

## GENETICS

**Radiation Damage Found Ten Times Greater**

➤ RADIATIONS FROM atomic bombs, radioactivity and X-rays are a ten times greater menace in causing hereditary changes than heretofore estimated, it is suggested in the AEC's 17th semi-annual report.

Experiments at the Oak Ridge National Laboratory show that mutations in mice as the result of radiation occur at a ten times greater rate than those observed in fruit flies, on which most of the estimates of radiation damage to human heredity have been based.

The changes in hereditary constitution due to these mutations or permanent changes in the germ cell make-up are one of the most feared long-time consequences of too much radiation, such as might be spread in the world by an excessive number of A and H bombs in war or peace or too much atomic power reactor debris.

The AEC has revised its estimates of the genetic hazards of radiation to human beings as consequences of its mouse tests with X-irradiation at high dosages of 300, 600 and 1,000 roentgens. It is continuing its testing of the mutation rate in mice using lower doses of radiation such as might actually be encountered.

Science News Letter, February 12, 1955

## PALEONTOLOGY

**Prehistoric "Horse" Bones Found in Wyoming**

➤ FOSSILS FROM a prehistoric land of lush vegetation and grassy plains, over which ranged herds of the earliest known horse, have been unearthed in southwestern Wyoming, the Smithsonian Institution disclosed. The area is now relatively arid, sagebrush territory.

The ancient horse, *Hyracotherium*, was not very much of a horse by modern standards. It was about the size of a shepherd dog and, unlike modern horses, it had four functional toes. Similar fossils have been reported in France.

Most abundant in the find, representing animals that lived between 50,000,000 and 70,000,000 years ago, were remains of a creature about the size of a sheep, called *Meniscotherium*. It has no living descendants.

The fossils, found by Dr. C. L. Gazin, curator of vertebrate paleontology at the Smithsonian Institution, and his associate, Franklin Pearce, also showed the existence of a creature about the size of a collie dog, believed to be very distantly related to the rhino. It was perhaps the first of a race of giant animals, the titanotheres, which developed in the following millions of years, then became extinct. These giants were probably a dominant animal wherever they existed.

Besides these animals, which were all presumably grazers, Dr. Gazin collected teeth

and other fossil bones of early tree-dwelling primates related to the lemuroids and tarsoids. Man, along with the monkeys and apes, are members of this primate stock. Bones of squirrel-like rodents were also found.

Dr. Gazin said that he has not yet identified all the fossils but would begin analysis soon.

The site of the find was the so-called Cathedral Bluff tongue, where during the early Eocene and late Paleocene ages river deposits were becoming interfingered with sediments of the long extinct Green River lakes. Dense temperate zone forests are believed to have existed then, when modern groups of mammals were first establishing themselves.

Science News Letter, February 12, 1955

## TECHNOLOGY

**Activated Carbon Made From Peanut Shells**

➤ ACTIVATED CARBON, an extensively used purifying agent, can now be produced from peanut shells.

The porous black substance, used as a filter in gas masks and to decolorize such substances as cane sugar, was produced by powdering the peanut hulls and heating them in a steel rotary kiln.

A dry yield of 34.9% was reported when the hulls were carbonized at 300 degrees Centigrade for an hour, then activated with steam in the same kiln at 700 degrees Centigrade for two hours. The hulls were first treated with ammonium phosphate.

Without this added chemical, yields dropped to 26.9% and an inferior product was obtained. The scientists found that powdering the hulls increased the power of the activated carbon to attract, or adsorb, impurities.

The work was reported by Frank C. Vilbrandt, professor of chemical engineering, and his associate, Stephen M. Gano to the Virginia Polytechnic Institute, Blacksburg, Va.

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## DENTISTRY

**Find Heat, Cold Equal As Pain Stoppers**

➤ HEAT AND cold are about equal in their effect on pain, inflammation and speed of healing, Dr. Abraham Possoff of Chester, Pa., reported to the *Journal of the American Dental Association* (Feb.).

He reported on 60 patients at the Veterans Administration Hospital, Aspinwall, Pa., who each had on the average 23 teeth pulled. Some got heat from an infrared lamp while others had cold from an ice bag. At the end of the 24 hours there was little difference between the groups in pain, tenderness or general discomfort.

All of the patients also got penicillin, warm salt mouthwashes and sedatives as post-operative treatment.

Science News Letter, February 12, 1955

**IN SCIEN**

## MEDICINE

**Unborn Gland Grafts for Skin Disease, Cancer**

➤ GRAFTS OF unborn glands are seen as a possible future way to help patients with hopeless cancers, among them child victims of leukemia. Such grafts have already brought "striking improvement" to four of six patients with a serious skin disease.

The glands are the adrenal glands. The two-way hope foreseen from the grafts comes because the adrenal gland hormone, cortisone, has helped both the skin disease and the cancer victims.

Trial of the unborn gland grafts in the skin disease patients and work looking toward their use in cancer has been done by Drs. Freddy Homburger and C. D. Bonner of Tufts College Medical School in Boston under a grant from the American Cancer Society.

The number of cases which can be treated is severely limited by the number of fetal adrenals available. These glands, which lie atop either kidney, must be removed and transplanted promptly while they are still alive. They are obtained from the victims of early miscarriage or spontaneous abortion not due to diseases which would make their use dangerous to the new host.

The scientists have reported using the glands in cases of pemphigus foliaceus, pemphigus vegetans, atopic dermatitis, parapsoriasis, disseminated lupus erythematosus and seborrheic dermatitis.

Science News Letter, February 12, 1955

## TECHNOLOGY

**Wire Insulator Is Developed for Motors**

➤ DESIGNERS CAN now make more powerful motors without increasing their size by using a new thin-film wire insulator.

Even small motors contain coils with a mile or more of copper wire that must be insulated against contact. The new insulator is a resinous substance, known technically as a cross-linked polymer. It can be applied with standard enameling equipment.

It is abrasion- and solvent-resistant and can be expected to stand up many years under temperatures as high as 300 degrees Fahrenheit. This is about 75 degrees higher than was previously possible with a comparable coating. Heat is one of the greatest enemies of electrical insulators.

The product, called Alkanex, was developed under the direction of Drs. A. L. Marshall and John R. Elliott of the General Electric Research Laboratory, Schenectady, N. Y.

Science News Letter, February 12, 1955

# CE FIELDS

## AGRICULTURE

### Jobs Being Offered to Identical Twin Calves

➤ **WANTED:** IDENTICAL-TWIN beef calves. Must be five months or younger and live within 200 miles of the nation's capital. Exceptional room and board. Good retirement program. Apply U. S. Department of Agriculture.

As many as 12 pairs of identical-twin calves are urgently needed by the Department's scientists for feeding experiments at the agricultural research center, Beltsville, Md.

In past beef-cattle nutrition experiments at the center, 27 pairs of identical twin calves have been used. The additional calves are wanted for a new series of tests to begin this spring.

Identical twins, the researchers say, develop from a single fertilized egg and are always of the same sex. Experimenting with the twins permits research to be done faster and at less cost because the results are just as reliable as tests made with several animals.

"The Department will buy twin calves on an offer-and-acceptance basis," they reported, "asked by their suitability and the price asked by the owner."

"Purebred or grade beef animals, and even crossbreds sired by beef bulls are acceptable," they added.

Science News Letter, February 12, 1955

## MEDICINE

### Repair Hip Joints With Living Gristle

➤ **LIVING GRISTLE** can be fashioned into caps for repair of diseased hip joints, Dr. John J. Flanagan of South Orange, N. J., announced at the meeting of the American Academy of Orthopaedic Surgeons in Los Angeles.

Metal, plastic and fascia from thigh muscles have heretofore been used for this purpose with varying degrees of success. Dr. Flanagan for years has been trying to find a better solution to the problem by developing a cap of living tissue such as exists in a normal joint.

The living gristle, or cartilage, cap has so far been used on only four patients and Dr. Flanagan stressed that more time is required to see how it will stand up over a long time.

The first patient, a 43-year-old practical nurse, underwent the hip-joint operation three years ago. Today she is working regularly and has excellent function of the hip without pain. One of the four operations was performed on a 12-year-old girl, suffering from degenerative arthritis, and so far the results are encouraging.

Since no source of cartilage of the size needed is available in the human body, Dr. Flanagan "borrowed" an idea from the plastic surgeons and constructed a perforated Vitallium mold which would hold bits of diced cartilage taken from a patient's ribs. He implants the mold, containing the cartilage, in the abdominal wall for a period of four months. During this time the cartilage cells proliferate and grow together, making a smooth cartilage cap in the shape of the mold.

Tiny blood vessels penetrate perforations in the mold and nourish the cartilage to keep it alive. Then the cartilage cap is removed from the mold and placed over the thigh bone which it has been tailored to fit.

Dr. Flanagan is presently working on a method whereby he hopes to transplant the diced cartilage directly without the abdominal wall implantation. He is also studying the use of cartilage that has been preserved in cartilage banks.

Science News Letter, February 12, 1955

## METEOROLOGY

### Electronic Brain Will Soon Predict Weather

➤ **ELECTRONIC COMPUTERS**, the so-called "giant brains," can be used to analyze weather maps, a step in forecasting previously done only by humans. The computer's results were at least as accurate as those of a meteorologist, Dr. Bruce Gilchrist of the Institute of Advanced Study, Princeton, N. J., told the American Meteorological Society in New York.

His disclosure brings much closer the day when the bulk of weather forecasting jobs will be done entirely by man-made devices. Most of the techniques for accomplishing this are already available, Dr. Gilchrist said, but the analysis problem was one question that had to be answered before a completely objective method was developed for taking the last step of getting from current data to a weather forecast.

Weather forecasters spend most of their time plotting and analyzing current data, a necessary step before making their forecasts. The electronic computer can do this same job accurately, and apply the calculations to its own forecasts for the next 24 hours, within an eight-hour day, Dr. Gilchrist said.

Dr. George P. Cressman, also of the Institute for Advanced Study, and of the Air Weather Service in Washington, collaborated with Dr. Gilchrist in making an analysis and forecast within a working day, using the electronic computer at the Institute.

Only one other person, a key punch operator who transferred weather data from the teletype, assisted them. Having shown that a computer can provide its own analysis of data that it will use in weather forecasting, Dr. Gilchrist is now working on predicting the weather for the entire Northern Hemisphere by giant electronic "brains." He expects to run an actual prediction within the next few weeks.

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## MEDICINE

### See Better Treatment For Detached Retina

➤ **BETTER TREATMENT** of detached retina, in which visual sense cells become separated from the rest of the eye, is foreseen as the result of research at the Medical Center of the University of California at Los Angeles.

Dr. Ralph Gunter and John Sinclair are doing the research which was made possible through a U. S. Public Health Service grant to Dr. Wilbur Selle, professor of biophysics, and Dr. Samuel R. Irvine, associate clinical professor of surgery (ophthalmology).

It is often possible to restore vision by a delicate cauterizing procedure in cases where the retina has become detached from the supporting layers of the eye because of an injury. This is done by sending current through a tiny electric needle into the retina, thus producing a condition in the supporting layers to which the detached retina will again adhere.

However, little is known about sensitivity of eye tissue to varying amounts of current, and instruments presently used to regulate the flow of current are not precise. As a result of this fact the outcome is hard to control.

The investigators are correlating data on eye tissue sensitivity to varying amounts of current with successful cauterizing procedures in experimental animals and clinical cases at the Los Angeles V.A. Center.

With the aid of such data they plan to design a device in which current resistance in eye tissue would automatically regulate the flow of current, keeping it at the desired level. If successful, the device should take the element of risk out of such operations.

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## ICHTHYOLOGY

### Long-Finned Tunny Caught in British Seas

➤ **THE ELEVENTH** long-finned tunny fish caught in British seas in more than 108 years and the first since 1947 has been reported.

The long-finned tunny, also known as the albacore or germon, is essentially a warm-water species ranging widely through the Atlantic from Massachusetts to the West Indies and from the Orkneys to the Cape of Good Hope, and entering the western Mediterranean.

First recorded as having wandered into British waters "several years" prior to 1846, the latest long-finned tunny was captured alive in a shallow pool at low tide at Morecambe, Lancashire, in northwest England on Aug. 14, 1954.

A description and photograph of the fish was reported in *Nature* (Jan. 22) by Denys W. Tucker of the Natural History section of the British Museum, London.

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