

## PUBLIC HEALTH

**Syphilis Increase Continues in U. S.**

► THE SHARP INCREASE of syphilis in the U. S. has continued during the first nine months of the 1961 fiscal year with 14,019 cases reported during that period.

The following facts were uncovered during a recent U. S. Public Health Service study:

More men have this venereal disease than women.

There are more syphilis cases than gonorrhea.

Large cities in many states accounted for most of the increase. Miami, Fla., had the highest rate in 1960.

All ages and both sexes were included in the increase.

Dr. William J. Brown, chief of the Public Health Service venereal disease branch, Communicable Disease Center, Atlanta, Ga., and Norman W. Axnick, statistician, reported the findings in Public Health Reports, 76:999, 1961.

Reduction of primary and secondary syphilis cases could be achieved, the researchers said, if all private patients are interviewed and "cluster" testing applied to persons in their social environment.

All private laboratories and hospitals doing positive blood tests for syphilis should be surveyed.

Private physicians and health departments in all states should also strengthen their visitation programs.

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## EDUCATION

**Natural Sciences Favored In Granting Graduate Aid**

► GRADUATE STUDENTS in physical and biological sciences who are rated as "poor" Ph.D. material by faculty members still have almost the same chance for financial aid as social science and humanities students rated "superior" or "excellent," the University of Chicago's National Opinion Research Center found in a nation-wide study.

The report indicates that high scholastic ability is less important than studying "the right thing at the right school" for many students getting "stipend income" from scholarships, teaching assistantships or research assistantships.

Graduate students in the natural sciences (physics, biology, chemistry) get more and better financial help than do those in other fields, NORC said. Public school students are given preference over private school students. Additionally, candidates for doctor's degrees get more and better stipends than do master's candidates.

The study of a cross-section of the 63,000 graduate students in United States schools was made at the start of the 1958-59 school year, before the National Defense Education Act went into effect. Professional fields such as law and medicine were excluded. At that time, and probably since, the Federal Government was helping more than twice as

many graduate natural science students as those studying either humanities or social science.

"The sharp differences in financial help in different fields of study and types of schools suggest that this nation has a long way to go before we can say that we are providing real encouragement for excellence across the board in arts and sciences graduate training," said Dr. James A. Davis, NORC senior study director.

Other study findings show that the students' median income was about \$400 monthly. An average of 15% of this was spent on education. Almost half of the students got \$150 a month or more from stipends, their single most important source of income. Forty percent received half their income from stipends.

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## TECHNOLOGY

**Today's Inks Disappear In Document Preservation**

► BECAUSE inks "are not what they used to be," future historians may be without original source documents.

Before letters, diaries and papers can be sealed permanently in plastic, the paper must be treated to halt deterioration. The standard treatment consists of one or more chemical baths.

This is fine for 17th, 18th or 19th century documents, but it floats ink right off 20th century documents. New inks are water soluble; old ones were not.

The division of industrial research at Washington State University currently is studying the problem. The school's Holland Library is custodian of more than half a million documents pertaining to the history of the Pacific Northwest, and most of the papers are less than 70 years old.

"We are investigating various misting and atomizing processes," explains Dr. Mark F. Adams, head of the division's chemistry research laboratory. "We hope to come up with an answer before many rare and valuable documents are lost forever."

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## SPACE

**Liquid Hydrogen Rocket Successfully Tested**

► THE FIRST U. S. liquid hydrogen rocket has successfully passed its preliminary flight rating test.

The engine, known as RL-10, performs about 30% better than current rockets using conventional hydrocarbon fuels such as kerosene.

Two of the liquid hydrogen engines will power the Centaur space vehicle, scheduled for its first flight test within a few months.

The test, consisting of 20 captive firings under simulated space conditions, was completed in five days. The RL-10 was developed for the National Aeronautics and Space Administration by Pratt and Whitney Division of United Aircraft Corporation in West Palm Beach, Fla.

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**IN SCIEN**

## MEDICINE

**New Antidote Saves Life Of Poisoned Child**

► A TWO-YEAR-OLD BOY who was almost fatally poisoned by swallowing parathion, an insecticide, was revived in less than 20 minutes by taking a new antidote.

Atropine, the usual antidote, was first given, but it did little to improve the child's condition. Drs. Griffith E. Quinby, Wenatchee, Wash., and Gordon B. Clappison, Yakima, Wash., reported in the Archives of Environmental Health, 3:538, 1961.

The doctors decided to try 2-PAM (2-pyridine aldoxime methiodide) prepared by Drs. I. B. Wilson, S. Ginsburg and H. Kewitz of Columbia University's College of Physicians and Surgeons, New York. Although the antidote was previously used in Japan and other countries, this is probably the first time it was tried in this country.

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## MEDICINE

**Sleeping Pills Popular For Committing Suicide**

► AMONG THOSE who attempt suicide about 20% use poison, mostly sleeping pills.

Most of those who use this method are women, and if the statistics compiled at New York's Jacobi Hospital are an indication, the suicidal mind is unimaginative at picking a poison.

Of 232 attempted suicide cases (178 women and 54 men) seen at the hospital between 1955-1960, some tried aspirin, others household solvents. But nearly 60% of the poison-users took barbiturates—sedatives or sleeping pills. Another 10% preferred meprobamate (Equanil), a commonly used tranquilizer.

All other agents were used less frequently and about equally, Drs. Joseph Hirsh and Howard L. Zauder and Bernadette M. Drolette of Albert Einstein College of Medicine report.

The popularity of the poison method enjoys among women, Dr. Hirsh states, is not unexpected in that "women appear to employ methods of suiciding which involve an important factor—time—allowing for rescue . . . and resuscitation." Men tend to use more precipitous, more action-involved, more lethal agents and methods than women do.

As a result, the scientists report in the American Medical Association's Archives of Environmental Health, 3:90, 1961, the male to female ratio of successful suicides in the United States is four to one, but for suicidal attempts, the ratio is virtually reversed.

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# CE FIELDS

## NATURAL RESOURCES

### Wildlife Useless as Food Source in Atomic War

► WILDLIFE may become unfit as a food source in the event of a nuclear attack, the National Wildlife Federation reported in Washington, D. C.

In the past, Americans have used wildlife as a food source in emergency situations; but in an atomic war this source may be drastically diminished, if not eliminated, due to inadequate protection.

Fish and waterfowl may be the first to become unfit for human consumption following a nuclear bombing because of the concentrations of dangerous radionuclides washing into lakes and streams. In addition, exposure to high levels of radioactivity might make reproduction impossible.

"Endangered species, such as the whooping cranes, could be wiped out entirely," the Federation said. No plans have been made or considered to include wildlife in the shelter program.

"Man knows little—and must learn more—about the effects of radiation, the assimilation of radionuclides such as iodine-131, strontium-89, strontium-90, cesium-137 and others into the body, and the result of eating food contaminated by them," the Federation said.

The Atomic Energy Commission is currently supporting research on the effects on wildlife of present fallout levels.

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## MEDICINE

### Mobile Unit Records Heart Information

► A MOBILE electronic unit that records 12 kinds of information about the heart is being tested at the University of California, Los Angeles. It is hoped that such information may spot early heart trouble.

Known as the heart function analyzer, the unit was especially designed and built by the Telecomputing Corporation with the collaboration of Louis Fields.

It has been donated by the firm to Dr. Clarence Agress, University of California, Los Angeles, Medical School heart investigator, through the Los Angeles County Heart Association.

The new weapon in the battle against heart disease is a two by four by three and a half feet mobile unit that can be wheeled into a laboratory or to a patient's bedside. Such sources of information as heart sounds, electrocardiogram, pulse pressure and frequency analysis of heart mechanical activity are recorded simultaneously. Research with the device is being carried out primarily at the Los Angeles Veterans Administration Center.

A small microphone placed on the chest

just above the subject's heart picks up information recorded by the machine. This information is translated into 12 tiny light beams, which play upon a light-sensitive roll of paper, and is thus recorded permanently for analysis by the investigators.

Emphasis in the investigative program for which the machine was tailored is on low-frequency vibrations. These reflect activity of the heart muscle itself as well as the valve sounds which dominate the unusual audible range of the stethoscope and the standard phonocardiogram.

Experiments to date have demonstrated the new analysis system can pick up many subtle changes in heart functions not apparent in conventional electrocardiograms. It has also demonstrated an increased accuracy of 22% over the electrocardiogram in detecting coronary disease.

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## PHYSICS

### Black Void Reactors for Fast and Slow Neutrons

► A NEW ATOMIC reactor for research, the Black Void Reactor, has been developed by scientists at the National Bureau of Standards. The idea, conceived by C. O. Muehlhause of Standards, would make possible the simultaneous presence of fast and slow neutron fluxes separated in space.

Fast neutrons released by fission in the walls of cylindrical fuel assemblies are slowed down by the moderator. A certain portion of these slow, or "thermal," neutrons return to the fuel assembly, where they are reconverted into fast fission neutrons to maintain the chain reaction.

Certain neutrons irradiate the void interior of the reactor tube, providing space for testing the effects of radiation on instruments. In addition, this arrangement constitutes a type of flux trap that yields higher neutron output for a given power input than the conventional system.

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## SPACE

### Figure Lunar Altitude With Horizon Sensor

► MOON TRAVELERS will be able to figure out how far above the lunar surface their spacecraft is by using a horizon sensor.

This device can be used to find the diameter of the apparent lunar disc, information that aids in finding an approaching space vehicle's altitude, Dr. P. J. de Fries of George C. Marshall Space Flight Center, Huntsville, Ala., reported to the National Aeronautics and Space Administration.

Dr. de Fries cautions that if the radius is not accurately known errors will result. Other causes of error in figuring the position could be caused by electronic equipment, and the unevenness of the moon's surface, which is dotted with ring mountains and streaked with mountain ranges and cracks. Therefore an error analysis would be necessary to know the exact spot, important information if a lunar vehicle lands on the moon.

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## CONSERVATION

### Unite to Solve Problem Of Pesticide vs. Wildlife

► EUROPEAN and American scientists have banded together to form an international committee for coordinating research on the harmful effects of pesticides on wildlife.

The committee, an offshoot of the International Union for the Protection of Nature and Natural Resources was formed in Leiden, Netherlands. It will also act as a clearing house for exchanging information on pesticide-wildlife research.

Needless duplication will be avoided by coordinating all the research programs on pesticide damage to fish and animals, Dr. John L. George, U. S. Fish and Wildlife expert and member of the new committee, said. Results of studies now being conducted in England on chemical spraying of seeds could probably be applied in Texas, which faces a similar problem, the scientist said.

Other plans of the new committee include the standardization of the conflicting pesticide terminology on both sides of the Atlantic. The Union, parent organization of the committee, is made up of naturalists, conservationists and scientific organizations such as the National Audubon Society.

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## TECHNOLOGY

### Computer Control System Like Auto and Driver

► TO UNDERSTAND computer control systems, just think of an automobile and a driver, Dr. Cornelius T. Leondes of the University of California, Los Angeles, advises.

Basically, a control system, including the guidance of space vehicles and the delivery of intercontinental missiles, consists of a computer that digests and evaluates data from the sensors and at the same time controls the actuators.

One of the most complex control systems, Dr. Leondes finds, is a man (and certainly a woman) driving a car. The eyes and ears are sensors feeding information to man's super-computer, the brain, which through the hands and feet controls the actuators, such as the steering wheel and the accelerator.

In the future, computer control systems will guide interplanetary space probes and may well navigate hydrofoil ocean freighters skimming above the water at 100 miles per hour.

In these automated ships, the sensors—gyroscopes and accelerometers—will supply information on location and acceleration, which will allow the computer to fix the proper velocity and direction, while the hydrofoils will serve as actuators.

Dr. Leondes is a 34-year-old professor of engineering, scientific adviser to the U.S. Air Force and the National Aeronautics and Space Administration, and editor of the recently published book on "Computer Control Systems Technology."

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