

BIOLOGY

World-Wide Search For Radium Workers

► A WORLD-WIDE search for persons who took radium internally two or three decades ago has begun.

You are one of the persons if you have ever:

1. Ingested radium compounds of any sort either during work, such as painting watch dials, or during medical treatment.

2. Received injections of radium compounds for such conditions as arthritis, hypertension or gout.

3. Suffered exposure in the process of radium research or the manufacture of radium products, such as chemists, physicists and laboratory assistants experience.

It is reasonably certain that about 2,000 luminous dial painters from the early 1920's are still living, most of them in good health, Dr. Samuel D. Clark of the Radioactivity Center and departments of physics and medicine at Massachusetts Institute of Technology reports in the *Journal of the American Medical Association* (Oct. 11).

Dr. Clark explains his appeal for assistance in contacting such persons is directed at compiling records for the study of the effects of radioactivity over a long period of time. Doctors from the United States and Great Britain are collaborating with the Radioactivity Center in this project.

If these persons can be contacted and studied, some of the questions about the puzzling effects of radioactive deposits in the body may be answered. Many persons have carried radioactive material in their bodies for 30 years.

American doctors, nurses and medical records departments have been asked to report any persons that have suffered radium poisoning to the Radioactivity Center, MIT, Cambridge 39, Mass.

The Division of Biology and Medicine of the Atomic Energy Commission is co-operating in this effort.

Science News Letter, October 25, 1958

NUTRITION

End Routine Diet Control For Pregnant Women

► THE RESTRICTED or special diet that many pregnant women are placed on as a routine procedure to control the size of the infant should be discarded.

This was suggested by Dr. Samuel M. Wishik, professor of maternal and child health, graduate school of public health, University of Pittsburgh, at an International Nutrition Symposium in Pittsburgh. The weight of the fetus will depend upon the adequacy of the nutrition supplied, not the amount, he pointed out.

Doctors today tend to set the average weight gain of pregnant women as the maximum weight gain allowable. The average weight gain varies from 24 to 27 pounds, yet many women gain more than 35 pounds and still have normal healthy deliveries. Pregnant women have enough emotional problems to contend with during

this period without the additional worries of special diet, he explained.

However the extreme should be avoided. The woman who gorges herself on sweets should not be allowed full rein, but the restricted diet should be abandoned if it is just a matter of routine application on the part of the attending doctor.

For instance, it is known that iron therapy raises the hemoglobin level of the blood. Yet this addition of iron may not be necessary because of compensating adjustments that the mother's physiological system is capable of making.

Above all, Dr. Wishik pointed out, since the adequacy of nutrition is so necessary during pregnancy, do not correct an overweight condition at this time. Weight loss should be accomplished after the birth of the infant.

Science News Letter, October 25, 1958

BIOLOGY

X-Rayed Cells Give Mice Immunity Against Cancer

► MICE have been immunized against cancer with injections of X-rayed cancer cells.

A team of medical researchers at the University of California at Los Angeles have found X-rays do not kill the cancer cells but instead alter them. The cells then act as a vaccine which stimulates the mice's natural resistance to cancer.

More than 90% of the mice given five injections of the X-rayed cells were immunized against later transplants of untreated cancer. Presumably the antibodies mobilized by these vaccinated mice destroyed the vigorous cancers implanted later.

Drs. Ralph W. McKee, Eugene Garcia, M. Richard Troch and William Schultz, discovered this vaccine by following up evidence that a few mice have shown a natural immunity to cancer.

To explore the possibility of building up the animals' resistance to the disease, they tried a variety of vaccines with cancer cells which had been frozen and thawed, dried out, ground up, shattered by supersonic waves and injured or killed by other means. Nothing worked until they tested vaccines made from X-rayed cancer cells.

The scientists, whose research is supported by funds from the American Cancer Society and the Jane Coffin Childs Memorial Fund, employed a type of almost 100% fatal cancer in which the cells grow singly and suspended in a fluid filling the belly cavity. They reported the vaccine has been effective solely against this kind of mouse cancer and emphasized the results do not indicate a vaccine can prevent cancer in humans.

Nevertheless, the studies provide new evidence that cancer is a problem of host resistance as well as cell alterations, that X-rays may be useful in preparing vaccines and that multiple shots may be vital to immunization against animal transplanted cancers.

The experiments also showed that the X-rays, in altering the cancer cells, changed the manner in which cells use oxygen and sugars.

Science News Letter, October 25, 1958

IN SCIEN

PHYSIOLOGY

Transplanted Animal Kidney Cells Regenerate

► THE FORMATION and growth of kidney tubules from injected normal kidney cells previously cultivated in a special medium, has been reported.

This basic research, involving animals only, suggests investigations into the possibility of transplantation of healthy human kidney cells to regenerate kidney tubules to replace those that have become diseased.

The investigators used monkey kidney cells that had been kept in a test tube medium. These were then injected into the brains of rats previously treated with radiation and cortisone, Dr. M. Michael Sigel, Dr. Thomas M. Scotti, Martha A. Wryk and Mantley Dorsey Jr., of the University of Miami School of Medicine and Virus Diagnostic Laboratory, Variety Children's Hospital, Miami, report in *Nature* (Oct. 11).

The injected cells appeared able to reconstruct their original form. Whether human adult kidney cells are capable of matching this performance remains to be answered. In addition, the key to this ability to regenerate growth is unsolved, the scientists point out.

It may be due to the culture medium in which the cells were grown, it may be some as yet unknown role of the brain, or the effects of the radiation and drug treatment before transplantation.

The experiment itself definitely establishes the utility of the brain as a transplantation site, the scientists conclude.

Science News Letter, October 25, 1958

PHYSICS

Find New Method for Tracking Satellites

► A NEW photoelectric method for making precise observations of the path artificial earth satellites take as they circle the earth has been devised.

Dr. A. P. Willmore of University College, London, England, reports in *Nature* (Oct. 11) that the method gives results as precise as those obtained using the especially designed satellite-tracking telescopes.

Objects as bright as sputnik-3 could be detected by the photoelectric method during the daytime, Dr. Willmore says, although this has not yet been tried.

He uses slits placed in the focal plane of a lens and a photomultiplier behind them to record the satellite's passage. As the sunlit satellite moves across the sky, its image moves across the slits and produces a series of pulses. These enable the position of the track in the sky to be determined if the orientation of the lens axis is also known.

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CE FIELDS

BIOPHYSICS

Scientist Studies Current Generated by the Eyes

► IF YOU are reading this sentence under normal room light, your eyes are probably generating about 100 millionths of a volt of electricity.

So says a scientist who has been measuring the electric current produced by the eyes when stimulated by light in order to learn more about how the normal eye works. Dr. Leo E. Lipetz, a biophysicist at Ohio University, reported data gathered through this research may "lead to a better understanding of how to make the best use of your eyes."

By hooking tiny wires to the nerve cells in eyes removed from animals, the scientist has been studying the electric current created by the cells when they are exposed to light. The current is amplified about a million times and reactions are observed by watching a wavy line on an oscilloscope screen.

The experiments are part of an overall probe of the means the body organs use to relay information. The visual system is particularly adaptable to this study because it is more isolated than other sensory systems.

"If we can prove (the existence of) a definite mechanism that carries activity from the light receptor cells to the nerve cells in the eyes," Dr. Lipetz says, "then this will stimulate researchers to test whether such a mechanism is also true of the other sense organs."

Science News Letter, October 25, 1958

ENGINEERING

\$22 Million Road Test Starting in Illinois

► THE THIRD in a series of road tests has started on a \$22,000,000 highway research project northwest of Ottawa, Ill.

Traffic, consisting of 60 trucks driven by members of the U. S. Army Transportation Corps Road Test Support Activity, began to roll on Oct. 15. For two years, the trucks will run about 18 hours a day, six days a week, on five test loops built along an eight-mile right of way.

Sponsored by the American Association of State Highway Officials, and supervised by the Highway Research Board of the National Academy of Sciences, the road test is a scientific study of the performance of highway pavements of known thickness when subjected to repeated passages of vehicles of known weight and load.

The test follows two important features of the scientific method.

First, randomization, allowing the laws of chance to work, which assures unbiased findings; second, replication, repetition of

tests, which helps determine the reliability of the findings.

More than a million dollars worth of electronic and mechanical instruments will be used and they will be designed to serve two purposes. The first is to aid in the measurement of vehicular and environmental effects on the pavement. The second is to speed the acquisition and summarization of test data to permit rapid analysis.

The first test of the series was run in 1950-51 in Maryland and was sponsored by several northeastern and Midwestern states. The second test was a cooperative effort of a group of western states and was held in Idaho.

This AASHO test is the largest and most comprehensive ever undertaken. Its findings are expected to influence future highway design and construction and to be of value in studies made by other agencies.

Science News Letter, October 25, 1958

ASTRONOMY

Blue Haze on Mars Believed Ice Crystals

► THE "BLUE HAZE" observed on Mars, which will make a relatively close brush with earth on Nov. 8, is probably due to a layer of ice crystals only a few miles thick about 20 miles above the planet's surface.

Dr. Seymour L. Hess, head of Florida State University's meteorology department, reports in *Science* (Oct. 10) that if all the water vapor on Mars were condensed to liquid, it probably would make a layer only a small fraction of an inch thick. There are no lakes, rivers or oceans on Mars, he concludes.

Dr. Hess said that study of information on Mars gathered during the planet's last close approach in 1956 indicated there is a great similarity between Martian and the earth's atmospheric circulation.

The blue haze shows up on photographs taken in blue light, even when Martian surface markings can be photographed in yellow or red light. The haze often completely obscures all surface features.

The haze is relatively thin because, although it obscures surface markings, it does not conceal the polar caps, which have more contrast.

Occasionally the haze clears away and permits the surface to show through. Such behavior, Dr. Hess said, means that it is an atmospheric phenomenon. When the ice crystals forming the blue haze are warmed occasionally, the haze evaporates partially and the surface features can be photographed in blue light.

Dr. Hess also reports that recent studies have suggested there may be organic molecules on the Martian surface. Verification of these experiments during the coming approach would be of "great importance," Dr. Hess says. (See p. 266.)

(They would prove the existence of a low form of life elsewhere than on earth, thus indicating that higher life forms such as man are not unique in the universe.)

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NUTRITION

Special Diets Help Some Retarded Children

► A SPECIAL diet that eliminates one of the amino acids is helping some retarded children.

Approximately one percent of the mentally retarded children in institutions suffer from a congenital metabolic disease known as phenylketonuria. Children afflicted with this hereditary disease usually suffer severe mental retardation, Dr. Harry Shwachman, chief of the chronic nutrition clinic at Children's Medical Center, Boston, reported at the International Nutrition Symposium held in Pittsburgh.

But a diet free from phenylalanine, one of the amino acids, relieves the condition caused by the child's inability to handle the acid properly so that it will be channeled into the correct metabolic process, he said. Protein foods such as meat, eggs, milk, contain these acids.

Another such ailment that affects newborn babies is galactosemia. It is a defect in the enzyme system. Children suffering both mental retardation and vomiting, abnormally low weight, and occasional cirrhosis of the liver were put on a strict diet free from all milk and sugar, since the babies' enzyme systems cannot properly utilize the galactose of either of the foods.

There are at least 50 such congenital metabolic diseases, Dr. Shwachman said.

The symposium attracted doctors and nutrition experts from the U. S., England, and Guatemala. It was sponsored by the H. J. Heinz Company in celebration of the opening of its new International Research Center on the 90th anniversary of the company.

Science News Letter, October 25, 1958

SURGERY

"Beeping" Device Warns Of Heart's Condition

► A TINY device relays by audible "beeps" the function of the heart of a patient undergoing surgery.

The device, a cardiac monitor, weighs less than six ounces, Dr. William F. Veling of the department of surgery at Grace Hospital, Detroit, reports in the *Journal of the American Medical Association* (Oct. 11).

It can be strapped to the arm of the patient and eliminates the long, complicated electrical wiring needed with present monitors, he points out. This audible recorder of the heart's electrical activity also frees the eyes and hands of those assisting in the operating room.

The self-contained unit is powered by batteries. The audible "beep" overcomes the disadvantage of the older machines that need constant visual attention.

Cardiac monitors are used to warn surgeons and anesthesiologists when the heart ceases to function properly. If the heart stops, it can frequently be started again through the use of heart massage and electrical shock, but instantaneous action is required.

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