

## PUBLIC HEALTH

**"Togetherness" Can Be Deadly After Radiation**

➤ LIVE ALONE and the chances are you will live longer if exposed to high levels of radiation. Crowded living "togetherness," as foreseen for fallout shelters, will substantially increase chances of death from radiation exposure, a study on rats at the department of radiation biology, University of Rochester, indicates.

Following exposure to various levels of whole-body radiation, 400 female white rats, each weighing less than half a pound, were either singly or multiply housed in cages measuring 7 x 10 x 7 inches. (Size of animal and cage are roughly proportional to that of an average man in the average family-size fallout shelter.) Feed and water were always available in sufficient quantities during the study.

Individually caged rats, exposed to 500 roentgens of X-rays, survived without a single fatality during the subsequent 30-day test survival period. Rats housed in multiples of two, four or six to a cage had a combined mortality of 12.5%. Those exposed to 750 roentgens and caged in groups all died in 30 days, while 44% of the rats living alone survived. Although all groups of rats exposed to 1,000 roentgens died within 30 days, rats living together died "significantly sooner" than those housed alone.

"The data thus suggest that population density can significantly alter the lethality of X-radiation not only in terms of survival per se but also in terms of significant shifts in the mortality curve," Drs. E. W. Hahn and J. W. Howland concluded. The results of their study were presented at the tenth annual meeting of the Radiation Research Society in Colorado Springs, Colo.

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## PUBLIC SAFETY

**Release of NACR Report Deferred by White House**

➤ PUBLIC RELEASE by the U.S. Public Health Service of a report by the National Advisory Committee on Radiation (NACR) which calls for a \$100,000,000 program to increase surveillance and provide a program of countermeasures to protect the public against man-made radioactive contamination has been postponed by order of the White House.

The Committee's recommendations include specific advice for protection against radioactive iodine-131, which now is showing up in high levels in milk in some areas as a result of fallout from the recent U.S. atom bomb tests. These and other countermeasures proposed by the NACR are under extensive study and review by the office of Dr. Jerome Wiesner, Science Adviser to the President.

Middle of May, radioiodine-131 levels rose sharply from below 20 micro microcuries per liter to 300 in Des Moines, Iowa; 660 in Wichita, Kans.; 600 in Kansas City, Mo.; and 90 in Chicago. According to radiation guide lines set by the Federal Radiation

Council, 100 micro microcuries of radioiodine-131 per day or 36,500 per year are considered acceptable. Above these levels, countermeasures are indicated. What countermeasures may be taken will not be disclosed, a PHS spokesman said, until the recommendations by NACR are made public.

If the increases in the Midwest cities are temporary, as Government experts indicate they will be, no countermeasures will be necessary. But if the levels of radioiodine continue to rise and the increase remains for more than a month, some action would be warranted.

A group of experts in radiation, at the request of the White House, currently are checking the data upon which the NACR has based its recommendations. At the same time, the Bureau of the Budget is appraising the increased funding urged for the PHS Division of Radiological Health, the Office of the Science Adviser told SCIENCE SERVICE. Following this review, the report will be made public with comments and additional recommendations by the Administration if any are believed warranted.

Members of the NACR, all considered authorities in this field, have unanimously endorsed the report which also is understood to have the approval of U.S. Surgeon General Luther L. Terry.

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## MEDICINE

**One Vaccine Protects Against Four Diseases**

➤ QUADRIGEN, a four-in-one immunization shot offering protection against the four major diseases of childhood, will again be available in quantity after temporary halting of production by Parke, Davis & Company, a spokesman reported. Diphtheria, pertussis (whooping cough), tetanus (lockjaw), and polio are the four diseases.

Unwanted virus in the polio vaccine, which caused the pharmaceutical company to take Quadrigen off the market, has now been cleared up. Although the four-in-one vaccine is still available only in small quantities, the shortage will soon be over.

The four-in-one vaccine has to be administered in three doses one month apart for children six months old and older. For children under six months, one dose a month for four months is advised.

At intervals of six to 12 months following the last injection one booster shot should be given.

Merck Sharp & Dohme, which formerly had a similar four-in-one shot called Tetra-vax, has taken it off the market probably permanently because of trouble with the pertussis vaccine.

With DPT, the three-in-one shot for diphtheria, pertussis and tetanus, there is no weakening of any of the ingredients, but when polio vaccine is added, pertussis in the Merck Sharp & Dohme product loses its effectiveness after four months.

Pediatricians find the four-in-one shot preferable because of the fewer needles required.

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**IN SCIENCE**

## PUBLIC SAFETY

**Contact Lenses Unsafe In Some Industries**

➤ THE USE OF contact lenses may be dangerous in most industries, a consulting industrial eye doctor said at the meeting of the American Industrial Hygiene Association in Washington, D. C.

Dr. Joseph Novak of Pittsburgh, Pa., said the ophthalmologist who treats the eye-injured worker knows that more than 90 of every 100 industrial eye injuries can be prevented by well planned and properly carried out programs for eye protection.

"Contact lenses do not protect the eye from injury," Dr. Novak said. "Their use may be dangerous and is definitely contraindicated in most industries."

He advised management in industrial plants where eye injuries are likely to take place to require everyone, even a visitor, entering certain areas to wear safety glasses.

The employee should know that properly fitted safety eyewear can cause no harm to his eyes, Dr. Novak said, "but an accident can." A complete eye safety program is a good investment for everyone.

"It makes sound economic sense for management. It provides many benefits for the union. And most of all, it helps the one whose eyesight is saved—the worker. Its success depends on the understanding and full cooperation of all three," he reported.

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## MEDICINE

**Sleeping Pills Deform Unborn Infants' Limbs**

➤ THE PRICE of sleeping pills to pregnant women in Germany has been deformed limbs of their babies in some cases.

Phocomelia is the name of a rare malformation which in extreme cases takes the form of completely useless legs and arms. By August, 1962, some 3,500 crippled babies are expected to be born in Germany and several hundred in England and elsewhere.

A drug containing thalidomide [alpha-(N-phthalimido) glutarimide], fortunately unapproved by the U.S. Food and Drug Administration after unsuccessful trials, was withdrawn from the German market in November, 1961, and slightly later in England, Australia and Canada. But not until irreparable harm was done.

Dr. Helen B. Taussig, winner of the 1954 Albert Lasker Award for her work on congenital malformation of the heart, pointed out in Science, 136:683, 1962, that in many instances the damage was done before the woman knew she was pregnant.

Dr. Taussig (Johns Hopkins Hospital) warns physicians to bear in mind the terrible harm apparently innocent drugs may do to the embryo and the unborn child.

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# CE FIELDS

## PHYSIOLOGY

### Monkeys Respond When Light Seems to Flicker

➤ MONKEYS have been taught to "report" how fast or slow a light must flicker to appear different from a steady light.

This test has often been used on humans and has been found to indicate the physiological state of the person tested. The effects of fatigue and certain drugs show up very quickly in the individual's ability to perceive that a light is flickering.

Now it may be possible to make use of monkeys, which are very like humans in physiological make-up, to study the effects of treatments or conditions that could not be applied to humans.

Success with the technique is reported in *Science*, 136:714, 1962, by Dr. David Symmes of Yale University School of Medicine. As a first step, young hungry monkeys were taught to push one lever if a light appeared to flicker and another lever if the light appeared continuous. During the training period the discrimination was made easy for the animals by setting the flickering light to flash 10 times a second. The steady light instead of being completely continuous actually flashed at 100 times a second—too fast for the eye to register. This made it less difficult to match the two lights for apparent brightness.

Reliable performance was obtained for the monkeys tested. The most extensively studied animal showed no improvement over eight months of regular testing.

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## MEDICINE

### Kidney Stones Triggered By Kidney Substance

➤ KIDNEY STONES are believed to be triggered by a newly discovered substance called "matrix substance A," which comes from certain kidney cells, a North Carolina physician reported at the New York Academy of Sciences in New York.

The substance is produced in the body when certain necessary enzymes are absent. It may be the antigen that causes the antibody response leading to development of stones, Dr. J. Stanton King Jr. of the Bowman Gray School of Medicine, Winston-Salem, N. C., said.

Matrix substance A appears to provide a nucleus for mineral deposit. It has been found in the urine of persons who have kidney stones but has not been detected in normal urine, Dr. King explained.

Dr. William Boyce, also of the Bowman Gray School of Medicine, said that the lack of necessary enzymes changes the normal cellular metabolism of the body, with a resulting accumulation of substances that precede the actual formation of kidney stones.

Stones may be found in the kidney, ureter, bladder or urethra, men being affected three times as often as women. They occur most often in middle years.

In another report delivered at the meeting, a new diagnostic procedure for various heart conditions was described by Dr. William M. Rogers of the College of Physicians and Surgeons, Columbia University.

Known as phonocardiography, the new technique, developed by Dr. Rogers and his team, uses a two-channel tape recorder that picks up the heart sounds and displays the pattern on a screen while it is being recorded. It also picks up the electrocardiogram (EKG) and displays and records that at the same time. The sound and the EKG can later be studied by medical teams.

The procedure involves the insertion of a miniature stethoscope down the throat into the esophagus. In this position, immediately behind the heart, it can pick up the heart sounds that are blocked from the stethoscope by body tissue.

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## PHYSICS

### Magnetic Field Varies From Night to Day

➤ THE EARTH'S magnetic field changes from night to day.

The changes can be explained by thinking of the magnetic field as invisible lines of force encircling the earth from pole to pole, just as iron filings align themselves along the lines of force from pole to pole as a magnet. The earth's lines of force act like extremely long rubber bands, stretching up to 18,000 miles above the surface, Dr. G. J. F. MacDonald of the University of California, Los Angeles, said.

Just as a stretched rubber band vibrates when plucked, the earth's invisible "rubber bands" also vibrate. They have a characteristic frequency of vibration that varies with the latitude, being longest in the northern latitudes. Dr. MacDonald reported that their period is several minutes at College, Alaska.

The period, however, changes from night to day. That part of the magnetic field facing the sun is pushed in, while the part facing away from the sun is dragged out. Also the periods at night are longer.

The magnetic field is about a thousandth of a gauss, a unit of magnetic measurement, and that is about 10% of the field at earth's surface.

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## GEOLOGY

### Mile-and-Half Thick Ice at South Pole

➤ ICE AT THE SOUTH POLE is a mile and a half thick and the ground level is 600 feet below sea level. Seismic measurements by University of Wisconsin scientists just returned from Antarctica showed the South Pole ice to be 8,400 feet thick.

Extensive mountains were found to exist in previously unexplored Antarctica areas.

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## ZOOLOGY

### One-Celled Animal Preys On Worms and Snails

➤ A TINY ONE-CELLED animal has been found to attack and devour young worms and snails, two zoologists at the University of Oklahoma, Norman, have reported.

The protozoan, *Dileptus*, was accidentally discovered in the university laboratory, swarming in a dish which had contained young planarian flatworms only a week earlier.

Drs. Harley P. Brown and Marie M. Jenkins had been raising the flatworms for several years, feeding them small pieces of beef liver once a week. The pair discovered the missing worms on a routine visit to the culture.

Some of the many *Dileptus* which were found to replace the worms were placed in Syracuse watchglasses and introduced to several baby planarians. Contact with the protozoan brought violent and immediate reactions, as if the young worms were being stung. Within 90 minutes, all of the worms were being eaten. Within a few hours there was no recognizable trace, except for a few cells on which the predatory animals were gorging themselves.

The scientists believe the *Dileptus* thrived upon beef liver until their population was large enough to attack the larger animals.

*Dileptus* has been known to prey on a variety of one-celled animals, but this is the first report of an attack on animals large enough to see with the naked eye, it was reported in *Science*, 136:710, 1962.

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## PALEONTOLOGY

### Fossil Crocodile Found in Oregon

➤ THE FIRST FOSSIL crocodile found west of the Rocky Mountains was recovered from rock by two University of Oregon scientists in Eugene.

Ninety percent of the skull and lower jaw of the reptile was cleaned and fitted from 45 to 60 million-year-old rock, along with remains of leaves and vegetation, the University reported.

Some 35 bone fragments and 15 teeth were discovered accidentally by Drs. Jane Gray and Kankichi Sohma, research associates at the University Museum, and paleobotanists (experts on fossil vegetation). The crocodile probably belongs to the Eocene period during the Age of Mammals, they said.

Positive identification of fossil crocodiles has been made in several places in the United States, but never in the West.

In recent years the same locality in north-central Oregon has yielded a miniature horse which "fills in a gap in our record of the development of the horse," the University reported. It has also produced a tapir. But most previous discoveries were of vegetable matter, they said.

The crocodile was probably about eight feet long.

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