MEDICINE

Cancer Not Caused by Virus Columbia Scientists Find

CANCER is not caused by a virus. This is the opinion, contrary to that of some scientific investigators, of Drs. J. W. Jobling and E. E. Sproul of Columbia University College of Physicians and Surgeons.

New experiments with tobacco mosaic and cowpox viruses and the famous Rous chicken tumor, supporting the opinion that cancer is not virus caused, are reported by Drs. Jobling and Sproul, (*Science,* Mar. 12).

Instead of being a virus, they think the agent that causes the chicken tumor is something produced by abnormal physical and chemical processes in the cells of the chicken's body. This substance or agent has the chemical nature of a lipid, which is in the fat class. Consequently, the scientists reason, it is unlikely that this substance can reproduce itself. How this substance can cause the tumor disease is explained as follows:

"It seems probable that it possesses the ability when injected into normal animals under proper conditions to stimulate normal cells to produce a similar substance and thus perpetuate the disease."

The belief that cancer is caused by a virus is based, Drs. Jobling and Sproul point out, on the demonstration that the tumor-producing agent of some chicken tumors can pass through a Berkefeld filter without losing their tumor-causing activity. A disease-producing agent which retains its activity after passage through a Berkefeld filter is generally held to be a virus, so the chicken-tumor-producing agent was classed as a virus.

If the chicken tumor is caused by a virus, then viruses must be classified according to their chemical properties. The virus of tobacco mosaic is a protein and cowpox virus, from which smallpox vaccine is made, is also protein, but the chicken tumor virus is a lipid.

Science News Letter, March 20, 1937

AGRICULTURE

Bacteria, Molds and Yeasts Promise Farm Problems Solution

BACTERIA, molds and yeasts, more noted now as disease-bringers and spoilers of things than for their useful activities, were hailed as potential factors in the solution of America's agricultural problems by Prof. Ellis I. Fulmer of Iowa State College, speaking before the Midwestern Conference of Agriculture, Industry and Science.

Farming, Prof. Fulmer pointed out, is essentially a chemical manufacturing process. The farmer is foreman in a chemical factory, wherein his crop plants are living machines using the energy of sunlight to make carbohydrates, fats, and proteins out of raw materials from air and earth. In the process, energy is woven into the things that come out as end-products.

Formerly the farmer cashed in on the release of a large part of that stored energy by feeding crop products to his work animals. Now he uses tractors and power machinery instead of horses and mules. So the products pile up, creating economic crises which can be only temporarily solved by crop limitation methods.

A considerable part of the answer can be found, Prof. Fulmer pointed out, in turning over the job of digesting carbohydrates (starches and sugars) to bacteria, molds, and yeasts. These use up part of the energy in their life processes, but they turn back to the chemical industrialist a great variety of liquid fuels, solvents, ingredients for explosives, etc. Prof. Fulmer displayed a list of more than forty products that can be obtained from the microorganic fermentation of carbohydrates, only a few of which have present economic uses.

Unfamiliar Uses

Most of us are familiar with starch mainly as white stuff used in stiffening shirt fronts and making cornstarch puddings, and we know syrup principally as a thick brown liquid that gets poured on pancakes—and unaccountably smeared all over children's faces. Dr. Norman F. Kennedy of the Corn Industries Research Foundation told the conference of a number of less familiar but very important uses of these two principal industrial products of corn.

Starch is used in enormous quantities in the manufacture of textiles, long before they are cut and sewed into shirts or sheets. It plays an important role in the production of paper, twine, burlap bagging, and many kinds of adhesives. Syrup from corn also has its uses in the textile and paper industries, and in such diverse industries as tobacco manufacturing and the tanning of leather.

Science News Letter, March 20, 1937

SEISMOLOGY

Earthquakes During "Storm" Were Difficult to Trace

THE two earthquakes of March 8 and 9, respectively—Monday's at San Francisco, Tuesday's a renewal of the recent Midwest shocks—have left seismologists puzzled. Instruments in the regular seismological observatories over the United States and Canada seem to have ignored the San Francisco disturbance. At any rate, no reports from these observatories have been received in Washington. Yet the battery of "strong-motion" records, a special type of seismograph that works only when jarred hard by a strong local shock, went into action in the San Francisco region with almost every one of its twenty instruments.

One thing that may have interfered with the records of some of the stations was a marked microseismic storm that was in progress when the San Francisco quake occurred. Microseisms are rhythmic minor earth tremors that keep on coming in for hours on end, like sea waves in a storm. Many scientists, indeed, believe that they are associated with the passing of major storm areas, such as the one that passed up the northern Atlantic during the past two or three days. The instruments at Canisius College in Buffalo, near Lake Erie, were busy all Sunday night and most of Monday writing microseism records, and show no trace of the disturbance on the California coast.

The second Midwest shakeup wrote its records on a number of instruments, but although the disturbed area was in the middle of a veritable ring of observatories its epicenter could not be

pinned down accurately on the map. This was characteristic of the first shock on March 2, also. Not all earthquakes have good, sharply defined epicenters; some of them seem to originate over a whole area rather than at a single given place.

While the two "home" earthquakes kept Americans interested, Central America slipped one past unnoticed except by scientists. On the morning of Tuesday, March 9, at 10:40.2, eastern standard time, a strong shock occurred at approximately 8.9 degrees north latitude, 83.8 degrees west longitude. Determination was made by the U. S. Coast and Geodetic Survey.

This is not far from the locality where a destructive earthquake occurred on July 18, 1934, wrecking a wharf and other structures in the towns of David and Puerto Armulles in the Republic of Panama.

Observatories reporting to Science Service were those of Fordham University, Canisius College, the Franklin Institute in Philadelphia, Williams College, the University of Michigan, the Dominion Observatory at Ottawa, and the station of the U. S. Coast and Geodetic Survey at Tucson, Ariz.

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MEDICINE

New Chemical Saves Lives of Type III Pneumonia Patients

The Dye, Prontosil, Already Entered in Battle Against Streptococci, Now Finds New Usefulness

A NEW victory in the fight against pneumonia is reported by Dr. Ralph R. Mellon, director of the Western Pennsylvania Hospital Institute of Pathology, Pittsburgh.

Prontosil and its close relative, Prontylin, chemical compounds already hailed as life-saving remedies in cases of deadly streptococcus infections, are proving effective remedies for Type III pneumonia. Serum treatment has not been satisfactory in this pneumonia although Types I and II pneumonias can be cured by use of the proper serum.

Reports of patients treated with these chemicals were given by Dr. Mellon before scientific audiences in Los Angeles and Pasadena.

Of 9 Type III pneumonia patients treated with the chemicals, 7 recovered and 2 died. These figures are exactly the reverse of those for a group of 9 patients who were not given the chemical treatment. In this group, 7 died and only 2 recovered.

The number of patients treated is not large, but studies of the chemical treatment for pneumonia in mice and rats adds to the evidence for the value of the new remedy. These studies have been going on at a number of institutions since the value of Prontosil for streptococcus infections, such as childbed fever, septic sore throat, scarlet fever and erysipelas, was first announced.

Dr. Mellon and associates studied the effect of Prontosil and Prontylin on pneumonia in rats rather than mice because they believe pneumonia in rats is more like the human disease. In a group of 14 rats infected with Type III pneumonia, the deathrate was 85 per cent. These rats had not had any Prontosil treatment. In another group of 13 rats with Type III pneumonia, Prontosil treatment brought the deathrate down to 23 per cent.

Chemical treatment of pneumonia is not new. Many years ago Dr. Lloyd Felton of Harvard Medical School studied the action of various chemicals, including sulfanilamide, the active part of Prontosil, in pneumonia. When a successful serum treatment for Type I pneumonia was developed, however, the idea of chemical treatment of the pneumonias was abandoned. Scientists have since been trying to develop equally successful serums for all the 32 pneumonias, especially the first four types. Successful serums for Type I and Type II are now available.

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ECOLOGY

Shelterbelt Trees Live Despite the Drought

TREES planted in the West's much-controverted shelterbelt area show high survival percentage despite two years of desperate drought, the U. S. Forest Service reports. Survivals average 550 trees to the acre, out of an average of 740 planted.

Chinese elm and cottonwood that were 18 inches high when planted in the spring of 1935 are now 15 and 16 feet high. Species showing best growth include green ash, cottonwood, Chinese elm, red cedar and Ponderosa pine.

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Asphalt roads colored red are found helpful for visibility in night driving.

An octopus in an Australian aquarium hatched a quarter of a million eggs in one brood.