

## SPACE

**First Manned Lunar Trip Will Be U.S., Not Russian**

► THE RUSSIANS may get to the moon first but the United States will be first to land a man on the moon and bring him back safely to earth, James E. Webb, Administrator, National Aeronautics and Space Administration, told members of the House Science and Astronautics Committee.

The NASA official made this statement while testifying before the Committee on the space appropriations bill. He was accompanied by America's first three men in space, NASA's Project Mercury Astronauts John H. Glenn Jr., Alan B. Shepard Jr., and Virgil I. (Gus) Grissom.

It will be necessary to land 30 tons of engine and equipment on the moon in order to return a six-ton manned spacecraft back to earth. More than 200 tons of machinery and equipment will have to be launched for the manned lunar expedition.

The cost will run into billions, but the scientific knowledge expected will justify the cost, Mr. Webb said. However, even though scientific knowledge is the main goal, the first man to go to the moon will not be a scientist, the Congressmen were told.

It is easier to train astronauts to make scientific observations than to train scientists to be astronauts, Robert R. Gilruth, NASA's Manned Spacecraft Center director, said. "I do not know any group who can observe better or with greater accuracy than test pilots chosen for space training," he said.

• Science News Letter, 81:152 March 10, 1962

## GENERAL SCIENCE

**Problems of World Peace Less Than War Threat**

► A WORLD without war would require difficult political-economic adjustments, but they would be no more difficult than those inherent in a world built on thermonuclear threat, Gerald Piel, publisher of *Scientific American*, states in *Science*, 135:648, 1962.

Present national prosperity, largely the result of building up military defense against the threat of war, has dimmed the terrible realities of this threat.

"Survival, if not victory, requires a civil defense system going far beyond the \$150 family fallout shelter," Mr. Piel believes. A study by the Rand Corporation indicates it would require an expenditure of \$150 billion, nearly the amount of the national debt, to provide substantial underground protection.

Spread out over a 10- to 15-year period, this would provide "heavy" blast shelter spaces for 40,000,000 people, "medium" blast shelters for another 40,000,000, and "light" fallout shelters for 170,000,000, in addition to providing for reallocation of one-fifth of the nation's manufacturing plant underground.

The success of this system would require "strategic evacuation" of the urban population of the country as a whole. The problems of feeding, clothing, exercising, sleep-

ing for people in these "subtopias" are enormous; and this has been recognized by the Rand "war-games" people and the military.

This hard reality, Mr. Piel states, makes the problems to be faced in a world disarmed and prepared for peace more plausible, and, certainly, more deserving of the efforts of our scientists and engineers. Half of these scientists and engineers are now employed by the industrial-military complex responsible for the war economy.

Mr. Piel notes former President Eisenhower counseled wisely that "If the feasibility of thermonuclear war has acquired, sought or unsought, unwarranted influence in public policy, then warranted influence, at least, must be sought for the feasibility of peace."

Such influence would reallocate funds, now spent on the munitions of war, toward increased spending on labor and welfare, education, housing and community development, the National Science Foundation, and economic assistance programs for industry. A study undertaken by the Bureau of the Budget, at the close of the last Administration, on the fiscal picture of the Federal economy following an international disarmament agreement permitting a 50% cutback in military expenditures, shows that a realistic and beneficial adjustment could be made.

It is now up to educators, scientists, technicians, labor-leaders, housing authorities and others to begin preparation for peace.

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## ORNITHOLOGY

**Bird's Song Traps Him; Leads to Rediscovery**

► A SUPPOSEDLY EXTINCT BIRD has been rediscovered in a Puerto Rican forest through the playing of tape recordings of its night songs.

A Cornell University ornithologist, George B. Reynard, taped the bird's sounds and lured the Puerto Rican whip-poor-will, scientifically known as *Caprimulgus noctitherus*, back to current status.

The mystery of the "spirit of the mountain," the native expression for the bird's nocturnal call, was solved during a nine-month investigation of the area in which the elusive creature was "discovered." The study followed the first recording of the call by Mr. Reynard during an unrelated visit in March 1961.

Evidence that the bird still existed was great, even though the literature listed the bird as extinct.

Natives recalled hearing the song nightly as far back as 1900. A female had been taken in 1888, and in 1919 bones were found in a prehistoric cave on the island.

Mr. Reynard took his tape recording to the area frequented by the birds, and lured a male into gun range. The dead bird together with photographs and the recordings have led ornithologists to reinstate the bird as a living creature.

Further studies should indicate distribution and number of survivors and other characteristics of the bird and its habitat.

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## GENERAL SCIENCE

**Cuba Pirates Text Published in Mexico**

► CUBA is following the Communist practice of pirating books, but for Castro's Spanish-speaking dictatorship, it is a bit easier than for the USSR where most literature has been translated into Russian.

At least one medical textbook originating in Mexico has appeared in an unauthorized edition offset printed in Havana with only the title page changed to credit the Cuban organization that issued the book. The book was a text on biochemistry by Dr. Jose Laguna, professor of biochemistry at the National University of Mexico. This publication of *La Prensa Medica Mexicana* has become a standard text in Latin American colleges and has also been translated into English.

Dr. Laguna feels flattered that the Cubans selected his book for reprinting, even without permission, and he is confident that due to lack of trade relations of many countries with Cuba the pirated edition will not be exported in any great number.

Incidentally the Mexican publisher is a bit envious of the quality of paper that Kruhshchev supplied for the book, although the drab brown binding supplied is not greatly fancied.

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## PUBLIC HEALTH

**Women on Relief Saved From Cancer**

► THIRTY-FOUR MOTHERS receiving aid to dependent children (ADC) in Dade County, Fla., learned that they had uterine cancer in time to do something about it.

This is because the Florida State Department of Health initiated a program of free examinations two years ago in the belief that women unable to afford them could be salvaged in the productive years. Those who had the examination totalled 1,039.

Drs. James E. Fulghum of the Florida State Board of Health and Robert J. Klein, formerly a cancer control officer in Dade County, said in *Public Health Reports*, published by the U.S. Public Health Service, that 97% of the proved cases were unsuspected at the time of screening.

The ADC project began on Jan. 1, 1960, a year that showed 469 uterine cancer deaths in Florida. Most of such deaths are believed preventable.

The investigators said they believed projects such as the one in Dade County would result in salvaging many women still in their productive years and responsible for the care and upbringing of children.

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# CE FIELDS

## GEOLOGY

### Drill Test on Land Sites Will Probe Earth's Crust

► UNITED STATES scientists will soon probe into the earth's crust at two land sites before attempting to reach the earth's mantle.

The drilling, scheduled to take place in the next few months, is part of Project Mohole, a multi-million-dollar effort to eventually penetrate the earth's crust to the dense underlying mantle. The drilling sites are Puerto Rico and St. Peter and Paul Rocks in the South Atlantic Ocean.

Equipment and techniques that may be used in the final probe to the mantle will be tested. Some scientists also believe that the rocks beneath the drilling sites may be the same material as the mantle that had thrust upward from the ocean bottom.

The National Science Foundation awarded a contract to Brown & Root, Inc., Houston, Tex., for the test drilling.

Within a year, U.S. scientists will do some more test drilling out in the ocean. This will be followed by the attempt to pierce the earth's crust sometime in 1963 or 1964.

The actual Mohole will probably be drilled in about three miles of water where the earth's crust "thins" to a three-mile thickness.

In preliminary tests conducted almost a year ago, scientists drilled a 600-foot hole in 11,700 feet of water to prove the feasibility of the project.

A progress report on the Project Mohole was presented by Dr. William E. Benson, director of the National Science Foundation's earth sciences program.

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## PHYSICS

### Ten Million TV Channels Carried by One Color

► TEN MILLION television channels could be carried by a single color, such as yellow, using the optical maser, also known as the laser.

This was one of the possible future uses for lasers, devices so new they were first operated only a year and a half ago, reported by Dr. John W. Coltman, associate director of Westinghouse Research Laboratories, Pittsburgh.

Other potentialities include knocking down missiles in outer spaces, performing delicate surgical operations and communicating with living beings on other planets if such life exists. Dr. Coltman reported these and other possible uses at a dinner meeting during which the 40 winners of the annual Science Talent Search were hosts to members of Congress from their home districts.

The 30 boys and 10 girls are in Washing-

ton for the six-day Science Talent Institute to compete for \$34,250 in scholarship awards. The 40 were selected for top honors from more than 23,000 high school seniors who entered the Science Talent Search from all over the United States (see story p. 155).

Dr. Coltman noted that the optical maser has been hailed in newspapers as a source of light brighter than the sun, as a radically new means of communication, both on earth and in space, and even as some kind of death ray.

He called the laser, which stands for light amplification by stimulated emission of radiation, a modern "Aladdin's lamp" that for the first time permits direct generation of coherent light. Light can now be treated by "all the sophisticated techniques" that have been developed for radio waves.

"Coherent beams of light now may be generated, changed in frequency, modulated to carry information by AM or FM and projected over long distances. A laser with a diameter of a quarter of an inch can produce a beam less than 25 miles in diameter on the moon, 240,000 miles away," Dr. Coltman told 40 of the nation's top young scientists and their guests.

A laser operates by using a source of light to energize the billions upon billions of atoms in a small crystal, usually ruby, to higher energy levels than they normally have. Usually these atoms would return to their normal state by giving up their additional energy as random, or incoherent, light. However, in an optical maser, the atoms are forced to emit their energy in unison as coherent light, thus generating an extremely narrow and brilliant light beam.

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## EDUCATION

### Small High Schools Seen As a National Problem

► SMALL HIGH SCHOOLS are a national problem in the adequate teaching of science, according to Dr. Ellsworth S. Obourn, science specialist in the U.S. Office of Education.

The science curriculum suffers in schools which are financially unable to provide a diversified teaching staff and up-to-date laboratory equipment.

Herbert A. Smith, president of the National Association for Research in Science Teaching, pointed out at the 35th annual meeting that the average high school in states such as Kansas has only 75 students. Teaching jobs are doubled up and some science courses are offered only bi-annually.

In reviewing the Association's program designed to help science teachers, Mr. Smith stressed the need to reorient teachers towards research and "the pursuit of science."

Primary emphasis in this program is placed on teaching the physical sciences as a "method of discovery" rather than as a static body of facts. In order to do this Mr. Obourn suggested that potential teachers should be research-oriented in undergraduate colleges and continue research in the classroom.

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## PUBLIC SAFETY

### New Center Marker Makes Highways Safer

► A DEVICE for marking the center line on highways so that it can be seen in good and bad weather is under development at the Stanford Research Institute, Menlo Park, Calif. It consists of a multiple reflecting device that is set at intervals along the painted lane-marking strip.

The device is designed to reflect a large amount of light back to the driver's eyes over a wide range of positions between headlight and marker.

A Bay Area business man, Chandler Ide, who had a narrow escape from an auto collision on a rainy, foggy night on the Bay Bridge at San Francisco, sponsored the research project with his own funds.

B. W. Bergsnov-Hansen, physical chemist on the staff of the Institute, worked out the device. Not yet on the market, the marker is being further developed.

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## MEDICINE

### Medical Students Needed To Use Research Results

► MEDICAL SCHOOLS are becoming "research institutes instead of teaching centers," according to Dr. Willard C. Rappleye, president of the Josiah Macy, Jr., Foundation, New York. He expressed concern that "the gap between what is known and what is applied is widening."

Dr. Rappleye attributed this to the generous grants available for medical research and suggested that financial problems were forcing medical schools to neglect their basic education programs.

The companion emphasis on post-graduate specialized training shows in the expanding number of hospital residencies. In the last 20 years the number of resident doctors has increased 600% while the number of medical graduates has risen only 35%. Although fellowships are available for both residents and researchers, most of the undergraduate medical students go through five to ten years of training with little or no scholarship assistance.

Dr. Rappleye called for the expansion of the "modern medical center" in which research and education would have equal importance.

Both Dr. Rappleye and Dr. Luther Terry, Surgeon General of the U.S. Public Health Service, agree that governmental and private grants should be made without restriction on their use.

Dr. Terry said that "the Government has made a substantial investment in all aspects of medical education—except the basic preparation of undergraduate students."

In an overall estimate of medical needs, Dr. Terry concluded, "We need more physicians than our medical schools are producing. Our physicians require a much more diversified training than was necessary even ten years ago."

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