

## Earth's Gravity Could Affect Venus in Orbit

► THE POSSIBILITY that every time Venus is lined up between the earth and the sun, the same side is facing the earth has been suggested.

This would be true if Venus rotated once on its axis every 243.16 days, theorized Drs. Peter Goldreich and Stanton J. Peale of the Institute of Geophysics and Planetary Physics, University of California, Los Angeles. Though estimates have varied, "this value . . . lies within the errors of the measured rotation period," the physicists reported in *Nature*, 209:1117, 1966.

Earth's gravity may have actually "locked" the planet so that its permanent bulge, or longest axis, always points toward the earth when the planets and the sun are in a line.

If this theory is true, observers on earth may have to resort to space probes for views of the other side of the planet, just as they must to see the "backside" of the moon.

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### PSYCHIATRY

## Schizophrenics May Have Too Much Copper

► A STUDY of schizophrenia reported in London has linked skin pigmentation, copper and a malfunction of metabolism with the disease.

For several years the staff of the Riverview Hospital in Essondale, British Columbia, Canada, has noticed a metallic bluish-brown coloring among some schizophrenic patients. To cure the pigmentation disorder the patients were given a penicillin substance called D-penicillamine. During treatment, the schizophrenics also seemed to be undergoing a spontaneous change in behavior.

Drs. G. A. Nicolson, A. C. Greiner, W. J. G. McFarlane and Mr. R. A. Baker thought there might be a connection between abnormal metabolism which produced the pigmentation and schizophrenia. They also believed that a tranquilizing drug used widely in treatment of the disease, chlorpromazine, was aggravating the psychotic condition.

To test their hypothesis the hospital researchers selected 10 patients who had not responded to either drug treatment or electric shock therapy.

Of these, five were given D-penicillamine and put on a low copper diet. The other five patients were used as controls.

All patients given D-penicillamine showed copper in their urine to varying degrees and all showed significant improvement in behavior. In fact, the degree of improvement seemed to be directly related to the

amount of copper excreted. Patients not given the penicillin product showed no change.

Upon completion of the test, one man had improved enough to be discharged from the hospital. He went off the low copper diet and D-penicillamine. Within three days his psychosis reappeared. Treatment was re-instituted and after another three days the symptoms began to disappear again.

The researchers reported in the *Lancet*, 1:344, 1966, that an unusual amount of melanin pigment may indicate a basic abnormality in schizophrenics' metabolism which is aggravated rather than relieved by the drugs used most widely in its treatment.

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### MEDICINE

## Portable Resuscitator Used by Rescue Squad

► MODERN SCIENCE can "raise the dead" if the person's heart has not stopped beating too long.

A new 19-pound heart-lung resuscitator called a Cardi-activator is saving lives even as patients are moved to the ambulance. The machine, developed by W. J. Mullikin of Washington, D.C., replaces an earlier model he invented several years ago.

In 1961, SCIENCE SERVICE reported that a 67-year-old man had been revived five times within two hours at Georgetown University Hospital using the early model. The patient had been under treatment for aneurysm, and soon after he was admitted to the hospital he had a coronary attack that stopped his heart completely.

Mr. Mullikin was not satisfied with the heavy early model, however, because it was difficult to carry to an ambulance for quick treatment. He has applied for a patent, not only for the heart-lung resuscitator, which permits oxygen to ventilate the person's lungs through a mask after his heart has been mechanically massaged, but also for a seven-and-a-quarter-pound Cardiac manual-aider for heart resuscitation only. A third new invention for which a patent is also pending, is a four-pound portable battery operated type of EKG, or electrocardiograph machine.

Rescue squads and fire departments as well as hospitals and other institutions are using these inventions.

Dr. Charles J. Savarese, medical director to the Bethesda-Chevy Chase (Md.) Rescue Squad, reported that he sees the advantages of the resuscitators over other machines that require moving patients in order to center the chest compressor or plunger accurately.

"The amount of pressure required is easily adjustable," said Dr. Savarese, "and the plunger can slide back and forth over the patient's sternum to get the exact position necessary."

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# IN SCIENCE

### BIOPHYSICS

## Radiation Sends Cells To a 'Lingering Death'

► CELLS that are not killed outright by exposure to radiation die a "lingering death" from a stoppage of protein production, a Pennsylvania State University biophysicist reported.

Without the synthesis of new protein, the cell simply "strangles," Dr. Ernest C. Pollard, head of the University's department of biophysics, told the annual Biophysical Society meeting in Boston.

Radiation causes hydrogen peroxide to be produced from the water in cells, which effectively shuts off production of a molecule called adenosine triphosphate (ATP).

ATP provides the energy that enables amino acids floating free in the cells to "hook on" to a form of ribonucleic acid (RNA), Dr. Pollard said, which in turn transfers them to a protein-building factory called the ribosome.

Without the energy from ATP, the amino acids cannot become "activated," and protein synthesis will stop.

In Dr. Pollard's first experiment he exposed dilute quantities of cells to radiation, which resulted in protein deficiency. Next he irradiated the cell medium and placed cells in it. Result: again, lack of protein.

These experiments may help scientists understand why cells and living organisms sometimes die long after being exposed to ionizing radiation.

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### GENERAL SCIENCE

## Medical Civil Rights Asked for Hospitals

► HOSPITALS and health agencies using Federal funds will be expected to participate fully in racial integration, Dr. Philip R. Lee of the U.S. Department of Health, Education and Welfare told the annual meeting of the New Orleans Graduate Medical Assembly.

A letter to all hospital administrators from the Surgeon General of the Public Health Service leaves no doubt that hospitals cannot use funds received from all taxpayers when they discriminate against some of them, said Dr. Lee.

"This will include all funds," the assistant secretary for Health and Scientific Affairs said. This means funds coming through the Department of Labor, the Department of Commerce, or the Department of Health, Education and Welfare and the Social Security's Medicare program.

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# CE FIELDS

## MEDICINE

### Formalin Cleans Soil Infected by Birds

► **THREE PERCENT** formalin is highly effective in destroying *Histoplasma capsulatum*, which causes the lung disease called histoplasmosis.

Dr. Tom D. Y. Chin, chief of the Communicable Disease Center's Kansas City, Kan., field station, told **SCIENCE SERVICE** that he will report the large-scale decontamination of the five-acre starling roost area in May at a Los Angeles meeting of the American Society for Microbiology.

His preliminary paper on the use of three percent formalin is in the American Journal of Epidemiology March, 1966.

**SCIENCE SERVICE** recently reported (SNL: 89:174, March 12, 1966), that lung infection in Mason City, Iowa, was found when attempts were made to clear starling roosts. With summer coming on, other community parks could be contaminated by bird droppings, thus causing hazards to picnickers who sit on the ground. The use of formalin in decontaminating soil infected by starlings and some other birds will probably have wide acceptance.

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## ASTRONOMY

### Moon Is Not Only Natural Satellite

► **THE MOON**, which everybody "knows" is the only natural satellite earth has, is not alone up there, two engineers believe.

Two clouds of debris, ranging in size from thousandths of an inch to small boulders, reportedly are orbiting the earth at the two points where the gravitational pulls of earth and the moon are exactly balanced.

The cloud-watchers are J. Wesley Simpson and Ray G. Miller of the Lockheed Missiles and Space Company, Sunnyvale, Calif., who are the heads of a small observatory operated by a group of Lockheed employees.

The points in space where the two gravitational fields balance are called libration points and were first predicted in 1772 by the French mathematician, Joseph Louis Lagrange. He said that there are five such points in the earth-moon system or in any two-body system in which stable equilibrium has been established.

In 1908, Lagrange's hypothesis was given a boost when a large asteroid was discovered at one of these points in another two-body system, that between the sun and the planet Jupiter. Other

objects were later found at another libration point in that system.

The earth-moon clouds were first observed in 1956 by Polish astronomer, K. Kordylewski. For five years he had been looking for large single objects at the libration points. He then tried, instead, to spot clouds of tiny particles. Although he found the clouds, he was not able to photograph them successfully until 1961.

Strangely enough, reported Simpson and Miller, the naked eye is better than a telescope for observing the clouds. A telescope will not show the very slight luminosity of the clouds, nor will it make the individual particles visible, 239,000 miles away.

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## MEDICINE

### Lasers Kill Cancers In Living Bodies

► **LASER ENERGY** has been used to successfully destroy cancers growing inside rabbits, Ohio State University has reported.

There is a possibility that lasers will also be tried on terminal human patients who understand the experimental nature of the research, it was learned in an interview with Dr. John Peter Minton of the University's Medical Center. He has been experimenting with lasers and cancer for three years, both at Ohio State and at the National Institutes of Health in Bethesda, Md.

Thirty rabbits with tumors in their liver and abdominal area were used in one study.

Of these, 10 rabbits were given laser treatment. Another 10 were not treated at all and died in 10 weeks. The rest had surgery.

All 10 rabbits treated with the intense light beams survived and healed. After 30 weeks, eight of the animals were still living and showed no sign of malignancy.

Dr. Minton injected a second group of rabbits with the same cancer virus—Brown-Pearce carcinoma cells—through veins in the ear. Laser beams destroyed the resulting chest cancer instantly, he reported.

Dr. Minton was able to destroy the cancers because he used a high energy laser unit, in the range of 1,000 joules. Other attempts to treat cancer with lasers have been usually restricted to ranges of 100 to 200, he said.

On the basis of his research, the scientist believes laser energy will be valuable in combating cancers diffused throughout essential organs.

Any use on humans, however, would have to be done with the thorough understanding that no guarantees are made, Dr. Minton cautioned.

He will present his findings at the American Therapeutic Society meeting June 25 in Chicago.

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## PUBLIC HEALTH

### Institute of Mental Health Reorganized

► **THE NATIONAL INSTITUTE** of Mental Health will undergo major reorganization as part of its recent intensive efforts to improve the quality of mental health services throughout the nation.

The new plan will set up four centers for the study of alcoholism, narcotics and drug abuse, suicide prevention and urban problems.

In addition, the stubborn problems of schizophrenia, social ills (automation, divorce, sex deviation, poverty, race conflict, leisure time), crime and child-adolescent mental health will be studied in special centers responsible for coordinating all activity in these fields conducted under Institute auspices.

To give impetus to its new mental health approach, the Institute will set up two model community centers—one based on a general hospital, the other on a state mental institution. It is hoped this will encourage states and cities to carry through with the task of bringing mental health services down to "mainstreet" America—an Institute goal.

In its 18 years of existence, the National Institute of Mental Health's budget has increased from \$4 million in 1948 to \$303 million in 1967. The revamping, the first for NIMH, was announced by Dr. William H. Stewart, Surgeon General of the U.S. Public Health Service.

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## GEOPHYSICS

### Old Coral Timepiece Might Be Inaccurate

► **THE NUMBER** of fine ridges on corals 350 million years old has been used by scientists to calculate the length of time the moon once took to revolve around the earth. But the "coral calendar" may be wrong.

By counting the number of ridges formed each day on pieces of ancient coral, scientists have estimated that during the Middle Devonian epoch, there were 13 lunar months of 30.5 days each, reported Anthony F. Aveni of Colgate University, Hamilton, N.Y. By using astronomical data, other scientists have estimated 14 lunar months of 28.8 days each, he reported in *Science*, 151:1221, 1966.

This difference is not serious, yet scientists have reported one species of modern coral with 28 diurnal ridges per band—one and a half less than the number of days per month. This recent tabulation indicates that the coral ridges are not an accurate timepiece, and that scientists' understanding of the history of the earth-moon system is still incomplete.

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