Pecten gibbus*, is a little fellow, about two and one-half inches in diameter. Its shell is ribbed and colorfully decorated. Like all other scallops, it swims in a jumping fashion by opening and powerfully closing its shell valves, thus forcing out a jet of contained water. This jet propulsion has prompted Florida fishermen to refer to their new find as "guided mussels."

The muscle that closes the shell and forces out the water jet is the edible part of the scallop, about the size of a man's thumb in the calico variety. At present this muscle must be separated from the viscera by hand. Methods of mechanical separation are being investigated and, if this problem can be solved, the calico scallop beds may turn into a million-dollar food industry.

• Science News Letter, 78:72 July 30, 1960

PHYSICS

World's Most Powerful Magnet at Laboratory

A NATIONAL RESEARCH FACILITY containing the world's most powerful magnet will be built at Cambridge, Mass., for study of the fundamental properties of matter near absolute zero, which is 459.7 degrees below zero Fahrenheit.

The Massachusetts Institute of Technology will operate the facility under a multi-million dollar contract with the Air Research and Development Command of the Air Force. The Air Force announced the project as a step to fill a void in the facilities available to the scientific world for extremely high, continuous magnetic fields.

The laboratory is expected to be completed in 1964. An initial investment of $5,600,000 for construction and management of the program will be made during the Federal fiscal year 1961.

• Science News Letter, 78:72 July 30, 1960

ASTRONOMY

"Most Remarkable" Chain of Galaxies

A CHAIN OF FIVE GALAXIES, one of the "most remarkable objects" in the sky, has now been photographed with the 82-inch telescope at the W. J. McDonald Observatory in Texas.

The five galaxies are believed to be physically connected. If they are arranged as a chain in space, it is unlikely that this configuration is stable.

It is also unlikely that the chain is due to chance, Drs. E. M. and G. R. Burbidge report in the Astrophysical Journal, 131:598, 1960. The husband and wife astronomical team work at the University of Chicago's Yerkes Observatory, Williams Bay, Wis., and McDonald, operated jointly by the Universities of Chicago and Texas.

Quintets of galaxies are very rare. The Drs. Burbidge suggest that this system represents some transient stage in the formation or evolution of small groups of galaxies. Galaxies are groupings of billions of stars, and there are countless billions of galaxies in the universe.

• Science News Letter, 78:72 July 30, 1960

IN SCIEN

ARCHAEOLOGY

Ancient Treasure Ship To Be Salvaged

WHEN WORKMEN SALVAGE a cargo of bronze implements and ox-hide-shaped copper ingots from a ship sunk 1,450 years before the birth of Christ, they will be taking part in what is reported to be the first scientifically organized exploration of an ancient wreck. The ship was evidently on its way from the mines of Cyprus. The ingots, some bearing stamped impressions, served as the currency of that time. The wreck was found along with 46 other ancient wrecks off the southwestern coast of Turkey.

Taking part in the exploration is George Bass of the Mediterranean section of the University Museum, Philadelphia. Expert divers, photographers and underwater draftsmen will also participate in the exploration, reported in Expedition, 2:21, 1960.

• Science News Letter, 78:72 July 30, 1960

MEDICINE

Old Surgical Technique Used for Lung Disease

LIVES OF PERSONS with chronic lung disease today are being saved by an ancient surgical technique that dates from the dawn of modern medicine.

Drs. L. B. Tecimer and Morton Lee Pearce and Joe Yamashita of the University of California School of Medicine, Los Angeles, and Veterans Administration Center describe the use of an artificial opening in the windpipe (tracheotomy) in treatment of acute pulmonary insufficiency in chronic lung disease. Their findings are reported in the American Medical Association's Archives of Internal Medicine, 105:891, 1960.

The first tracheotomy is thought to have been performed in about 124 B.C. by the Greeks, the physicians said. Since that time the procedure has been used primarily in cases of obstruction of the windpipe (trachea).

The Los Angeles physicians have found the procedure useful in treating an increasing number of acute pulmonary insufficiency complications of the chronic lung disease, emphysema.

The artificial opening is especially useful in aspiration of material the patient is unable to cough up. If the patient's difficulty is severe enough to warrant use of an iron lung, the tracheotomy is mandatory, they reported.

The surgical procedure to make the opening is a minor one. Healing of the opening is rapid once the opening is no longer needed, and the minor scar that occurs presents no problem.

• Science News Letter, 78:72 July 30, 1960

CE FIELDS

NAVIGATION

Radar Helps Bridge Operators Spot Ships

RADAR has been installed on the Aerial Lift Bridge in Duluth, Minn., to help bridge operators spot ships approaching the drawbridge in the fog. Threading iron ore boats, longer than two football fields, through the canal into the twin ports of Duluth and Superior requires expert seamanship. The radar will enable bridge tenders to anticipate openings, which average 30 daily, by spotting approaching vessels as far as 32 miles away.

• Science News Letter, 78:73 July 30, 1960

ROCKETS AND MISSILES

Rockets to Study Danger to Spacemen

A BASKETBALL-SIZED ROCKET PROBE this year will help determine how dangerous the earth's radiation belts will be to astronauts.

A four-stage, solid-fuel Argo D-8 research rocket will be used to hurl the vehicle to heights as great as 10,000 miles. The payload is called NERV, for Nuclear Emulsion Recovery Vehicle. It will be cone-shaped and weigh 75 pounds.

Developed by the General Electric Company for the National Aeronautics and Space Administration, it will contain a disc made of strips of sensitive material called nuclear emulsion. An electro-mechanical shutter will protect the material until time for exposure.

After its trip up, the unit will re-enter the atmosphere and drop somewhere in the Pacific Ocean range. It will float, stain the water with dye and broadcast an electronic signal to aid in recovery.

• Science News Letter, 78:73 July 30, 1960

PUBLIC HEALTH

Bird Radiation Study May Help Man

RADIATION STUDIES strictly for the birds at Oak Ridge National Laboratory may provide important information on the amount of radiation man may expect to accumulate from his diet.

The seed-fruit-insect diet of birds is sufficiently similar to the grain-fruit-meat diet of man to provide a basis for estimating radiation levels in man, William K. Willard of the University of Georgia reports in Science, 132:148, 1960.

The levels of concentration of such harmful beta-emitting radioactive elements as strontium-90 and cesium-137, in the bones and muscles of birds feeding at the Oak Ridge White Oak Lake basin, an atomic waste disposal area, showed a "striking" difference in levels according to both season and feeding zones.

Birds, such as the song and field sparrow and the water thrush, which feed close to the ground, had the highest tissue levels of radiation. Those, like the goldfinch and indigo bunting, which feed between the tall and the low vegetation, had only about a tenth as high gross beta activity.

Thicket birds, the cardinal and catbird, had one-twentieth the radioactivity, while the radiation in the humming-bird, which fed from the lake bed infrequently, was scarcely above background.

The total body burden of radiation in the birds that had fed through the winter was markedly higher than the summer-feeding birds. The seasonal changes may be explained by the fact that in the summer the bird population feeds largely on insects. In the winter they feed on seeds, for which they must probe in the more heavily contaminated soil.

The levels of the radiation in birds, both average and maximum, were found to be higher "than we would want to risk in man," Mr. Willard says. "At present, it is not known whether these are actually harmful to the birds." No estimates from bird to man on radiation levels have been completed.

• Science News Letter, 78:73 July 30, 1960

GEOPHYSICS

Fallout Found Lower In Southern Hemisphere

RADIOACTIVE fallout from nuclear test explosions is "considerably lower" in the Southern than in the Northern Hemisphere, four Naval Research Laboratory scientists confirmed.

They say studies of the debris thrown into the atmosphere when nuclear bombs are exploded also showed that air in the stratosphere mixes only slowly across the equator. They compared the amounts of radioactive tungsten-185 and strontium-90 in the air at various times after the 1958 nuclear tests in the Pacific.

The usefulness of tungsten-185 as a tracer of fallout from the Hardtack test series is rapidly nearing an end because most of the element's radioactivity has disappeared. The report on radioactive contamination of the atmosphere in Science, 132:154, 1960, is made by Drs. L. B. Lockhart Jr., R. L. Patterson Jr., A. W. Saunders Jr. and R. W. Black.

• Science News Letter, 78:73 July 30, 1960

MEDICINE

Toilet Soap Safe For Eczema Patients

ECZEMA PATIENTS may use ordinary toilet soap without fear of making their skin disease worse, five Cleveland physicians report after a one-year study of 250 patients with four different kinds of skin rashes. Drs. Richard B. Stoughton, Lew W. Potts, William Clendenning, Stuart Fisher and Morton Kress, University Hospitals, collaborated on the report, which appears in the Journal of the American Medical Association, 173:1196, 1960.

• Science News Letter, 78:73 July 30, 1960

MEDICINE

Navy Warns Skin Divers Against Deadly Device

THE MOMSEN LUNG—a device which saved many sailors—may mean death for skin divers and swimmers, the Navy has warned. Used by the Navy in escape from submarines until 1956, the device definitely was not designed for diving, the Navy said.

Use of the lung in swimming, and especially as a breathing apparatus for skin diving, can cause death from lack of oxygen, rupture of the lungs, carbon dioxide poisoning or drowning. Some of the devices have been sold through surplus outlets. Navy officials urge that all of them be destroyed or turned over to the Navy.

• Science News Letter, 78:73 July 30, 1960

PYSCHOLOGY

Engineers Produce More When Specially Treated

STAFF SCIENTISTS and engineers are most productive when they are recognized and treated as highly skilled individuals. This is the conclusion of the bureau of industrial relations of the University of Michigan, which interviewed 90 supervisors and 277 scientific and engineering staff members of ten selected companies.

The bureau summarized the striking differences between professional workers and other groups of employees as:

1. Scientists and engineers are more responsible, objective and involved in their work.

2.They want greater individual freedom and less routine supervision.

3. They show a greater need for tangible and intangible rewards for their work and ideas.

4. They are more ambitious, creative, analytical, introverted and emotional.

5. They have broader, higher and more definite goals.

Professional staff members studied found greatest satisfaction in their jobs when their work was varied, included a balance of laboratory and technical work and permitted personal responsibility for the entire project. They liked new and challenging assignments, utilization and extension of their abilities and opportunities for growth and advancement.

They disliked drafting, clerical and routine tasks, report writing, certain aspects of basic and applied research and other "non-engineering" or "non-scientific" work.

The most serious problems of young professionals were insufficient technical preparation in school, inadequate psychological preparation for work in industry and difficult adjustment from academic to industrial standards, systems and pace.

Complete details of this study are included in a book recently published in Ann Arbor by the University of Michigan, "Characteristics of Engineers and Scientists," by Lee E. Danielson, professor of industrial relations at the University.

• Science News Letter, 78:73 July 30, 1960