CHEMISTRY-MEDICINE

Change in Cell Chemistry May Be Step in Cancer

➤ A CHANGE in fundamental cell chemistry which might be a first step toward the development of cancer has been discovered by Drs. Antonio Cantero, Roger Daoust and Gaston De Lamirande of the Montreal Cancer Institute and Notre-Dame Hospital in Montreal, Can.

During the transition stage when a cell is becoming cancerous, enzymes which break down the acid in the cell's nucleus behave differently than they do after the cell has become cancerous, the Montreal scientists find.

They worked with white rats that had been fed a diet of cooked polished rice and an azo dye. This diet caused an irreversible liver cirrhosis which the scientists consider a sign that cancer is going to develop. The enzyme activity of these pre-cancerous rat livers increased progressively up to the 90th day the rats were on the special diet. Then the enzyme activity decreased progressively for the rest of the 150 days of the diet.

Previously it has been shown that the nucleic acid these enzymes affect is changed in cancer. Whether the change is a first step in producing cancer or merely accompanies the development of cancer is not yet definitely known. These studies however, were made of nucleic acid in normal and cancer cells. The studies of the Montreal scientists, reported in the journal, SCIENCE (August 25), were made on cells during the transition stage between the normal and cancerous states.

Science News Letter, September 2, 1950

ASTRONOMY

New Observatory for Southern Hemisphere

➤ A NEW astronomical observatory will be established in Australia, it was announced recently in New Haven, Conn.

A joint venture of three universities, Yale, Columbia and Uppsala, Sweden, the observatory will located on Mt. Stromlo, near Canberra, capital of Australia.

The two American universities now operate a joint observatory, the Yale-Columbia Southern Station, at Johannesburg, South Africa. This will be given up and the equipment moved to the Australian research center.

Plans for the cooperative arrangement were made by Dr. Dirk Brouwer, director of the Yale Observatory, Dr. Jan Schilt, director of the Rutherfurd Observatory at Columbia and Richard van der Riet Woolley, director of the Commonwealth Observatory, who is visiting the United States.

Yale and Columbia will install a 26-inch photographic refractor telescope in the new observatory. The Australian government will construct the dome to house this instrument and will supply other equipment, including a 74-inch reflector telescope and a Schmidt-type telescope.

The astronomical research center is expected to be ready for use by Jan. 1, 1952.

Hindrance of observations by city lights and smoke from industrial plants in Johannesburg is one of the reasons for moving to a new location, Dr. Brouwer stated. Mt. Stromlo is in an area where industrial or residential development has been forbidden by act of the Australian Parliament.

Science News Letter, September 2, 1950

ENGINEERING

Silica Glass for Small High-Wattage Lamps

➤ THE only new development in glass making since glass melting began many years ago is a process now used in producing new silica glasses with properties approaching fused silica, the Illuminating Engineering Society was told in Pasadena, Calif.

These products, called Vycor brand 96% silica glasses, can be used to make high wattage incandescent lamps in small envelopes, W. W. Shaver of Corning Glass Works, Corning, N. Y., stated. Also, in germicidal lamps, they increase efficiency because they transmit a larger percentage of ultraviolet rays.

The first steps in making these alkali-borosilicate glasses, as they are also called, are conventional melting followed by blowing, pressing or drawing processes. But the products are turned out in oversized shapes.

After a heat treatment they are immersed in a dilute acid bath and soluble materials are leached out. In the heat treatment the glass separates into two phases, one of which is rich in boric oxide and acid soluble while the other is practically 96% silica.

New photochemical lamps, developed particularly to meet the operating conditions of modern whiteprint machines, were described at the same meeting by L. E. Barnes of Westinghouse Lamp Division, Bloomfield, N. J.

These new lamps have higher ultraviolet output and more uniform output because of reduced sensitivity to drafts. They have longer life and their life is practically independent of the number of times the lamps are turned on.

In these lamps the Corning Vycor glass is used, being cheaper than quartz and more efficient than glasses formerly employed. By means of a new electrode sealing process, the need of an exhaust tip is eliminated. The new glass permits a reduction in bulb diameter, thereby reducing sensitivity to drafts.

Science News Letter, September 2, 1950

IN SCIEN

ZOOLOGY

Rare Birds at Bronx Zoo

➤ SOME of the rarest birds ever to come out of South America—including a long-wattled umbrella bird, an equatorial cock of the rock, and a series of brilliant-hued Andean humming birds—went on exhibition recently at the Bronx Zoo in New York.

They are part of a collection by Charles and Emy Cordier of the New York Zoological Society. Some of the humming birds, inhabitants of high reaches of the Andes Mountains in Ecuador, are believed never to have been exhibited alive before.

The rare long-wattled umbrella bird has a bright red throat pouch which blows up to more than a foot in length and four inches in diameter. When first put into a glass-fronted cage with a cousin the eastern umbrella bird, the new inmates immediately tried to fly through the plate glass. The cage had to be whitewashed until the birds learned the limits of their strange new world.

Science News Letter, September 2, 1950

AERONAUTICS

Automatic Parachute Opens at Proper Altitude

➤ A PARACHUTE that opens automatically at the proper distance from the ground, developed at the Wright-Patterson Air Force Base in Dayton Ohio, promises to eliminate much of the hazard of dropping from speedy planes and high altitudes with open chutes.

The parachute "brain" contains a timer, which is set usually to permit an interval of five to seven seconds between release and opening. It contains also an aneroid element, such as used in barometers, set to open the chute at an elevation of 5,000 feet above the earth. The parachuter has a free-fall until this proper height above the earth is reached.

The parachute requires only that the pilot get out of the plane and pull a handle connected by cable to the automatic release. From there on, the automatic release takes over, opening the chute after the airman has fallen a safe distance. It prevents accidents that follow if a pilot fails to pull a hand ripcord at the proper time or if he is prevented by a blackout from pulling it at all.

The parachute itself is the same size as earlier types but is 30% lighter and its tearing strength has been increased 100% by a special rip-stop weave.

Science News Letter, September 2, 1950

CE FIELDS

MEDICINE

Warn against Overdose Of Ergot for Headache

➤ ERGOT is a "most potent and effective" drug for relieving migraine headaches but overdosing with it must be avoided, Drs. Marvin Fuchs and Lester S. Blumenthal, of George Washington University Medical School, Washington, D. C., warn in the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION (Aug. 26).

They base their warning on two cases. In one "alarming symptoms," including massive vomiting, pain around the heart, palpitations, numb and cold extremities and blue lips and nails, developed 30 to 40 minutes after taking two tablets of cafergot. This is an ergot and caffeine preparation. The patient recovered, but he was unable to get out of bed for 24 hours because of prostration. This case is believed the first in which bad effects followed the use of cafergot.

The other case, in which the patient's heart was affected, is the first known report of such toxicity from another ergot preparation, dihydroergotamine.

Migraine headache sufferers are usually resistant to the harmful effects of ergot, the Washington physicians point out. However, they warn, migraine does not give immunity to ergot poisoning.

Malnutrition, from protein and vitamin lack, and high blood pressure even without detectable artery or kidney complications, are conditions which should make doctors extra cautious in giving ergot preparations, the Washington physicians state.

Science News Letter, September 2, 1950

MEDICINE

Vampire Bats Carry Rabies In Tropical Countries

➤ VAMPIRE bats, legendary terror of the tropics, now have another curse against their name. Like mad dogs and foxes in temperate zone countries, blood-sucking bats are transmitting rabies.

The modern-day fight against the vampires was described by Dr. James H. Steele, chief veterinarian of the U. S. Public Health Service's Communicable Disease Center at Atlanta, Ga., in a paper at the annual meeting of the American Veterinary Medical Association in Miami Beach, Fla.

Rabies is almost sure death to both man and animals unless serum is given before symptoms of the disease appear. In the United States, Dr. R. B. Phillips of Cordele, Ga., reported, cows are becoming more susceptible to rabies than dogs. In one section of Georgia last year, he said, rabid foxes killed about 360 cows, horses and mules. Dogs, although highly susceptible to the dread disease, were protected by vaccination.

Another cattle disease called anaplasmosis, which is like malaria in humans, now costs U. S. farmers about $5,000,000 a year, Dr. Paul L. Piercy of the University of Georgia told the convention.

Originally found only in the Deep South, anaplasmosis now has spread to half of the 48 states. It is carried by ticks, flies and mosquitoes, and may be transmitted by man by the use of unsterilized surgical instruments in dehorning or vaccinating cattle. Cows that recover from the disease may be carriers of it for the rest of their lives. No satisfactory treatment of the disease has yet been found.

Science News Letter, September 2, 1950

GENERAL SCIENCE

Direct Handling of Deferment Appeals

➤ RESERVE officers will soon be able to appeal directly to the Pentagon for deferment if they are in jobs they or their employers consider essential, Science Service learned.

The Army, Navy and Air Force are setting up an appeals mechanism headed by an officer of colonel or general rank in each service to which reserve officers subject to call may take their cases directly instead of going through channels.

The nation's top scientists see this as a step ahead in the task of conserving our vital supply of scientific personnel. They consider that the recently announced categories in which officers and men will be deferred from active duty was not sufficient. The time between being called up and reporting for duty is not long enough to get a proper decision at a local level.

Also, with decisions being made by local draft boards, the tendency is to put a man in service rather than to consider whether he would be more useful to the nation in his present civilian job. Until the appeals mechanism is set up, reserve officers must make their appeals through the chain of command where they are likely to be stymied.

The scientific world, however, does not consider the impending appeals mechanism enough. Scientists are still plugging for a scheme under which the entire scientific manpower picture of the nation will be assessed.

Scientists of draft age and in the reserves would then be assigned to the places in which they could do the nation's defense effort the most good, whether in uniform, in government laboratories, in private industry or in the colleges and universities.

Science News Letter, September 2, 1950

METALLURGY

Thorium, Atomic Energy Element, Found in India

➤ THORIUM occurs in the monazite sands in the Gaya district and in other parts of India, it is reported in a series of investigations on radioactive minerals of India by S. K. Nandi and D. N. Sen of the University College of Science and Technology in Calcutta, India.

Thorium is the only natural element besides uranium from which fissionable materials for the A-bomb can be made. Crystals of the thorium mineral occur in several places in India, associated with pitchblende, the usual ore of uranium, according to the Indian scientists.

The mineral is an ortho-phosphate of the rare element cerium, and contains 12% of thorium combined partly as phosphate and partly as silicate. A small fraction of a per cent of uranium present in the monazite sand allowed the age of the mineral to be determined as 803 million years, and assigned it to the Pre-Cambrian geologic age.

The researches are published in the JOURNAL OF SCIENTIFIC AND INDUSTRIAL RESEARCH (June).

Science News Letter, September 2, 1950

AERONAUTICS

Nautical Miles Will Replace Statute Miles

➤ KNOTS and nautical miles will replace miles-per-hour and statute miles in aircraft communications in the United States after July 1, 1952, it was revealed recently by D. W. Rentzel, head of the U.S. Civil Aeronautics Administration, Washington, D.C.

This will be in accordance with the standards established by the International Civil Aviation Organization, of which the United States is one of the 50-odd members. It also will put civil aviation in step with the U.S. military forces which in 1946 adopted knots and nautical miles as standard for all aviation operations.

A nautical mile is 6080 feet, compared with 5280 feet in a statute mile. Basically, it is a sixtieth of a degree, or one minute, on the arc of a great circle of the earth. Knots express the number of nautical miles traveled in an hour. A speed of 20 knots means traveling at 20 nautical miles per hour. A speed of 91 miles per hour is the same as 79 knots.

The recommendation of the International Civil Aviation Organization relative to the world-wide adoption of knots and nautical miles is one of several steps taken by the group to promote international transportation and make aviation communications easier to understand by pilots from all parts of the world by the use of universal terms.

Science News Letter, September 2, 1950