

## TECHNOLOGY

**Vehicles Guided Without Human Hands Foreseen**

➤ A WORLD in which all kinds of vehicles could be guided without human intervention may be possible in the next 20 years.

To prepare for peaceful space activities before manned space travel is achieved, the Brookings Institution has issued a 190-page report proposing a wide range of studies, from satellite-based communications systems to those that will affect basic moral and ethical questions.

New plastics, alloys and combinations of metals and plastics may compete strongly with conventional metals and other materials because of their strength, lightness and temperature resistance, the report said. However, the demand for conventional ores may not be reduced, so a study is necessary to discover means of coping with changing patterns of the international metal trade.

The discovery of intelligent life in other parts of the universe, while not likely in the immediate future, could happen at any time. Its consequences for earth attitudes and values may be "profound." The report advises research "to determine what factors historically have entered into support or rejection of new ideas and technologies."

The space summary was prepared for the committee on long-range studies of the National Aeronautics and Space Administration, of which Hon. John A. Johnson is chairman. The Brookings report, called "Proposed Studies on the Implications of Peaceful Space Activities For Human Affairs," was done under a \$96,000 NASA grant, and required a year's work.

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## GENERAL SCIENCE

**Japanese Science Club To Start Firefly Farm**

➤ A FIREFLY breeding farm is the next project of a Japanese high school science club which already has successfully raised 100,000 fireflies.

This unique program of artificial hatching and culture of fireflies has grown out of a full-scale research project carried on by the Biology Club of Togane Commercial High School, Chiba Prefecture.

Each year thousands of fireflies are collected and sold in gauze-covered cages for use as garden lanterns. The firefly is also important agriculturally since the larvae devour field and garden pests.

So, as the first step in its investigation, the club collected data on the firefly population and the reasons for its depletion by sending questionnaires to 2,600 students in other high schools.

In the course of its study, the group learned that fireflies generate light even in the larval stage, that there are observable differences in the light emitted by male and female fireflies, and that intermittent light from a flashlight attracts a congregation of the insects.

The young scientists' discovery that fire-

flies would nest in an inverted flowerpot, and that pond snails and mollusks made a very suitable diet, resulted in the extensive breeding program.

The biology club was given the Prime Minister's Award when the project was exhibited at the Fourth Japan Student Science Awards program held recently in Tokyo.

Other science club projects that won top awards include research on the sea turtle, a project conducted for ten years by succeeding classes of Hiwasa Junior High School; a study of topographical features affecting weather; the development of quantitative test apparatus for proving conservation of mechanical energy, and lacunological studies of a pond in a sand dune.

Two outstanding students who carried out individual projects will be chosen as finalists to the National Science Fair-International which will be conducted by SCIENCE SERVICE in Kansas City, Mo., May 10-13, 1961.

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## PHYSIOLOGY

**Substance From Nerves May Help Bees Digest**

➤ ACETYLCHOLINE, the substance released from nerves to activate the muscles, may help bees digest their food.

This suggestion was made by Dr. E. H. Colhoun of the Pesticide Research Institute, London, Ontario, Canada, and Dr. M. V. Smith of Ontario Agriculture College's department of apiculture, Guelph, Ontario.

Royal jelly and honey, the natural foods of bees, contain acetylcholine, which is known to increase intestinal movement. The chemical may have an action similar to that of muscarine, a poison from mushrooms which increases salivary and intestinal secretions.

Acetylcholine seems to have no effect on the bees when it is injected in abnormally high amounts, but when they eat it, apparently something happens to their digestive tracts.

Just how the substance gets into food is still a puzzle.

Royal jelly, a food reserved for queen bees, is produced in the hypopharyngeal glands of nurse worker bees. But, the researchers reported in *Nature*, 188: 854, 1960, there is no evidence that acetylcholine is synthesized in the same place.

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## MEDICINE

**Physicians Recommend Annual Check-Up**

➤ A STUDY based on 587 interviews with physicians shows that three in every four agree that all adults, no matter how well they feel, should have an annual check-up, and that all women should have a pelvic examination each year.

Two out of three doctors agree that cigarette smoking is a major cause of lung cancer, the American Cancer Society meeting was told in New York. The survey of doctors' opinion was made by the University of Chicago's National Opinion Research Center.

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**IN SCIENCE**

## MEDICINE

**\$250,000 Grant Made By Cancer Foundation**

➤ A \$250,000 GRANT from the Eleanor Roosevelt Cancer Foundation for an international fellowship program will be supervised by the International Union Against Cancer, Dr. Harold F. Dorn, secretary-general of the IUAC, reported in Washington, D. C.

Dr. Dorn said that final plans would be agreed upon after an international committee meets in early February in London. However, it will probably be close to March 1 before announcements are sent to the 51 member nations of the IUAC, he said. The research program should be underway by next June.

Applications from qualified science students in this country who wish to do cancer research in other countries will be received along with applications from promising cancer researchers who may benefit from study in the United States.

This is believed to be the first time a voluntary organization has made a grant to an international professional organization.

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## SURGERY

**Artificial Kidney Makes Heart Operation Possible**

➤ THE ARTIFICIAL KIDNEY now offers hope to heart patients with excess body fluids that prevent surgery.

A 45-year-old woman's life is reported saved by an artificial kidney after every known treatment failed to remove the accumulation of blood and fluids that made an operation impossible. She had congestive heart failure, a disorder marked by a drop-slow condition.

Unless nature or medications can remove the accumulated fluids, the patient usually dies before an operation is possible.

Drs. William M. Lemmon, Teruo Hirose, Robert A. O'Connor and Charles P. Bailey of the New York Medical College, Flower and Fifth Avenue, Metropolitan Hospital Center, report successful use of the mechanical kidney after the patient failed to respond to diuretics and other treatment in the *Journal of the American Medical Association*, 174:2124, 1960.

The doctors report the artificial kidney seemed capable of accomplishing three different objectives—the elimination of excess body fluid, the restoration of the electrolyte balance of the circulating plasma, and the elimination of waste products or poisons from the blood stream.

The mechanical kidney was used twice before it was possible to operate on the woman, who recovered completely.

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# CE FIELDS

## SURGERY

### Many Blood Transfusions Unnecessary or Harmful

► THERE WOULD BE more blood available for essential transfusions if surgeons did not order them so routinely. Many transfusions are unnecessary or even harmful.

Dr. John H. Morton of the University of Rochester School of Medicine and Dentistry, Rochester, N. Y., after studying blood-transfusion practices at the University Medical Center, found a possible 72% of 169 patients received unnecessary transfusions.

Reports from other clinics indicate that the administration of single-unit transfusions is a common practice, Dr. Morton said.

Surgery in itself is not a reason to give a blood transfusion. Dr. Morton said other investigators had pointed out that promotion of wound healing, to supply proteins or calories or to correct a low hemoglobin level does not warrant administration of whole blood.

In the cases studied, the surgeon said one elderly woman received a unit of blood in the hope that she would be less disoriented and uncooperative after her operation.

"Both the patient and the community as a whole have a stake in the curtailing of unnecessary transfusions," Dr. Morton said. With open-heart surgery and other major operations increasing the demand for blood, transfusions that are not essential must be abandoned, he reported in the *New England Journal of Medicine*, 263:1285, 1960.

Dr. Morton said that the direct hazard of transfusion is small and that blood should not be withheld when the indication for its use is clear cut. Over-transfusion, with serious circulatory overloading, is one hazard to the patient receiving large amounts of blood.

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## PUBLIC SAFETY

### Banks Alerted to Danger Of Radium Storage

► METROPOLITAN BANKS have been alerted to the danger of radiation from radium that might be stored in safety deposit boxes.

The warning is sounded by Dr. D. R. Peterson, director of the adult health division, Seattle-King County, Wash., Department of Public Health, after a Seattle bank scare.

Dr. Peterson reports in *Public Health Reports*, 75:1190, 1960, that radium was removed from a Seattle bank after being stored with other valuables in a safety deposit box since approximately 1945.

The radium had been obtained in an estate, and the owners, knowing nothing better to do with it, had put it in the bank

vault. It was removed to a hospital radiation safe until further disposal after the hospital radiologist had received phone calls regarding it.

The Seattle Department of Health instituted a Geiger counter survey of 68 bank vaults in the city. Each bank paid a nominal fee for the inspection service. Only three out of 71 banks refused the service.

The average background radiation in the surveyed vaults ranged between 0.005 and 0.01 milliroentgens per hour, which is considered within normal limits. No additional radium or other radioactive material was found.

Dr. Peterson reports that the type of radium used by physicians of an earlier era, which was most likely to be uncovered, was packaged in such a way that the passing of time could permit the escape of highly toxic radon gas generated by the decay of radium. However, persons exposed to this radiological health hazard are probably few.

The probability of finding radium in bank vaults is unquestionably higher in some of the older and larger metropolitan communities than in Seattle, a "relatively young community of more than 800,000 persons."

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## PSYCHIATRY

### African Mental Disorders No Different From Others

► THE MAJOR mental disorders occurring in Africa are fundamentally similar to those in other parts of the world.

Schizophrenia, or split personality, seems to be most common, although permanent recovery seems to occur most readily in African patients, Dr. T. Adeoye Lambo, consultant psychiatrist, University College Hospital, Ibadan, Nigeria, reported in the *British Medical Journal*.

One of the most important observations Dr. Lambo made in a five-year study was the comparatively quick recovery of schizophrenics treated within the framework of the community.

However, although schizophrenics were found to constitute nearly two-fifths of the insane criminals in four large asylums in Nigeria, frenzied anxiety is a more common cause of crime.

Tranquilizers have revolutionized the management of psychiatric disorders in Africa, Dr. Lambo said. The boarding of day patients at Aro Hospital in surrounding rural villages for three years could not have been accomplished without drugs that reduced tension, excitement and aggression, he observed.

New problems such as alcoholism, prostitution and character disorders, drug addiction and juvenile delinquency are arising in Africa, he said, but a scientific evaluation of behavior deviations arising from social change has yet to be made.

"The interplay between man and his physical and social environment," he concluded, "would seem to influence considerably the evolution of the disorder—that is, its property of remaining latent or manifest, its later course and its final outcome."

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## GENETICS

### Nobelists Gives Candy To Demonstrate Genetics

► NOBELIST Dr. George W. Beadle of California Institute of Technology gives away free candy at his public lectures. He also has rabbits and cats as props to illustrate certain points about genetics.

The candy is used in demonstrating the genetically controlled difference between "tasters" and "non-tasters."

Identical twins, developed from the same fertilized egg and, therefore, having the same genetic makeup, are asked to chew a piece of paper treated with phenylthiocarbamide. PTC is bitter for tasters and tasteless for non-tasters but does not test a person's ability to taste other substances. Identical twins react to PTC in the same way. Of fraternal twins, however, one, both or neither may taste the chemical.

The candy is given to cover up the bitter flavor.

The Himalayan rabbits and Siamese cats show how the same gene can produce different effects depending on environment. These rabbits and cats have a pigment that is one color at body temperature but becomes darker at lower temperatures. This is the reason newborn Siamese kittens are more or less solid color and develop the black ears and paws only when these body areas cool off.

Dr. Beadle said that it is easier to discuss details of scientific subjects with younger people than with adults.

"The younger people are more curious and read much more than my generation did. They are less inhibited about thinking of new ideas; they are not saddled with the preconception that science is difficult," Dr. Beadle said at the ninth annual Christmas lectures of the Philosophical Society of Washington, D. C.

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## PHARMACOLOGY

### New Drugs Open Air Passages, Heart Vessels

► A NEW SERIES of chemicals that dilate the air passages of the lungs and the blood vessels of the heart has been developed.

The chemicals, some of which probably will be developed as prescription drugs, are the 1,3-dialkyl-6-thioxanthines. They differ from a well-known dilator drug, theophylline, in that a sulfur atom has been substituted for an oxygen atom in the chemical structure.

Some of the new 6-thioxanthines are 60 times as active as the corresponding salts of the older drug, theophylline, in test-tube tests. In the living animals, the effectiveness of the chemicals is reduced, but they are still potent enough to protect guinea pigs from the deadly effects of an aerosol spray that narrows the air passages.

The research is reported in *Nature*, 188:1107, 1960, by Drs. A. K. Armitage and K. R. H. Wooldridge of May and Baker, Ltd., Dagenham, Essex, England.

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