

placed on the rubidium-strontium method of dating ancient minerals.

The oldest rocks dated so far were found with the rubidium-strontium determination, using the isotope-dilution method of measuring.

Galaxies in Collision

Ghosts of dead stars that exploded hundreds of years ago and galaxies of stars in collision are sending out such strong radio signals that they have been picked up here on earth.

During the past year three of the outstanding radio sources of the sky have been identified by Drs. Walter Baade and R. Minkowski of Mount Wilson and Palomar Observatories of the Carnegie Institution of Washington and the California Institute of Technology.

Radio signals from the constellation of Cassiopeia were found to come from the center of a remarkable emission nebula. This is believed to be the expanding envelope of what may have been a supernova of the remote past.

Another strong radio source, located at the Cavendish Laboratory in England, is in the constellation of Cygnus, the swan. This was found to coincide with a galaxy of billions of stars like our own Milky Way, but far beyond the system of stars to which our sun and the earth belong.

"This nebula is a very queer object," the annual report of the Carnegie Institution of Washington states. "In fact, its structure seems to make sense only if it is assumed that we are dealing with two nebulae which are in actual collision."

Another strong radio source seems to be a mass of peculiar glowing filaments of gases, spreading out from the center at varying speeds. Except for its small size, this object in the constellation of Puppis, the ship's stern, resembles the one in Cassiopeia.

Drs. Baade and Minkowski have been cooperating with the active radio research centers in Australia and England in attempting to spot astronomical objects that are broadcasting the cosmic radio noise picked up here on earth. One of the first objects identified with a radio source was the Crab nebula, remnant of a galactic supernova of 1054 A.D.

Mutation Process Described

Heredity-controlling cell structures are only indirectly changed by mutation-causing agents (mutagens), Dr. M. Demerec, geneticist with the Institution, has discovered.

Dr. Demerec said various chemicals and ultraviolet radiation used to cause changes in genes, bearers of hereditary traits, affect the general metabolism of a cell primarily. The changes in the gene follow as a result of the metabolism change.

Dr. Demerec described the process of induced mutation like this: A mutagen acts upon the cell material, cytoplasm, to cause a change in the cell metabolism. This change in the cell "climate" then affects

the genes. Some of the genes are stable and do not react to the change, but others show some differences which then affect the hereditary structure of the cell.

Another discovery in genetics from Carnegie Institution of Washington laboratories was that increased heat seems to speed up the process of mutation. Geneticist Evelyn Witkin found that the one-celled organism, *Escherichia coli*, showed a greater rate of both spontaneous and induced mutations with an increase in temperature.

Dr. Barbara McClintock reported she found that the carriers of genes, chromosomes, also bear another functional genetic unit. This second unit controls the time and degree of action of the genes.

Science News Letter, December 20, 1952

NUTRITION

Average American Eats 12% More Than Pre-War

► THE AVERAGE American consumes 12% more food now than he did in pre-war years.

Furthermore, he is indulging his taste for more expensive kinds of foods, Dr. Frederick V. Waugh, agricultural economist, told the National Food and Nutrition Institute in Washington.

Although the average American eats more food now, he has not increased his intake of calories from the 1935-39 period. He eats less starchy material, about the same amount of vitamin A and a little more vitamin C. He gets considerably more riboflavin, thiamine, niacin, iron, protein and calcium now than in pre-war years.

In terms of food, the average American now eats fewer potatoes and grain products, but more meats, citrus fruits, tomatoes, leafy green and yellow vegetables.

Science News Letter, December 20, 1952

GENERAL SCIENCE

Temperature Inversions Cause "Flying Saucers"

► THE CIVIL Aeronautics Authority has now confirmed that the "flying saucers" seen on radar scopes at National Airport near Washington last July were the results of temperature inversions bending the radar waves. (See SNL, Aug. 9, p. 82.)

"Correlation of controllers' reports with Weather Bureau records indicated that a temperature inversion almost always existed when such targets appeared on the radar," the CAA said. The radar beams were bent downward by the inversions to give the operator a ground reflection on his radar scope. The inversion areas traveled with the speed of the wind, but horizontal movement of the areas produced a speed on the scope apparently twice as great as the wind speed.

The CAA report did not mention the lights seen occasionally along with the more numerous radar echoes. A spokesman said

this was because the lights did not interfere with traffic control at the airport, and were thus of little interest to CAA.

A meteorologist stated that, while the temperature inversion explanation for the radar echoes is quite reasonable, it would take quite terrific temperature inversions, which occur only rarely, to produce visual light reflections from the ground.

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Using radioactive tracers, scientists have found that a hormone-type weed-killer was carried throughout a bean plant's system in 30 minutes.

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