

PHYSICS

Hunt More Industrial Uses for Atom Products

► MORE industrial uses for fission products from atomic piles are being searched out on a nation-wide scale by Stanford Research Institute in a study for the Atomic Energy Commission.

The plan is to let industries know how fission products can help them and to get some idea of the total of possible uses for these products.

Among the uses suggested for fission products are the sterilization of foods and drugs in containers without heat, production of fluorescent lights and of new types of luminescent paints and tiles, and tracing of pipeline flow.

Fission products are highly radioactive elements produced by the splitting of uranium in nuclear reactors. They are of no use for power, but their energetic radiations can kill certain organisms, cause chemical reactions, and penetrate solids.

Although these fission products are being used to a certain extent now by many industrial concerns, there are many unexplored possibilities. A booklet just issued by the Institute describes some of these possible uses as well as some of the problems, such as those of health and safety and disposal of radioactive wastes, that must be met when fission products are handled.

Science News Letter, March 24, 1951

PUBLIC HEALTH

Rules Given for Safe Use of DDT

► THE SEASON for fighting insects on farms, around the home and at camps and other recreation areas is beginning in some parts of the country and will soon arrive for all of us. Many will turn to DDT, that powerful insect killer developed during World War II which still is playing a big part in protecting our fighting men from disease-carrying lice and mosquitos.

DDT is a poison and some human deaths have been caused by it. But its poisonous effect decreases with the increasing complexity of the living organism exposed to it. Insects are destroyed by it, but more complex organisms such as human beings and the higher types of animals are "not likely" to be harmed, an American Medical Association committee reports.

When used wisely, DDT can be used safely. Some of the precautions given by the committee follow:

"DDT insecticides should never be stored in food cupboards or medicine chests where there is a likelihood of contamination of food or mistaken use. All exposed foods, utensils and working areas must be covered when kitchen and dining areas are being sprayed.

"Children's toys or cribs and rooms oc-

cupied by sick people should not be sprayed.

"Use of oil solutions on household pets should be avoided and DDT powders should be used only where they cannot be licked off. Intimate skin contact with aerosol discharge is to be avoided. Plants and aquariums in the home should be removed or covered before applying DDT sprays or aerosols.

"The use of oil solutions in the vicinity of open fires should be avoided because of the inflammability of such mixtures."

Science News Letter, March 24, 1951

CHEMISTRY

Carbon and Silicone Compounds Combine

► NEW chemicals which will undoubtedly provide useful materials of a kind not available today are foreshadowed in a communication from the Whitmore Laboratory of the Pennsylvania State College to the JOURNAL OF THE AMERICAN CHEMICAL SOCIETY (Feb.).

Related to the important silicone compounds, the new substances combine these materials with the older type carbon compounds in a newly discovered process. This reaction, which makes possible the synthesis of a large number of hitherto unavailable new-type organosiloxanes, is announced by L. H. Sommer, N. S. Marans, G. M. Goldberg, J. Rockett and R. P. Pioch of the college.

Combination of carbon with silicon by treating trimethylsilyl with sulfuric acid provides the starting point for the new materials. Carbon and silicon each form a large number of compounds, but have not hitherto been easy to combine with each other.

Science News Letter, March 24, 1951

EDUCATION

Train Mobile Teams To Battle Ignorance

► A TRAINING center for preparing teams of experts for the battle against ignorance will open soon in Patzcuaro, Mexico.

Each team prepared at the center will consist of experts in such fields as literacy, hygiene, home economics, practical farming methods and handcraft industries. Students will be trained under UNESCO grants and will return to their own countries to teach other teams. The idea is that these teams will be mobile, and will move about the country, working in remote regions in the fight against illness, poverty and illiteracy.

At the start, capacity of the center will be 50 students, of which ten will be Mexicans and 40 from other Latin American countries. Plans are to train more than 1,000 fundamental education specialists in 12 years. Opening of the center is announced in UNESCO COURIER (Feb.).

Science News Letter, March 24, 1951

IN SCIENCE

ZOOLOGY

True Wolf Fast Becoming Extinct

► THE WOLF is "staying away from our door" in increasingly large numbers. As a matter of fact, the true wolf is nearly extinct in this country.

Only a few of these creatures still remain in Minnesota, Wisconsin, Michigan and Oregon. Great numbers still exist, however, in Canada and Alaska. They are hunted down and killed whenever possible because they are a scourge to sheep and cattle.

Soon, all that will be left of these wolves in this country will be on exhibit—stuffed—at the Smithsonian Institution's U. S. National Museum. Mammalogists are now mounting pelts in settings simulating their native habitats.

The wolf once covered most of the Northern Hemisphere, but they have long since vanished from western Europe.

Science News Letter, March 24, 1951

INVENTION

Jet-Propelled Bomb Awarded New Patent

► NOW bombs as well as bombers can be jet-propelled. A jet-accelerated armor-piercing bomb was given a patent.

The inventors—Clarence N. Hickman, Jackson Heights, N. Y., Raymond L. Graumann, Alexandria, Va., and Rudolph F. Mallina, Hastings, N. Y.—point out that armor-piercing bombs ordinarily have to be dropped from great heights to achieve enough velocity to penetrate the plates of battleships and other armored targets. This decreases the chances of an accurate hit.

Their invention has been assigned to the Navy Department and to the Bell Telephone Laboratories. The jet impulse on the new bomb is produced by the rapid ejection of gases from a fast-burning propellant powder through a suitable nozzle attached to the body of the bomb.

In addition, a mechanism is provided for setting off the jet at a point in the trajectory of the bomb which will least affect its normal flight. Also included are safety devices so the jet propulsion will not go off prematurely.

The jet impulse, the inventors say, provides a suitable means for increasing the velocity of bombs dropped at a relatively low altitude. The inventors received patent 2,545,204 for their bomb.

Science News Letter, March 24, 1951

E FIELDS

METALLURGY

Iron from Taconite May Be Source of Steel

► **HIGH-GRADE** iron ore from the mineral known as taconite, extracted by an improved process, may be America's principal source of steel in the future in spite of recently discovered high-grade ores in Labrador and Venezuela.

This prediction is made in *Steelways Magazine*, a publication of the American Iron and Steel Institute. Lake Superior high-grade reserves, which have supplied the nation with the greater part of its iron ore during the past several decades, is fast dwindling. Utilizing magnetic taconite will give a domestic supply.

The high-grade iron ores of the Mesabi region in Minnesota contain about 51% iron and require little or no processing. Taconite is an extremely hard rock and contains only about 25% iron.

In this improved extraction process, the taconite is reduced to a fine powder and the iron-bearing particles are concentrated by several magnetic separations. The resulting mud-like concentrate is then rolled into balls and baked hard to stand up in the blast furnace.

An advanced section of a plant near Babbitt, Minn., will be producing pellets by the end of this year, the *Steelways* article states. Plans are underway for a \$70,000,000 plant to be built on Lake Superior at Beaver Bay, Minn. It is scheduled for completion by 1955, and will produce 2,500,000 tons of iron-rich pellets annually.

There are tremendous deposits of taconite close to the Mesabi region. They contain enough potential iron to supply the country's need for many generations to come.

Science News Letter, March 24, 1951

ENGINEERING

Nut Shells, Corncobs, Dry Ice Polish Metal

► **NUT SHELLS**, corncobs and dry ice are among strange materials now used to put mirror-like finishes on metal and non-metal machine parts at a fraction of the cost required by hand polishing.

The parts to be polished are put in a barrel together with the polishing materials, and the barrel rotated. The resultant rolling-tumbling action between the parts and the abrasive does the polishing. Quite heavy castings can be ground to remove fins and "flash" by the same method.

This tumbling process for polishing metals is not entirely new, but many new

materials are now being used as abrasives, the American Society of Tool Engineers meeting in New York was told by Hubert M. Goldman of Ethone, Inc., New Haven, Conn., and Adolph Bregman, a consulting engineer of New York City. Among abrasive materials now employed are dry ice, nut shells, steel balls, cinders, cracked corn, ground corn cobs and sand. Each is useful in doing a different kind of job or producing a different degree of finish.

Dry ice, for instance, is now used to perform one of the rubber industry's most difficult jobs. It removes the fine molding "fins" from the edges of rubber products, they stated. The dry ice freezes the fins until they are brittle, and the tumbling action then breaks them away.

Machine tools which control themselves are important in modern manufacturing, J. M. Delfs, General Electric, Schenectady, N. Y., told these engineers who design the small and giant so-called tools used in modern plants. Not only do automatic machines increase output per worker but they do a better job for the machine operator, and with less fatigue and monotony. Product quality is often improved at the same time, he declared.

Science News Letter, March 24, 1951

CHEMISTRY

Pitzer Named as Alumnus of the Year

► **KENNETH SANBORN PITZER**, 37-year-old research director of the United States Atomic Energy Commission, has received the highest honor his fellow University of California alumni can bestow.

The "Alumnus of the Year" award was bestowed on Dr. Pitzer for his outstanding achievements of 1950. The award recognized him as top man, in terms of achievement, out of 150,000 University of California graduates, who are technically eligible for the award.

The young chemist received his Ph.D. at the University in 1937 and rose rapidly through the ranks of instructor, assistant professor, associate professor to full professor of chemistry at the University in 1945. He took leave of absence from the University in 1943 and 1944 to serve as research director of the Maryland Research Laboratory (Special Weapons Research). He was recipient of the American Chemical Society Award in Pure Chemistry in 1943 and 1949 was named one of the 10 most outstanding young men in the United States by the U. S. Junior Chamber of Commerce. In recognition of his achievements in the field of thermodynamics, he was awarded the Precision Scientific Company Award in Petroleum Chemistry in 1950.

Dr. Pitzer was appointed to the AEC post early in 1949 after the commission had conducted a critical survey of all leading physical chemists in the country.

Science News Letter, March 24, 1951

PHOTOGRAPHY

Aerial Camera Takes Large Area in Short Time

► **AN AREA** the size of Pennsylvania could be photographed in less than a day on one very large roll of film with a new aerial camera developed by Perkin-Elmer Corporation for the U. S. Air Force.

To accomplish this the plane would fly at a 40,000-foot altitude. The same job with older apparatus would require a battery of from two to five cameras. The heart of the new camera is a huge 90-pound glass prism that hangs beneath the lens of the camera and rotates in a semi-circle, scanning the earth below from horizon as much as 180 degrees if wanted.

The new instrument is called the Transverse Panoramic Camera. It successively photographs strips of terrain below and across the line of flight of the plane, from horizon to horizon. The film used is 18 inches wide and from 200 to 5,000 feet long. If used in a bomber type plane the camera could carry a film weighing up to 400 pounds. Each scan of the camera can give a picture 18 inches wide and from two to ten feet long depending upon the altitude of the aircraft.

This camera is in a fixed position in the plane and does not move. The rotating prism picks up the picture much as it would be done by a swinging mirror. The camera contains no shutter and operates by moving film over a slit, "wiping" an image of the terrain on the sensitized film as the airplane speeds over the ground.

By synchronizing the speed of the film to the ground speed of the plane a perfect picture is secured along the flight path. The instrument scans across the flight path of the plane, depending on successive sweeps of the prism to picture the flight path of the plane. These sweeps overlap to give a continuous scene.

The new camera was developed in cooperation with the Photographic Laboratory of the U. S. Air Force at Wright Field, Dayton, Ohio. Dr. James G. Baker of Harvard University proposed the new design.

Science News Letter, March 24, 1951

VITAL STATISTICS

Deaths at New Low, Births at High

► **BIRTHS**, deaths and baby deaths all established new records at the end of 1950. The nation's total death rate of 9.6 per 1,000 population and the infant death rate of 29.2 per 1,000 live births were the lowest in the history of the country.

Births, estimated at 3,699,000, were not far below the 3,699,940 registered for the record high in 1947. For the period 1946-1950 more babies were born in the United States than for any other five-year period in the nation's history, the National Office of Vital Statistics records show.

Science News Letter, March 24, 1951