

First Plutonium Sample in Smithsonian

► THE WORLD'S FIRST sample of plutonium 239—an invisible coating on a dime-sized piece of platinum was presented to the Smithsonian Institution.

The presentation was made by Dr. Glenn T. Seaborg, chairman of the U.S. Atomic Energy Commission, and Dr. Emilio Segre of the University of California, Berkeley. Also given to the Smithsonian was the cigar box in which the plutonium had been stored for 25 years.

Dr. Seaborg was a co-discoverer of plutonium and Dr. Segre was instrumental in showing that the isotope plutonium 239 undergoes nuclear fission when bombarded with thermal neutrons, the reason for this material's great value.

The presentation of the tiny amount of the nuclear fuel, the first ever created by man, was made on the 25th anniversary of the day that the fissionable nature of the isotope was proved—March 28, 1941.

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IMMUNOLOGY

Volunteer Prisoners Aid Flu Vaccine Study

► THIRTY-THREE volunteer Federal prisoners have helped make possible improved influenza vaccines that will save lives and lessen the effects of flu.

These men exchanged their prison cells for quarters in the National Institutes of Health (NIH) Clinical Center where they were under careful medical surveillance for two days before and 14 days after inoculation with flu viruses.

Influenza virus strain A2/Bethesda/10/63 was sprayed and dropped into their noses and throats. Until the collection of the clinical specimens, 21 and 28 days later, the men were outpatients.

This virus was grown in vervet-monkey-kidney cells after being taken from the throat swab of a patient with moderately severe influenza in the winter of 1962-63 by Dr. Patricia Webb of NIH.

Results of the tests on three separate groups of the prisoners showed the following conclusions, reported to *SCIENCE SERVICE* by Dr. J. A. Morris, chief of the section on respiratory viruses, NIH Division of Biologics Standards.

"In order to be effective the vaccine must contain a specific virus. Prompt incorporation of each new antigenic variant of influenza virus into the vaccine is needed."

The Public Health Service is now taking action to improve the influenza vaccine. This may entail the removal of some old strains if they are proved to be of no value.

Dr. Morris, and his NIH colleagues,

reported in the *New England Journal of Medicine* 274:527, 1966, that "these observations appear to discourage hope for ultimate success in stimulating a solid immunity against influenza A2 viruses by use of vaccines containing strains that are antigenically dissimilar from strains against which they are to protect."

The Government has modified the influenza vaccine given the public in the winters of 1963-64 and 1965-66. Health officials are considering a third change to make the vaccine more effective in the next season.

Cooperating with Dr. Morris in this study were Drs. J. A. Kasel, M. Saglam, V. Knight, and F. A. Loda.

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MEDICINE

Birth Control Pill Causes Jaundice

► A SWEDISH woman has had her gallbladder removed because she got jaundice from taking birth control pills.

This report came from two physicians at the University Hospital, Lund, Sweden, who said the operation was performed because the diagnosis was uncertain.

Six other women who had been taking the oral contraceptive, Anovlar, suffered from prolonged tiredness and inability to work. Two of them had the intense itching called pruritis.

Anovlar is not given in the United States, but U.S. Food and Drug Administration officials told *SCIENCE SERVICE* that its chemical ingredients, ethinyl-estradiol and norethisterone acetate, are similar to those in oral contraceptives produced by American pharmaceutical companies.

The FDA has no plan to crack down on birth control pills containing estrogen, however, as isolated cases are continually being reported of women who have side effects, including jaundice, when they take pills containing the female hormone produced by the ovaries. All that needs to be done in such cases is to discontinue the pills. Fortunately all women do not react the same way.

Drs. K. E. Thulin and Jerker Nermark, who reported the seven cases of jaundice from Anovlar, referred to several recent reports of the possibility of liver damage following the use of oral contraceptive pills.

Four of the women taking Anovlar were not using the drug for contraceptive purposes but for difficult menstruation or endometriosis.

Liver biopsy was performed in six of the cases and the prognosis has been good. All recovered with almost normal liver function within one or two months after jaundice occurred.

"The widespread use of oral contraceptives leads us to the supposition that this cause of jaundice is sometimes overlooked," the authors concluded in the *British Medical Journal*, March 5, 1966.

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IN SCIENCE

TECHNOLOGY

Short Circuits Boost Fuel Cell Power

► BY REPEATEDLY short-circuiting a fuel cell, which converts chemicals directly into electricity, the cell's power output can be "substantially" increased, a scientist reported.

Cells that use carbonaceous fuels require a catalyst of some kind to keep the conversion process going. After a period of use, however, the catalytic material often becomes "clogged" with incompletely oxidized products from intermediate stages of the conversion, reported Max C. Deibert of the Massachusetts Institute of Technology, Cambridge, at the annual meeting of the American Chemical Society in Pittsburgh, Pa.

Short circuit jolts lasting only a fraction of a second when repeated every few seconds cause these intermediate products to oxidize completely. This lets the catalyst keep working at peak efficiency and increases the amount of power produced by the cell.

The meeting was also told of some 330 tons of sulfur dioxide, 95 tons of nitrogen oxides and 20 tons of miscellaneous particles that are kept out of Los Angeles County's atmosphere every day, solely because area industries were required to switch from fuel oil to natural gas. Before the switch, said Ralph E. George of the L.A. County Air Pollution Control District, the pollution problem was growing by leaps and bounds, since thermoelectric power requirements have risen more than 500% since 1950.

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SOCIOLOGY

Birth Control Forced By Red Chinese

► THE RED CHINESE Government is controlling the ages at which people marry in order to enforce birth control on its huge expanding population that exceeds 700 million people.

Late marriage is an unwritten law in Communist China, reported Dr. Tien-Hsi Cheng, professor of zoology at Pennsylvania State University. The Chinese government will only issue marriage licenses to men at 30 years of age and women at 25. Couples are often separated to keep the birth rate low. The man is placed in southern China, while his wife lives and works in the northern regions.

The people have been thoroughly indoctrinated into "doing what is best for the state," said Dr. Cheng.

The study was supported by the National Science Foundation.

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CE FIELDS

ASTRONOMY

'Blue Objects' in Sky Number Some 400,000

► THE UNIVERSE holds some 400,000 "odd-ball" light sources known as "quasi-stellar blue objects," the American Astronomical Society was told in Hampton, Va.

The first members of this new class of quasars, which are the puzzling energy champions of the cosmos, were discovered less than a year ago by Dr. Allan Sandage, astronomer at Mt. Wilson and Palomar Observatories.

Now, Dr. Sidney van den Bergh of David Dunlap Observatory, Richmond Hill, Ontario, Canada, has carefully searched a small part of the sky, counting the number of blue objects he detected inside the selected patch. From the 33 spotted in a small area near Andromeda, Dr. van den Bergh calculates that 400,000 could be detected over the entire sky.

Although 400,000 may seem like a large number, it is actually a very small fraction of the billions upon billions of stars and other luminous objects in the universe.

Quasi-stellar blue objects are related to quasars but do not emit radio waves as quasars do. Dr. van den Bergh said that the 33 he detected are a "mixed bunch," some being in the Milky Way galaxy or in the halo surrounding it and others lying in far-distant galaxies.

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MEDICINE

Artificial Heart Analyzed in Survey

► DEVELOPMENT of an artificial heart has been predicted in the next five years, but in the meantime, the National Heart Institute, Bethesda, Md., is paying a firm of engineering consultants to analyze preliminary research and development.

The study will be directed by Dr. Harry P. Kling, vice president of Hittman Associates, Baltimore, which is operating under a \$154,000 one-year contract.

Although pacemakers and valves are already in use, a reliable, permanently implanted organ that could restore heart-damaged persons to fully useful lives is the goal of heart specialists.

Some of the major technical problems are materials, pump design and energy sources, Dr. Kling said. Proposals for a suitable energy source have ranged from batteries and biological fuel cells to various applications of nuclear power.

In the United States, nearly one person in every 15 suffers from some rec-

ognizable disease of the heart and blood vessels, and the yearly U.S. death toll is nearly one million. Almost two million more persons are totally or partially disabled by such diseases each year. Even dramatic progress in preventing or curing major heart disease would leave a large number of former patients as possible candidates for artificial heart implantation.

A large-scale national program would probably involve the development of additional temporary devices to help heart victims survive the crucial early stages of coronary attacks.

One of the more forward-looking research studies is one that has produced a device that was implanted in a calf by Dr. Willem Kolff and his collaborators at the Cleveland Clinic. It was developed by engineers at the U.S. Army's Harry Diamond Laboratories, where so-called fluid amplifiers, control and switching devices requiring few if any moving parts, were made to run on compressed air or gas.

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GEOPHYSICS

Young Iron Meteorites Found By Radioactivity

► THE YOUNGEST known iron meteorites have been discovered by measuring their radioactivity.

Meteorites, both iron and stony, are earth's only known visitors from space that can be picked up off the ground, then tested in the laboratory.

Dr. James C. Cobb of Brookhaven National Laboratory, Upton, N.Y., has found the first definite evidence of an overlap in the ages of iron and stony meteorites.

He detected an unusually low amount of the stable isotope argon 38 compared to the radioactive isotope argon 39 in four iron meteorites. The abnormally low amounts of the stable isotope indicate the meteorites were exposed to the cosmic rays that produce radioactivity for abnormally short periods of time.

Dr. Cobb reported in *Science*, 151:1524, 1966, that as high as 20% of the known iron meteorites may have had equally short periods of exposure to cosmic rays.

The exposure ages previously reported for iron meteorites ranged from 120 million to 2,200 million years, while ages for most stony meteorites varied from two million to 40 million years. Dr. Cobb has now tested four iron meteorites with exposure times of from only four million to 50 million years.

The current theory is that both types of meteorites were formed when a larger body, perhaps an asteroid, disintegrated in space and scattered its matter in all directions. The time between such a break-up and the arrival of the meteorite on the earth's surface can be determined by measuring the ratio of a radioactive isotope to its stable element.

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GENERAL SCIENCE

U.S. Must Understand Forces Changing World

► VIET NAM has shown the need for U.S. understanding of the social forces in the coming changes taking place in vast areas of the world, it is advised in a speedily prepared report on the possibility of peace in Viet Nam. Published in paperback by Hill and Wang, the book was prepared for the American Friends Service Committee in only two and a half months.

"Our future and that of Asia, Africa and Latin America are clearly interlocking," the survey stated.

Observing that most persons in the United States benefit from the country's growing productivity, the eight-man working party of the Friends organization found that the gap between the "have" and "have-not" peoples steadily widens. In their affluence, Americans can scarcely realize the desperation of peoples in most developing nations today.

"The ghettos of our own cities provide but a small sample of the social dynamite among the poorer nations," the conclusion states. "These conditions cannot be met by dogmatic anti-Communism."

"Revolutionary change of some kind is necessary," the committee reported. "The tragedy of Viet Nam shows that revolutionary forces can turn to civil war, and civil war can lead to outside intervention, and intervention can lead to an ever-widening arena of conflict, with the spectre of the H-bomb looming as the ultimate debacle—all this unless the forces of change are channeled into constructive courses."

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ZOOLOGY

Crocodiles' Sweat Surprises Scientists

► CONTRARY to popular belief, reptiles sweat—that is, they lose water through their skins.

Crocodiles in particular lose water from their skin at a surprisingly high rate, according to P.J. Bentley and Knut Schmidt-Neilsen of Duke University, Durham, N.C.

Reptiles, were thought to have skin that was impermeable to water, the scientists reported in *Science*, 151:1547, 1966.

Now in a study of five species of reptiles, scientists are finding that these creatures lose a great deal of water through their skins.

The water loss per surface area was 19 times higher in a crocodile than in a desert lizard, and four times higher in tropical lizards and a box turtle than in the desert lizard.

In moist environments, animals lose more water, but in dry desert areas, the amount of sweat decreases drastically to prevent the animal from drying out.

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