

## PUBLIC HEALTH

**Wide, Open Spaces Still In Crowded Effete East**

► THE EAST has its wide open spaces, more than 20 million acres.

Good for recreational use, much of this area is within two or three hours driving distance from the cities of the New York-New Jersey-Philadelphia metropolitan area.

By 1976 population increase and more leisure will overstress the existing play space.

A survey by the Federal Outdoor Recreation Resources Review Commission just issued recommends that unused public lands be developed, public transportation be provided to new areas, day camps be established for children, and auto traffic be eased by introducing reversible lanes in center lanes of expressways.

• Science News Letter, 83:312 May 18, 1963

## SPACE

**Better Communications For Mars Probe in 1964**

► SCIENTISTS depend on radio to link them with far-flung space probes.

As space scientists push farther into the vast distances of the universe, radio engineers must do their best to keep up with them and build radio systems to cover the huge distances and time spans, Dr. W. H. Pickering, California Institute of Technology, Pasadena, stated in Washington, D. C.

In communication systems between the spacecraft and stations on earth, solar energy is the prime source of power, he said. The selection of radio frequencies and elimination of space noises are some of the problems facing today's space radio scientists, Dr. Pickering told the United States National Committee of the International Scientific Radio Union.

More detailed problems include, for instance, the size and shape of the antenna which must be delicate and accurate enough to point in the right direction, and yet be folded inside the rocket for the take-off.

The detailed performance of the communication system of Mariner II as it flew past Venus was very good, he reported.

By the time a spacecraft is ready for travel toward Mars in 1964, he said, radio communications will be ready to track it, with improved ground stations, sensitive antenna and clearer messages.

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## GENERAL SCIENCE

**The U.S. Spends More on Recreation Than Space**

► THE UNITED STATES spends five times as much on recreation as on space.

The total cost of all U.S. space activities for the past six years has been \$9.5 billion, Dr. Edward C. Welsh, executive secretary of the National Aeronautics and Space Council, said in New York. This averages out to less than 20 cents per week per person.

The United States can well afford such

expenditures, he told the American Institute of Aeronautics and Astronautics. Even with the "significant increase" of \$2 billion in space spending expected next year, only one percent of the gross national product will be going into the total space effort, Dr. Welsh said.

Two false assumptions prompt the charge that space money would be better spent on projects here on earth. First, he noted, the money for moon trips is spent for labor, materials and resources on earth. Second, failure to spend large sums for space does not guarantee that the money would be spent on other programs such as schools, housing and medicine.

Dr. Welsh gave as reasons for going to the moon:

The moon is the nearest place in space to test equipment and men for future space travel.

Know-how not otherwise obtainable will be developed.

The U.S. could become a second-rate nation if another country wins the lunar race. The standard of living will be improved.

A greater deterrence to aggression will be gained.

Dr. Welsh predicted that 1963 will bring more space spectaculars for the Russians than for the U.S.

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## GEOPHYSICS

**Indian Ocean Has Unusual Wind, Currents**

► THE PATTERNS of ocean currents around the equator are different in the Indian Ocean from those of other oceans.

For instance, researchers have found no undercurrent like those of the Atlantic and Pacific Oceans.

Also, the Indian Ocean currents follow no simple pattern, Dr. John A. Knauss of the University of Rhode Island reported. Currents vary in strength and stability at different degrees from the equator, he told the 44th annual American Geophysical Union meeting at Washington, D. C.

A current can be recorded during a period of 24 hours, he said, but will change within three weeks, sometimes within three days.

As part of the International Indian Ocean Expedition, Dr. Knauss took part in a three-month cruise to study the equatorial circulation of the Indian Ocean at different seasons of the year. The joint expedition of the Scripps Institution of Oceanography and the University of Rhode Island, on the Scripps research vessel *Argo*, was sponsored by the Government. The first three-month cruise was completed last September.

Heavy monsoon winds, blowing essentially north and south, may be influential in creating these unusual equatorial currents, Dr. Knauss said.

Currents around the equator in the Atlantic and Pacific Oceans are generated initially by the steady trade winds maintained by the rotation of the earth. These winds, blowing generally from the east as the earth turns on its axis, roll the masses of water towards the west.

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**IN SCIEN**

## MEDICINE

**Lung Cancer Diagnosed When X-rays Are Normal**

► EARLY DIAGNOSIS of lung cancer, when surgical cure is most likely, can be made even when chest X-rays are normal.

Microscopic examination of cells in samples of sputum, known as a cytological examination, was successful with 12 patients, three New York pathologists reported at the International Academy of Pathology meeting in Cincinnati.

The researchers suggested that cytological techniques be used routinely in examining patients with chronic cough or other persisting symptoms of lung disease. Special skills are required of laboratory personnel, which makes wider use of the method inadvisable at this time, but a possibility for the future.

When lung cancer has been detected by cytological examination, it is necessary to find its exact position in the lung. Repeated use of a special lighted bronchoscope called bronchoscopy can usually find the position. Also useful is aspiration, or sucking up, of bronchial fluid for cytological diagnosis from various areas within the lungs. Another method of localization is through special X-rays of the bronchial walls.

When lung cancer has spread too far for complete surgical removal, only about five percent of patients recover. It is the leading cause of death from cancer among men in the United States.

The findings were reported by Drs. M. R. Melamed, L. G. Koss and E. E. Clifton of the Memorial Hospital for Cancer and Allied Diseases, New York.

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## BIOLOGY

**Fungi Found Harmful In Cereal Products**

► THE PRINCIPAL organisms causing damage in stored cereal grains are fungi, those tiny non-green plants such as molds, mildews and rusts.

Bacteria also may flourish in cereal products, Dr. Glenn G. Slocum, Food and Drug Administration in Washington, D. C., reported at Minneapolis. But less attention is paid to them except when they create special spoilage problems in bread or in tinned products, he told the American Association of Cereal Chemists meeting.

There has been little study on the relation of microbes in cereal products and the soundness and cleanness of grains and milling establishments, he said. But in recent years, a more centralized food production system and demands for more non-sterile "convenience" foods have created more interest in this subject and in methods of controlling the microscopic living organisms.

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# CE FIELDS

## SPACE

## IAEA Aids Space Research Meteorite Program

► THE INTERNATIONAL Atomic Energy Agency (IAEA) will help its member states with their space research by arranging for the collection and rapid transport of newly fallen meteorites to laboratories where their radioactivity can be analyzed.

Short-lived radioisotopes in meteorites are a most useful means to determine the presence and nature of radiation in outer space, including radiation belts around the earth.

However, unless meteorites are analyzed in suitably equipped laboratories quite soon after impact with the earth's surface, the shorter-lived radioisotopes contained in them will have decayed too far for precise quantitative and qualitative determination.

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## PSYCHOLOGY

## Newborn Babies See Patterns

► BABIES are born with the ability to see patterns.

Newborn babies look longer at patterns than at plain solid surfaces, Dr. Robert L. Fantz, psychologist at Western Reserve University, Cleveland, has found.

Tests on 18 infants, ranging from ten hours to five days old, showed they looked more at discs patterned with newsprint, bulls-eye targets and sketches of faces than at discs colored plain yellow, white or red.

In order to pay so much attention to patterns, the infants would first have to be able to recognize them, and to see that they were different from solid forms.

The tests indicate that the infants were able to make this discrimination, Dr. Fantz reported in *Science*, 140:296, 1963. His work challenges traditional views that the infant's world is formless and chaotic, and that seeing patterns is a learned rather than an innate ability.

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## SPACE

## Radio Waves May Detect Distant Missiles

► NEW METHODS for detecting missiles thousands of miles away are "very promising" as a defense warning system.

Brig. Gen. B. G. Holzman, commanding the Air Force Cambridge Laboratories at Hanscom Field, Mass., revealed that far-off missile launchings are being tracked by this method. He said that the method grew out of his Laboratories' study of the impact rockets make on the ionosphere.

Rocket exhausts disrupt high altitude radio-reflecting layers in a wave-like manner

that can be picked up by special radio receivers.

During the past two years the Air Force has monitored a number of rocket launchings on many radio frequencies. The monitors are set at several ground launching sites throughout the world. At the same time the Air Force had been putting together a map of the natural gases in the ionosphere.

"The evidences of foreign gases should not be very difficult to detect," Gen. Holzman said.

Some monitoring stations also have been using highly sensitive television systems to study the effects of upper regions upon missile trails and experimental packets of chemicals released by rockets.

Air Force spectrometers also have been trained on shock waves of high explosives set off by rockets at high altitudes.

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## GEOPHYSICS

## Sending Probe to Scan Comet Makeup Proposed

► SENDING a space probe close to a comet, possibly passing through the head or tail of these wandering objects, was proposed by a Belgian astronomer.

Dr. P. Swings of the University of Liege suggested that a far-flying rocket be hurled millions of miles into space to investigate a comet's makeup.

He also suggested launching an artificial comet nucleus composed of ice of known composition. How this man-made mixture reacts in space could be observed both from the ground and an accompanying satellite.

Studies of the man-made comet could yield valuable clues to the chemical composition of real comets, and thereby clues to the solar system's origin. The proposals were made in a special report to the Smithsonian Astrophysical Observatory in Cambridge, Mass.

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## PSYCHOLOGY

## Men Kept Their Heads During Cuba Crisis

► MEN KEPT COOL at the time of the Cuba crisis, while women responded anxiously to the threat of nuclear war.

The number of men who preferred swimming pools in the backyard to fall-out shelters was the same both a year before and during the crisis, a team of psychologists told the meeting of the Midwestern Psychological Association in Chicago.

Women's preferences shifted, however, the psychologists said. More women would have built bomb shelters rather than swimming pools during the crisis than before it.

A total of 454 men and 441 women were questioned by Dr. William C. Kosinar and Robert Neville of Chicago City Junior College and George Senitz of Chicago Teachers College.

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## MEDICINE

## Reliable Cancer Test Uses Fluid Samples

► A TEST for difficult-to-diagnose internal cancers has been found using excess fluids that accumulate in the chest or abdomen.

Cancer cells release from twice to ten times the amount of an enzyme, called lactic dehydrogenase or LDH, released by nonmalignant cells, Dr. Russell J. Erickson of the University of California Medical Center, San Francisco, has found.

The catalyst LDH, which is involved in the cell's production of energy, is made and used by all cells. In 23 of the 27 patients Dr. Erickson tested, the fluid contained a concentration from 185 to 740 units of LDH. The average concentration of LDH in nonmalignant patients was well below 130 units.

Dr. Erickson, whose research was assisted by the American Cancer Society, said the test was much more dependable than any other pre-operative test for cancer as the cause of accumulation of fluid. Although the method involves "a substantial margin for error," it is more reliable than X-rays or microscopic studies for the presence of cancer cells.

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## BIOCHEMISTRY

## Tumor Cells Return To Normal Functioning

► CANCER CELLS can return to normal appearance and behavior.

After a series of grafts onto healthy tissue, abnormal tumor cells recovered and became completely normal, Dr. Armin C. Braun of the Rockefeller Institute, New York, has found.

His work, done with plant tumors, may be applicable to animal and human cancers as well, Dr. Braun believes, because the basic features of cell chemistry are the same.

There are two distinct kinds of chemistry in normal tissue: the chemistry of cell growth and the chemistry of specialization, he said. In normal tissue, these systems are balanced.

In tumor cells, however, the chemistry of growth takes over. By themselves, tumor cells manufacture the hormones for growth and division that normal cells can only get from outside. This is how the tumor grows so wildly, Dr. Braun explains.

The irresponsible growth of tumors would be checked when the balance of the two chemical systems was restored, his theory proposes. And this is what happened when the plant tumors became normal.

The research, supported by the American Cancer Society, suggests new possibilities for controlling cancer. The main aim of anti-cancer drug research is to find a way to kill the cancer cell or to slow down its growth. Dr. Braun's findings indicate that study to discover how cancer cells can be made to revert to normal cell types is warranted.

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