

NUTRITION

Peanut Oil Causes Mutations in Wheat

INVESTIGATING peanut oil as a cancer-causing agent might be worthwhile, two Indian scientists have suggested.

Peanut oil caused many mutations in wheat seed that had been soaked in it for 24 hours, report M. S. Swaminathan and A. T. Natarajan of the Indian Agricultural Research Institute, New Delhi. Since there is believed to be a relationship between mutation-causing agents and cancer-causing agents, they say, it may be worthwhile pursuing the oil's effect on genes and chromosomes from the point of view of cancer and its cause.

"The role of nutrition with reference to the incidence of cancer is now widely realized and there are indications that a search for carcinogenic compounds in human dietary regimens might be worthwhile. Peanut and mustard oils are widely used as cooking media in tropical countries," the scientists point out.

Details of their study appear in *Journal of Heredity* (Vol. 50, No. 4, 1959). They soaked einkorn, emmer and bread wheats in peanut, mustard and castor oils. The seeds were sown in the field or germinated in the laboratory in petri dishes. In both bread wheat and einkorn, the peanut oil caused the greatest reduction in germination. Fertility was also reduced in the bread wheat. Some of the mutations produced may be of economic value, the scientists say.

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OCEANOGRAPHY

Undersea Mountain Rises Higher Than Mt. Whitney

A HUGE UNDERSEA mountain, higher than California's Mt. Whitney, has been discovered in the South Atlantic.

The formation, termed a seamount by geologists, rises 15,980 feet from the ocean floor. Its platform top is 210 feet below the surface of the ocean, with one isolated knob rising to within 120 feet of the surface.

Discovered by Columbia University scientists aboard the university research vessel Vema about 550 miles west of the Cape of Good Hope, South Africa, the cone-shaped seamount is some 35 miles across at the base and five miles across at the top.

Columbia geologists said the formation probably existed as an island, protruding well above the surface, during the last glacial period 8,000 to 10,000 years ago. After that period, melting ice changed the world-wide sea level and the waters of the Atlantic rose about 180 to 240 feet, submerging the island.

As most seamounts, this one is associated with a large anomaly in the earth's magnetic field, indicating it is composed of highly magnetic volcanic rock.

Rounded cobbles of lime about the size of large eggs and baseballs were dredged from the crest of the formation, as well

as coral and mollusk shells. The shells indicate some animals live on the top of the cone. No biological trawls were made from the Vema.

A blanket of manganese-coated sand and gravel was spread around the base of the seamount at 15,600 feet.

The discovery was made while the Vema, now on a ten-month scientific cruise that will include circumnavigation of the Antarctic continent, was enroute from Recife, Brazil, to the Cape of Good Hope.

Previously unknown to mariners, the seamount could have proved a menace to mariners, scientists said. A submarine with its sonar not in operation could possibly have rammed the formation before being aware of its existence.

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NATURAL RESOURCES

Interior Department Shows Successes, Needs

THE UNITED STATES will need its best thinking and planning in the years just ahead to meet the impact of population pressures on the nation's natural resources, Secretary of the Interior Fred A. Seaton said in Washington, D. C.

The past year's successes, ranging from bird conservation to bituminous coal mining, and the future years' needs were highlighted in the Department's annual report.

Some of the Interior Department's activities in fiscal 1959 included: work on the construction of five saline and brackish water conversion demonstration plants; reclamation projects for water and electricity in arid western areas; planned urban and suburban development; seeding and reforestation unproductive lands; exploring oil, gas, coal and nuclear fuel resources and conserving helium; and maintaining and improving recreation resources.

The turn-over from Federal to state control of Alaska's fisheries and wildlife was one of four pieces of major legislation affecting the Department's Fish and Wildlife Service in 1959. More funds for research on effects of pesticide chemicals on fish and wildlife and for migratory bird refuges—through a dollar increase in the duck stamp price—were also made available.

The Geological Survey, which celebrated its 80th anniversary in March, 1959, prepared a total of 2,439 maps, of which more than 1,600 constituted new mapping. Studies were directed toward the discovery of concealed ore deposits, while airborne radioactivity and magnetic surveys provided new information about large areas of the U. S.

Safety devices were developed for coal miners by the Bureau of Mines. "An ambitious study" was begun to determine if hydraulic methods can be used to mine bituminous coal in the U. S. Another new project is directed at finding techniques for removing explosive methane gas from coal seams in advance of mining. A fifth Government helium plant neared completion. Improved and more efficient mining and metallurgy techniques were among the Bureau's 1959 achievements.

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IN SCIENCE

MEDICINE

Death Rates Related To Marital Status

A WOMAN'S marital status apparently is closely related to the age at which she might be expected to die.

Young to middle-aged women, ages 20 to 45, who fall in the "ever-married" category that includes married, divorced or widowed women have lower death rates from most causes than do single women. Medical selection appears an important factor at the younger ages, Julia B. Zalokar of Yale University's department of public health reports in the *Journal of Chronic Diseases* (Vol. 11, No. 1, Jan.).

After age 45, however, there is a large group of circulatory system diseases, along with diabetes and cirrhosis of the liver, to which ever-married women seem more susceptible. Possible environmental factors that could be adversely affecting this group should be studied, the researcher suggests.

Analysis of deaths by cause also showed some diseases are much more highly selected out by marriage than others. For influenza and pneumonia, tuberculosis and diabetes, single women have at age 30 more than twice the rate of the ever-married group. Accidents and cancer show relatively little difference at this age, however.

In conclusion the study indicates that the "environment of single women is not necessarily unfavorable in comparison to that of ever-married women."

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VETERINARY MEDICINE

Virus Causes Cattle Disease

A VIRUS much like the one found in children with respiratory diseases is at least partly responsible for "shipping fever," a costly cattle disease.

Described as a major breakthrough in researchers' understanding of the disease, identification of the virus means a start can be made towards producing an effective vaccine.

Veterinarians at the U. S. Department of Agriculture's research center, Beltsville, Md., have isolated para-influenza 3 virus from the nasal mucus of calves showing signs of shipping fever. Mild cases of the disease were then produced in healthy animals by spraying this virus into their noses. The virus was also grown in tissue culture and anti-serum produced.

It appears, however, that many infectious agents may be responsible for this widespread respiratory disease of cattle, Dr. Robert C. Reisinger said. Much more will have to be learned about this disease complex before an effective vaccine is produced.

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CE FIELDS

DYNAMICS

Convert Heat Directly To 100 kc Electricity

HEAT HAS BEEN converted directly into 100-kilocycle alternating current electricity in significant amounts without rotating machinery or a DC-AC converter.

Scientists at General Atomic Division's John Jay Hopkins Laboratory for Pure and Applied Science, San Diego, Calif., used a high temperature cesium cell converter to produce enough alternating current to light a series of small light bulbs.

An outgrowth of thermoelectric research, the discovery brightens prospects that direct conversion equipment, including the cesium cell, may eventually be used in future power plants instead of steam boilers, turbines and generators. Such equipment might even help power companies cut costs.

The cesium cell is based on the Edison effect. During early experiments on the light bulb, Edison found that a white hot metal boils electrons out of its surface. This was the founding idea of all radio tubes in which electrons are boiled off hot wires and collected by an adjacent plate within the tube.

In the cesium cell, a metal plate is heated white hot. Electrons boiled out of the hot plate, or emitter, are collected on an adjacent cold plate called a collector. The hot and cold plates act as the poles of a battery, delivering current to electric wires for distribution. Part of the heat put into the hot plate is converted directly into electric current.

A small amount of cesium metal vapor added to the cell helps in the direct conversion process by stepping up the rate at which the electrons boil off the hot surface, by reducing the energy loss at the cold surface and by creating an ionized gas or plasma which neutralizes the electron space charge in the region between the hot and cold surfaces. This causes the current to pass much more readily through the region.

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PHARMACOLOGY

Tranquilizers Cost Us \$280,000,000 Each Year

AMERICANS spend approximately \$280,000,000 annually on tranquilizers.

This figure is estimated from data supplied by the Kefauver Antitrust and Monopoly Subcommittee, investigating the pricing practices of leading manufacturers of tranquilizers.

Sen. Estes Kefauver (D.-Tenn.) reported that tranquilizers constitute a major branch of the drug industry. Manufacturers sell their tension-relieving pills to druggists for \$200,000,000 annually. Druggists mark prices up an average of 40%, the Senator estimated.

The price of one tranquilizer varied from

\$4.25 to \$5.50 for 50 pills among five drug-stores in one major city.

Only those pills that are big sellers will be investigated. They include Miltown, Equanil, Compazine, Thorazine, Sparine, Serpasil and other brands of reserpine. There are more than 60 other brands of various types of relaxing agents now on drugstore shelves.

Sen. Kefauver emphasized that the major interest of the Subcommittee is a factual determination of whether or not the major drug manufacturing companies are competitive and price drugs accordingly. The Subcommittee also is interested in what part, if any, the use of patents and licenses has played in the pricing structure within the drug industry, and a determination of whether or not new legislation is needed to protect consumer interest in the vital area of health.

Officials from Smith, Kline and French Laboratories, Philadelphia, Carter Products, Inc., New York City, American Home Products Corp., Philadelphia, and Ciba Pharmaceutical Products, Inc., Summit, N. J., were requested to testify before the Subcommittee.

Tranquilizing drugs have assumed an important role in our present day society. Their use is not limited to patients in mental hospitals or those with recognized mental disorders under treatment at home. They are prescribed and used by large segments of our population living ordinary lives but suffering from anxiety, tension and emotional disorders, the Senator said.

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PHYSICS

Plasma-Jet May Propel Manned Vehicle To Space

See Front Cover

THE EXPERIMENTAL plasma-jet generator is at the present time being used only for the testing of materials for space vehicles, but it is conceivable that a propulsion system using the plasma jet could propel a manned space vehicle on an interplanetary flight at speeds close to that of light.

Such a propulsion system would probably use atomic power or the heat from the sun as a source of electrical energy to create the plasma. Plasma, called the fourth state of matter, is a mixture of gas and electrically charged particles at high temperatures.

The plasma-jet generator, seen on the cover of this week's SCIENCE NEWS LETTER, uses a high intensity electric arc to produce temperatures up to 18,000 degrees Fahrenheit. The arc separates the molecules in gases, such as nitrogen or argon, and forces the charged gas particles through a small nozzle. The gas particles recombine and produce the high temperatures.

The plasma jet has been developed by the Bell Aircraft Corporation's laboratories in Buffalo, N. Y. With additional equipment, it could produce temperatures up to 40,000 degrees Fahrenheit.

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ZOOLOGY

Living Fluorescent Corals Flown to Antwerp Zoo

A RARE collection of living, fluorescent corals, transported 12,500 miles by plane, can now be seen in the Antwerp zoo. It is one of two such exhibits open to the public.

The tiny deep-sea dwellers were taken from their tropical home in the reefs off the coast of New Caledonia, French territorial island in the South Pacific. Divers, who collected the specimens from depths of 100 feet or below, worked under the direction of Dr. Rene Catala, founder, owner, and director of the Aquarium and Marine Biology Station at Noumea, New Caledonia.

Transfer of four cases of the corals was made by special flight arrangements with TAI (Transports Aeriens Internationaux) from Noumea to Brussels via Paris, then to the zoo by truck. Dr. Catala accompanied the shipment and cared for the animals.

When ultraviolet light is directed into the especially prepared fishpond where the corals live, fluorescent colors transform the ordinary-looking corals into glowing underwater jewels.

The collection was taken to the Belgian zoo under the auspices of the Royal Society of Zoology of Antwerp, with the cooperation of geologist Dr. Haroun Taziéff.

Dr. Catala is the first to transport living corals over a long distance and set up a popular exhibit of this kind. He also discovered their fluorescent qualities.

Exposure to ultraviolet light is expected to shorten the life of the corals considerably. The skeleton left after the animal dies is not fluorescent.

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AERONAUTICS

Jetting Around World In 54 Hours Scheduled

IN THE NEAR future it will be possible to fly around the world on commercial transports in a scheduled 54 hours, San Francisco to San Francisco, thanks to the coming of 100% pure jet operation on the globe circling routes.

This day-by-day possibility does not quite equal the present record set in December, 1959, by Milton Reynolds, ball point pen manufacturer of San Francisco. This was 51 hours 45 minutes 22 seconds, some nine hours less than a circling made by two Japanese writers. Tail winds aided the Reynolds flight and Pan-American jets flying the polar route from San Francisco to London were an important factor.

On Feb. 8 Pan American World Airways will have jets to link up with the polar flight that will circle the world back to the West coast, and a present ten to 12 hours delay in the schedule at Tokyo will be plugged. Then new record times of 54 hours will be a schedule possibility, contrasted with Jules Verne's 80 days.

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