

## MEDICINE

## X-Ray Movies Help Deaf Speak Properly

► THE DEAF are being helped to speak properly through the use of X-ray movies showing the speech mechanism in action.

New filmed procedures, known as cine-fluorography, have been developed by a speech therapy team at the University of California, Los Angeles Medical Center for this purpose. The team consists of Dr. Franklin L. Ashley, Robert F. Sloan, and Drs. Howard A. Grey, Elise Hahn and John Miethke.

The speech mechanism of the subject is coated with vanilla-flavored, radio-opaque barium, and X-ray movies are then made as the subject utters basic speech components, known as phonemes, as well as words and phrases. Thus the various parts of the speech mechanism, such as the tongue, soft palate, etc., are visualized in action.

The film is designed to help the teacher and pupil actually to see what goes on in the mouth and throat during speech. Diagrams and still X-ray photos have been inadequate for the purpose. Motion pictures, it is believed, will help the individual to visualize better a particular combination of articulatory positions in the proper sequence and duration necessary for a smooth speech flow.

The film is used with those born deaf and those whose speech is deteriorating as a result of hearing loss in later life. Both groups are handicapped by absence of the hearing sense, which is the chief speech monitor.

Films have been made for both English- and Spanish-speaking groups and demonstrated in this country and in Mexico.

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## IMMUNOLOGY

## Mass Revaccination Program in USSR

► COMPLETE eradication of polio in the USSR is the aim of current plans for the mass revaccination of Russians under 20 with the Sabin oral live virus vaccine.

Dr. Albert B. Sabin of Cincinnati, who developed the vaccine, reports in the *Journal of the American Medical Association*, 176:231, 1961, that 77,475,000 persons were vaccinated during 1960 in the USSR.

Of this number, 72,231,000 were under 21 years of age, and the remainder were 21 to 55 years old. The mass inoculation of the younger group was usually accomplished in one to seven days. Most of the population was inoculated before July 1, thus preventing the traditional summer increase in the disease.

Referring to the 1960 community immunization program in Cincinnati, in which the Sabin vaccine was used for children in schools and others in doctors' offices, Dr. Sabin states that conditions in the Cincinnati program made revaccination unnecessary.

Prof. M. P. Chumakov, director of the Moscow Institute for Poliomyelitis Research

of the USSR Academy of Medical Sciences, indicated that his recommendation for revaccination this year in the USSR is based on the desire to do even more than may be necessary to achieve complete eradication of polio.

"I have not seen any data that indicate a need for it," Dr. Sabin says.

Prof. Chumakov reported that although Salk killed vaccine was used in three regions of the Russian Soviet Federated Socialist Republic (RSFSR) with a consequent lowering of polio cases on an average of four times less than among children not vaccinated, the Salk vaccine did not prevent the seasonal increase of the disease in a whole town or region.

"It is practically impossible," Prof. Chumakov said, "to vaccinate 100% of susceptibles with Salk vaccine for a variety of reasons."

The Council on Drugs of the AMA in the same issue of the journal reiterates its belief in the Salk vaccine and states the live poliovirus vaccine will not be available for use in 1961, although it is being studied.

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## MEDICINE

## Help for Leukemia Seen In New Oral Compound

► EFFECTIVE ORAL treatment of chronic lymphatic leukemia and Hodgkin's disease has been reported.

Uracil mustard, an "alkylating agent," one of the antitumor substances, has produced regression of symptoms in 15 of 20 leukemia patients and in 16 of 27 with malignant lymphoma, or Hodgkin's disease.

Fewer side effects were noted than when nitrogen mustard was injected into the veins of such patients. Large doses were given for short courses at intermittent periods.

Drs. B. J. Kennedy and Athanasios Theologides of the University of Minnesota Medical School, Minneapolis, report in *The New England Journal of Medicine*, 264:790, 1961, that cancer has been controlled by uracil mustard in seven patients for one year.

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## ASTRONOMY

## Two "Exploding" Stars Found in Milky Way

► TWO UNUSUAL "exploding" stars, having atmospheres that move with speeds up to 2,000 miles a second, have been found in the Milky Way.

Both novae, as they are called, were found on photographic plates by Drs. Jason J. Nassau and Charles B. Stephenson, astronomers at Case Institute of Technology in Cleveland.

In about two or three days, a nova can become many thousand times brighter than it was before. It then gradually fades. The increase in brightness is caused by an explosion inside the star. However, both novae are much too faint to be seen without a telescope.

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# IN SCIEN

## TECHNOLOGY

## Cheaper Atomic Power From Hot Gas Tested

► A WAY of producing atomic power much more cheaply is being investigated. The idea is to make the jet of hot gas from an atomic furnace generate electricity directly without having to use rotating machinery like a steam turbine.

A prototype of one of these "no-moving-parts" generators that will test the principles of the method is being built by the Parsons Nuclear Research Center, Newcastle-on-Tyne, England.

Prof. M. W. Thring of Sheffield University has carried out some small-scale experiments on generating electricity direct from flames. The prototype is designed to test the possibilities of using this kind of generator with a gas-cooled atomic furnace like the Dragon, now under construction.

The most modern power stations waste about two-thirds of the heat contained in the coal they burn or release in their atomic furnaces. This waste cannot be avoided except by increasing the working temperature of the gas or steam used. But, in spite of many improvements, the maximum temperature at which the steels used for turbine blades can be made to work is quite low.

The new type of generator, because it has no moving parts, can be made of materials able to withstand the high temperatures but not strong enough to be used in a turbine.

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## ROCKETS AND MISSILES

## Atlas Failure Will Not Delay U. S. Space Flight

► THE FAILURE of the Atlas rocket carrying a "mechanical man" will not delay the first U. S. manned space flight.

The National Aeronautics and Space Administration reported that the purpose of the flight had been accomplished, namely to release safely the capsule that the first United States astronaut will ride in.

The Atlas rocket carrying the capsule was launched from Cape Canaveral at 11:15 a.m. Tuesday, April 25, and was destroyed 40 seconds later by the range officer because the rocket malfunctioned.

The space capsule was ejected in the way planned for the end of the flight. It landed in shallow water a short way from the beach and was picked up by a helicopter and returned safely.

The first U. S. manned space flight will get its send-off with a Redstone rocket, not an Atlas. For this reason there will be no reason for any delay in the planned manned flight, believed ready to take place early in May.

• Science News Letter, 79:280 May 6, 1961

# CE FIELDS

## GENERAL SCIENCE

### Spending More for Basic Research Urged

► **MORE MONEY** must be spent on pure science research in the United States space program if the country is to maintain its leadership in that field.

The National Aeronautics and Space Administration budget for pure sciences must be doubled or tripled to keep pace with the many new space developments, Dr. John A. Simpson of the University of Chicago said in Washington, D. C.

The U. S. is facing "lean years" in the space program ahead, the scientist said. Only one probe into deep space and back is scheduled from now until 1963.

In the years ahead, free nations of the world will look back to see who were the leaders in pure science research, which provides the building blocks for future space achievements.

More space probes are needed for sampling space phenomena. Rockets with greater thrust can carry heavier payloads, the scientist said, but a more diversified sampling of space is needed which cannot be accomplished with solitary shots covering a limited area.

The tempo for heavier shots still should be maintained, but the pure science budget should also be greatly increased. Although the United States has "lost the first round in the race to put a man in space," the program should not be de-emphasized, the scientist concluded.

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## MEDICINE

### Medical Research Lags Behind Man in Jet Age

► **MODERN** technological innovations demand a new approach in medical research, Dr. Rene J. Dubos, noted microbiologist and pathologist, said at the Yale School of Medicine.

Dr. Dubos, of the Rockefeller Institute in New York, said the jet age has man moving about so fast that modern medicine has not yet caught up with him.

"Nowadays changes occur constantly and rapidly," he said. "New substances, new forces, new stimuli are constantly introduced in our life and we cannot avoid them."

But most medical research work is geared to a study of man and his ailments as if his life was much slower and constant, the scientist emphasized.

"The interplay between the innate nature of the organism and the environment in which he lives focuses attention on an aspect of modern life which has been neglected by medical science," he said.

"At an ever-increasing rate, man is being separated from the environmental forces

among which he has evolved. He has hardly any occasion to experience the impact of regular seasonal variations. He carries his day into the night and vice versa. He moves by jet in a few hours from one climate and one latitude or longitude to another."

He indicated that these changes along with modern air-conditioning contrasts to the non-conditioned atmosphere and other excessive stimuli may have physiological consequences.

"These problems should and can be investigated," he said, "but they demand a different kind of scientific approach and also a change of emphasis on what is worth doing and fashionable."

Dr. Dubos said "biomedical sciences have emphasized almost exclusively the aspects of life that man shares with animals." Medicine must now develop techniques to study disease and health as affected by the "traits which differentiate man from the rest of creation. Scientists will not feel at home in this new kind of task."

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## ROCKETS AND MISSILES

### Communication Satellites Endorsed by President

► **PRESIDENT KENNEDY** has endorsed a step-up in this country's communications satellite program. An additional "\$25 to \$27 million" will be invested in space communications.

This is an area in which the United States has demonstrated a superior space capability. It has long been thought by experts in international affairs here and abroad that the first nation to make such a system available to the world would have a greater impact on the minds of men than would the nation which orbited man first. Industry has been anxious to share development costs in this area.

President Kennedy indicated that developing such a system was a U. S. space goal. He said he would welcome support in achieving this goal from industry or any others interested in putting their money into this area. He indicated, however, that investment by industry would afford little saving to the Government.

"I must say," he said, "that from examining this and other programs, the Government puts most of the money into it."

The entire area of this country's space science program currently is under review. Decisions will be made in the near future concerning the areas in which U. S. space efforts are to be concentrated. They will be those in which the U. S. can advance first and fastest, the President said.

Although President Kennedy did not mention it, besides communications, the United States has a great lead in space meteorological research from its weather satellites, Tiros I and II. But the Administration's present space budget has cut funds for development in meteorology. These probably will be restored and possibly increased in the near future.

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## MEDICINE

### Human Heart Ailments Simulated in Animals

► **FOR THE FIRST TIME**, scientists have produced, in experimental animals, the blood clots that frequently lead to artery hardening and heart attacks in humans. This gives them the tool needed for testing treatments designed to prevent heart disease.

Drs. Sanford Byers and Meyer Friedman of Mount Zion Hospital and Medical Center, San Francisco, reported to the Federation of American Societies for Experimental Biology in Atlantic City, N. J., that the blood clots can be produced either with a small spiral wire or a plastic trough.

It has long been known that a blood clot may be the immediate cause of a heart attack, Dr. Byers said. But in 1948 it was suggested that blood clots might also be one cause of the artery hardening that precedes a heart attack, and researchers have been trying to verify this experimentally ever since.

In one of the techniques devised by Drs. Byers and Friedman, a spiral wire composed of a metal alloy that acts like a miniature battery is placed in a heart artery. This battery provided tiny electric currents that caused a blood clot to form within three days.

The clot in turn causes an artery hardening, which "exactly simulates" the actual area, called an atherosclerotic plaque, found in the arteries of the human heart after a heart attack.

If a researcher wants an atherosclerotic plaque in a specific size, shape or location, he merely changes the size, shape or location of the wire.

The plastic trough works in the same way, except that the clot forms without benefit of electric currents.

Heart disease conditions can be reproduced so precisely with the new technique that different treatments can now be put to tests of exact comparison.

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## MEDICINE

### "Gun" Device Used For Cancer Detection

► **A CANCER** detecting "gun" that permits earlier diagnosis of throat and lung cancer has been perfected by a Florida physician, Dr. J. Ernest Ayre, medical and scientific director of the Cancer Cytology Foundation of America in New York and Miami.

Finger-pressure on the gun trigger fires a brush out of the tube into the oral cavity where it can be rotated. Laryngeal cells from the vocal cords and bronchogenic cells in the mucous stream from the lungs are caught by the revolving brush.

The cell samples are examined under the microscope to determine the presence or absence of malignant cells.

Cytology tests, using the new gun device, are comparatively painless, require less than five minutes to complete, and can result in the discovery of unsuspected cancer.

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