BACTERIOLOGY

Analyze Germs In Search For Plant Cancer Causes

A PHOSPHORUS-containing material, relatives of which are found in the human brain and liver, has been isolated by Drs. Erwin Chargaff and Michael Levine of the College of Physicians and Surgeons at Columbia University and Montefiore Hospital from the body of a bacillus that causes tumors in plants.

In plants there is a well-known disease, the crown-gall, which bears a slight resemblance to tumors in animals. It is produced by the Bacillus tumefaciens.

Using the chemical methods developed by Dr. R. J. Anderson of Yale University, who recently purified an acid from tubercle bacilli which produces symptoms of tuberculosis itself when injected into an animal, they are engaged in analyzing the crown-gall germ.

Their first results show that it contains a phosphatide which stimulates rapid cell multiplication in plants. They are now working to learn the exact constitution of this chemical. Some similar materials have long been known to be of extreme importance to the normal function of plant tissues as well as animal ones.

Science News Letter, January 30, 1937

MEDICINE

Study of Cancerous Mice Shows "Tumor Disposition"

MICE with an inbred susceptibility to cancer have a "tumor disposition." Evidence for this and characteristics of the tumor disposition are reported by Dr. J. E. Davis of the University of Chicago (*Canadian Medical Association Journal,* January).

The tumor disposition investigated by Dr. Davis is not psychological but chemical. It refers to the way animal tissues use oxygen for the energy interchanges that are constantly going on in the body. Such chemical studies of tissue activity are being made by scientists all over the world in the hope of discovering the fundamental difference between cancer tissue and normal tissue and thus learning what causes cancer and how it may be prevented.

The term tumor disposition was first suggested by Dr. W. Buengeler in a report to a German scientific journal. Confirming Dr. Buengeler's observations, Dr. Davis found that bits of tumor tissue, liver, abdominal muscle and lymph nodes taken from mice of the cancer or tumor strain used less oxygen than similar tissues from mice of a non-cancer strain. Along with the lower oxygen consumption of the tissues of their bodies, the cancer-strain mice had larger livers, fewer red blood cells, less hemoglobin and lower red cell volume.

The cancer-strain mice also had more calcium (the kind of lime that makes bones hard) in their soft tissues.

These differences, Dr. Davis believes, are not the result of cancer but predispose to it. These, and possibly other factors, make up the tumor disposition. Dr. Davis concludes that in the cancer-strain mice the presence of calcium in the tissues suffering from oxygen deficiency may have been the deciding factor as to whether a tumor would or would not result.

His studies were made on cancer-strain mice with and without tumors and on mice from a non-cancer strain.

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AGRICULTURE

Summer-Planted Spuds Yield Well in Russia

POTATOES are traditionally supposed to be planted in spring, as early as possible; yet in southern Ukrainia it has been found more profitable to plant them in summer.

This discovery was made by T. D. Lyssenko, Soviet agricultural investigator whose "vernalization" of seeds to make them grow faster and yield more heavily has already given him a wide reputation.

The potatoes used in Mr. Lyssenko's new method of cultivation are not subjected to the special treatment which he gives to seeds, but are simply planted late. The Academy of Sciences of the U. S. S. R., which sponsors his work, states through a Tass news report, that potatoes thus planted are less subject to the destructive action of heat and drought and that the yield is increased. Despite late drought last summer, yields as high as 50 tons per hectare were reported. (A hectare is 2.47 acres.)

Quality improvement also is claimed, and the resulting crop is said to be better for seed-potato purposes as well. The first large-scale use of the Lyssenko late-planting system was during the summer of 1936, when a total of 18,000 hectares were planted in southern Ukrainia. For the coming summer, plans call for the planting of 61,500 hectares.

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IN SCIENC

PHARMACOLOGY

Iodine In Water Pronounced Best Antiseptic for Cuts

THE best antiseptic for treating wounds, cuts and abrasions is a solution of iodine in water.

This is the conclusion of Dr. Robert N. Nye of the Mallory Institute of Pathology, Boston City Hospital, who has completed a series of experiments on certain commercial and non-commercial solutions ordinarily used as antiseptics for minor wounds and for irrigations. (*Journal, American Medical Association,* Jan. 23.)

Four solutions containing iodine, seven containing mercury, two containing chlorine and three miscellaneous solutions were tested at the same time.

On the sixteen antiseptics five comparisons were made: (1) bactericidal activity, (2) bactericidal activity in mixtures containing 50 per cent horse serum (3) diffusibility, (4) toxicity, and (5) cost.

"The superiority of iodine as an in vitro (in a glass) antiseptic is obvious," states Dr. Nye in the medical journal. "The bactericidal strength of any iodine solution is directly proportional to its free iodine content."

Iodine was the only antiseptic of the series that retained its bacteria-killing power in the presence of an equal amount of serum. It possesses a high degree of penetration and is not unduly toxic for human white blood corpuscles, Dr. Nye declares. In dilutions suitable for their particular purposes it is inexpensive.

Dr. Nye asserts that some opposition to the use of iodine has developed because it is usually employed as the standard (7 per cent) or half strength (3.5 per cent) tincture. Such a solution is painful to apply and is irritating to the tissues, partly as a result of its high iodine content and partly because of the alcohol.

Iodine in a solution of water rather than of alcohol can be used to advantage, he says. A 1 per cent or even a 0.5 per cent aqueous solution can be used for wounds, cuts, abrasions and irrigations.

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E FIELDS

ARCHAEOLOGY

Chinese Had Children Seek Imaginary Isles

SOME of the world's strangest exploring expeditions have been tried by the Chinese.

Thousands of boys and girls were sent out into the eastern sea over 2,000 years ago to hunt for the Three Isles of the Blest, says H. H. F. Jayne, director of the University Museum, University of Pennsylvania.

Emperor Shih Huang-ti, famous builder of the Great Wall, sent the youthful explorers to find out about a legend that the immortals dwelt on the Three Isles. The emperor also ordered the boys and girls to bring him a precious drug that would prevent death, supposed to grow on the isles.

A little later, Emperor Wu-ti sent expeditions for the same purpose, and went so far as to go to the seaside himself, hoping royal eyes might discern the peaks on the isles. But even with aid of his magicians, he saw nothing, and had to content himself with building a huge artificial lake with three mountainous islands and the birds and beasts and palaces supposed to be on the islands.

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ANTHROPOLOGY

Fossil Ape Bones Show New Human Resemblances

NEW points of resemblance between man and the recently discovered higher-ape fossils of Sterkfontein have been worked out by their discoverer, Dr. R. Broom of the Transvaal Museum, South Africa, as he has cleared away more and more of the bone from its encasing stony matrix.

New details of the cheek bone, thus made visible, show that the animal had less of an ape-like snout and a straighter, more "human" facial angle than Dr. Broom had at first supposed. The eyeteeth are relatively small, and there is no gap between them and the first pre-molars — again a man-like rather than an ape-like character.

In general, says Dr. Broom, the new findings support the earlier opinions of both himself and Prof. Raymond A. Dart of Witwatersrand University, that this extinct genus of apes, though unquestionably real apes and not men, were not related to any living type of great apes and show a closer approach to the human physical makeup than do any other known apes.

Dr. Broom considers his specimen to be sufficiently different from the much more ancient one found by Prof. Dart to justify a separate name for it. He proposes the zoological title *Australopithecus transvaalensis.*

Since first reporting discovery of skull fragments, brain cast, and teeth a year and a half ago, Dr. Broom has also found bones of most of a hind leg, the base of a spinal column, and one bone of a pelvic girdle. These are still embedded in the stony matrix, awaiting the tedious job of drilling, chiseling, and scraping them free. As soon as he can find time to do this, he expects to be able to form some idea of the animal's posture in walking—whether stooped far forward like an ape, or more nearly erect like a man.

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ORNITHOLOGY

Reptile-Clawed Bird Sought for Museum

ON a search for a rare and strange bird which demonstrates that birds descended from reptilian ancestors millions of years ago, Emmet R. Blake of Chicago's Field Museum of Natural History sailed from New York on Thursday, Jan. 28. The bird is the hoatzin, found only in the inundated forests of northern South America. Its fledglings have reptilian claws which they use with great agility in climbing in and out of their nests. Later the claws are lost.

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ENGINEERING

Inflate Tires With Water—Advocated By Maker

INFLATING the rubber tires of tractors partially with water is being advocated by a tire manufacturer to improve traction in rough uneven ground. You use a special dual water-air nozzle and put in water until it comes to the nozzle level. Then you fill the tires with air up to their regular pressure. In freezing weather a solution of calcium chloride can be used.

Science News Letter, January 30, 1937

BIOLOGY

Earthworm in Tree Reported to Smithsonian

AN EARTHWORM that lives in a tree has been discovered by a Smithsonian Institution collaborator, H. G. Deignan, who has just sent in over 600 birds also collected in northern Siam. The tree-dwelling earthworm was sent to India for identification by a scientist now there.

Science News Letter, January 30, 1937

ZOOLOGY

U. S. Breeds Own Huskies For Dogteams in Alaska

ADVENT of the airplane in Alaska, and resultant air-mail contracts, have produced in the past few years a diminution of the supply of huskies available to pull dog teams. The result is that park authorities in Mount McKinley National Park are raising their own dogs, reports Superintendent Harry J. Liek.

Previous to the use of air-mail, mail delivery was mainly by dogteam throughout the territory, so that the breeding of huskies was a thriving business. Now that the dogteam delivery has been discontinued in most sections, huskies are scarce and difficult to purchase.

The dogteam still remains the winter mode of transportation in Mount McKinley Park, however, hence the decision to breed huskies in the park for government needs.

Fourteen pups raised in the park during the summer now are in excellent condition and large enough to work. The rangers using them report faster travel with the young dogs than with the older members of their teams, and it is hoped that a good strain of husky may be developed. An average of about 40 dogs for sled use is maintained.

A well-trained leader of a dogteam can follow an old trail although covered with snow, according to Superintendent Liek. Although the driver of the team may be in doubt as to the location of the trail, the lead dog invariably finds it. The average load per dog is 75 pounds on a good trail, and the stamina of these animals in heavy hauling on steep grades is remarkable.

Rangers using dog patrols become much attached to their huskies, and replace them with reluctance when old age makes this necessary.

Science News Letter, January 30, 1937