

Do You Know?

Decay in wood occurs only by the action of fungi or bacteria.

Jet-propulsion of aircraft is most efficient at high speeds; when the flight speed is reduced, the propulsion efficiency of jet engines decreases.

Subjecting unmated *queen bees* to a carbon dioxide gas anesthetic causes them to lay eggs which later hatch into drone bees.

A burning *paper match* produces about 40 times as much light as the so-called grain-of-wheat lamp used by surgeons in exploring body cavities.

There are now more than 100 *soybean processing plants* in America; the soybean is America's fourth largest cash grain crop, following corn, wheat and oats.

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BIOCHEMISTRY-AAAS

Mutations with Chemicals

➤ **CANCER-CAUSING** chemicals can also cause the sudden evolutionary changes known as mutations, Dr. M. Demerec of the Carnegie Institution of Washington announced at the meeting. This points to the opposite possibility that mutation-causing chemicals may cause cancer, and must therefore be avoided or at least handled with extreme caution.

Dr. Demerec's experimental results support the theory already advanced, that cancer cells behave like strangers in the bodies they afflict because they have actually become strangers through mutational changes. If this is true, he commented, "our chances for finding ways to prevent it are very, very slight."

However, it should be possible to reduce the frequency of cancer by avoiding contact not only with cancer-causing chemicals but with chemicals known to cause mutations, and extensive research for the mutation-causing properties of all sorts of compounds appears to be in order.

Dr. Demerec demonstrated the possi-

bility of chemical production of mutations by exposing the geneticist's favorite animals, fruit-flies, to an exceedingly fine mist or aerosol of a war gas that was never used in war, one of the nitrogen mustards. The bodies of insects are so constructed that air and anything that may be in it comes into direct contact with their sex glands, thereby exposing them to mutation if the appropriate chemical is used. Now he is continuing the experiments, with aerosols of various cancer-causing compounds, as well as other chemicals not yet proven guilty.

Cancer-causing chemicals can change the heredity of animals from cancer-resistant to cancer-susceptible, Dr. L. C. Strong of Yale University reported. Into mice of an inbred strain that normally lost only six-tenths of one per cent of its numbers to cancer he injected the cancer-causing chemical, methylcholanthrene, keeping up the treatment through nine successive generations. After this, nearly two-thirds of the mice of this strain developed cancer, and the tendency had become hereditary.

Science News Letter, January 10, 1948

NUCLEAR PHYSICS-AAAS

Mesotron May Be Created

➤ **WITHIN** the next few months, giant high voltage machines should create one of the fundamental particles of matter, the mesotron, which up to now has been seen only rarely as a result of cosmic rays smashing into the upper atmosphere of the earth.

This prediction by Prof. Marcel Schein of the University of Chicago raises hope that the role of this particle, intermediate between electron and proton, will be discovered.

Observations made on America's highest peak, Mt. McKinley, by a mountaineer colleague, Dr. V. Victoreen, allowed Dr. Schein and T. H. Carr of the Navy cosmic ray project to conclude that five giant atom-smashers operating in 1948 have a chance to generate mesotrons artificially. At 18,200 feet the energies of natural mesotrons are between 150 million and 400 million electron volts. Five accelerators—the one already operating at the University of California and those at Columbia, Rochester, Cornell and Harvard Universities to go into service this year—attain such energies.

Just as the neutron unknown a few years earlier was the key that unlocked atomic energy, so the mesotron may explain the mystery of the forces that hold the atom together.

Already three weights of mesotrons are known and physicists expect that other varieties will be found during their searches on this new atomic frontier.

To duplicate, under controlled conditions, what only the harder cosmic rays can do so far, hope was expressed by Dr. Leland J. Haworth, assistant director of Brookhaven National Laboratory on Long Island, N. Y., that there would be constructed two giant accelerators operating at billions instead of mere millions of electron volts. The top energy of these machines would be ten billion electron volts. Plans for a similar machine on the West Coast at Berkeley were announced earlier.

Science News Letter, January 10, 1948

Bubonic plague in humans, which usually is transmitted to them from rats and other rodents by fleas, is called *sylvatic plague* in the animals.