SCIENCE NEWS

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PLANT TUMOR BACTERIA

TUMORS on plants, that are very much like animal tumors, even to the formation of cancerous dead areas within themselves and eventually killing the plants, are being studied by Dr. Philip R. White at the laboratories of the Rockefeller Institute for Medical Research at Princeton, N. J. They are unlike animal tumors in that they are started by easily detected bacteria, but they are like animal tumors in that they can be transplanted into previously healthy tissue—and these transplants do not need to have the originally causative bacteria in them to continue their malignant growth.

Dr. White's latest efforts have been in the direction of finding how these bacteria operate to start the tumorous growth. He has not got the whole answer yet, but he is able to report one or two interesting leads.

One thing he has discovered is that the bacteria can be robbed of their tumor-causing power by growing them on nutrient media containing the protein fraction known as glycine. Bacteria thus treated can live in the tissues of the host plant, but tumors do not develop at the point of inoculation. However, if the top of the plant is cut off, and the tissues around the infected spot are treated with a solution of one of the growth-promoting substances or hormones, tumors again develop, although bacteria taken from these new tumors are still unable to produce new tumors elsewhere unless they are again aided by growth-promoting hormones. But if bits of germ-free tumors are transplanted into healthy plants, they will develop into big and harmful growths. That is, even though the bacteria have been rendered harmless by themselves, they are still capable of being links in a chain of harmful development, that can go on afterwards by itself without them. As Dr. White phrases it, the plant's cells have undergone a "permanent and irreversible cancerization."

Another lead followed by Dr. White has been the suggestion that the bacteria themselves are not the cause of the mischief, but that they act as carriers of a virus, much as mosquitoes serve as carriers of the yellow fever virus. The hypothetical tumor virus, it was suggested, might then carry on in the plant tissues without further help from the bacteria.

To test this, Dr. White sought a plant species that could survive a degree of heat that is sufficient to kill known plant viruses. Such a species was not easy to find, but he located one finally, a garden flower known as the Madagascar periwinkle. This delicate-looking but really tough little plant can survive prolonged exposure to a temperature of 115 degrees Fahrenheit.

Inoculated with the tumor bacteria and held at this temperature for ten days, nothing happened; but when the temperature was lowered to an ordinary greenhouse level the tumors developed normally. In the meantime the bacteria themselves had disappeared—but before they died they managed somehow to bequeath to the plant tissues a heritage of abnormal growth.

ALLERGY AND APPENDICITIS

APPENDICITIS may be due to allergic reactions similar to those causing the symptoms of hay fever, asthma, hives and the like, is reported by Dr. L. O. Dutton, of El Paso, Texas, in the forthcoming issue of a new medical journal, the Annals of Allergy. This bi-monthly journal, published at St. Paul, Minn., is the official organ of the newly organized American College of Allergists. This new scientific body aims, among other things, to bridge the gap between doctors specializing in treatment of allergy, the many other practicing physicians "who are applying allergy to their practice," and the non-clinical scientists such as biochemists, pharmacologists, botanists and plant pathologists who contribute to knowledge of allergy and its management.

The theory that appendicitis is due to allergy does not, Dr. Dutton emphatically states, contradict the fact that it must be treated by surgery. Prompt diagnosis and prompt operation to remove the inflamed appendix before it ruptures and causes death-dealing peritonitis is required, regardless of whether or not the appendicitis was caused by allergy. The allergic theory, however, if proved valid and sound, "offers some hope of prophylaxis."

Scientists have never agreed on one single cause for appendicitis, he points out. In some cases the cause is mechanical obstruction due to fecaliths, kinks or adhesive bands. Functional obstruction due to swelling is supposed to occur frequently. Such swelling and engorgement of the appendix tissue is similar, Dr. Dutton points out, to the swelling which characterizes allergy in other conditions as, for example, hay fever. Careful study of over 120 cases of appendicitis and the appendices removed at operation strengthened Dr. Dutton in this theory which previous experience had suggested.

In 87 of these patients, moreover, 45, or more than 50 per cent., gave a history of definite hay fever, asthma or hives existing before the appendicitis attack. Although based on too few cases to be statistically reliable, Dr. Dutton says, the figures are nevertheless impressive in contrast with the fact that these three allergic conditions occur in less than 10 per cent. of the general population.

THE NEW MEXICAN VOLCANO

SCIENTISTS are not able to predict as yet when the new Mexican volcano, Paricutin, will stop erupting, was reported by Ralph R. Bodle, seismologist of the U. S. Coast and Geodetic Survey, who has made an inspection of the volcano.

Mr. Bodle met a native who was helping to evacuate the people of the little town of Paricutin partially covered by lava from the volcano. "Many learned people come here to study the volcano," said the native. "They write articles but with all their knowledge not one can tell you when the volcano is going to stop."

The government seismologist was on the spot to watch when the volcano let loose a new flood of lava in mid-June. The new phase of activity was ushered in by a

strong earthquake motion that shook the whole countryside. The cone itself was obscured by a great cloud of dust. Then a third to a quarter of the cone collapsed due to lava forcing its way out under one side of the base. The lava flow continued for about ten days until it reached the village.

Mr. Bodle's studies show that earth shocks at the city of Uruapan about 15 miles distant from the volcano were almost continuous for some 20 days before the volcano began to form in a corn field on February 20. Some strong shocks that were felt on February 22, he believes, were due not to the volcano but to a large earthquake centering off the west coast of Mexico. Shocks were felt throughout the immediate region of the volcano for some days after the lava appeared.

Strangely enough, the shocks continued in one locality about five miles southwest of the volcano long after they had died out elsewhere. At this place, known as Pechu, in the foothills of Tancitaro mountain, the shocks continued until about May 7, when they nearly ceased. A field party surveying the earth's magnetism near the volcano under the direction of Nelson C. Steenland, of the U. S. Coast and Geodetic Survey, camped there on May 21 and felt three shocks which appeared to be related to explosions in the crater of the volcano.

In his exploration of the volcano Mr. Bodle noticed that the sand was hot at one place. Three or four days later a lava field had covered the site of his observations.

This caused him to credit the story heard in Mexico that before the volcano appeared, an Indian in whose field it started found that the ground was warm and went out there to sleep to ward off the chill of night air.

THE MEDITERRANEAN FISHING INDUSTRY

SARDINIA'S sardines, for the past two decades or so, have been consumed mostly in Italy. Small quantities were still being imported into America before the war to satisfy the taste of Italian-Americans who have a particular liking for this especially cured and packed-in-olive-oil little fish. The commercial sardines used in America come from the Atlantic and Pacific coasts, and are packed principally in Maine and California. Some have been imported from Norway, France and Portugal.

During the past year or so, fishing in the Mediterranean has practically ceased. Sicily and other Mediterranean islands and countries caught, packed and shipped much tunny, or tuna, in pre-war days. The Tunisia campaign brought this activity to a standstill. Other fish is more or less plentiful in the Mediterranean. With the collapse of Italy's war resistance, the industry may start again. Much food could be obtained from this great body of water.

Except for local consumption, commercial fishing was never a great industry in the Mediterranean. Pre-war Italy, including Sardinia, Sicily and a number of the smaller islands, landed about 50,000 to 60,000 tons a year. Northern African fishermen together slightly exceeded Italy's catch. Eastern Mediterranean Asiatic countries caught a few thousand tons. Data for Greece and other European nations are not available, but their catches were small and used only locally.

France and Spain carry heavy fishing activities. Together they landed nearly $88,000,000 worth of sea products a year, but only a small part of this was from Mediterranean waters. These figures do not add up to big business as do fishing figures in America.

There are possibilities, however. With the food shortage in all the Mediterranean countries that have been occupied by the Nazis, the fishing industry could be expanded far beyond its past extent. Modern methods would have to be introduced. The industry could well be assisted by the United Nations in order to save long hauls of other foods to relieve the underfed Mediterranean people.

ITEMS

A FAVORITE Mexican resort city for American tourists is adding science and culture to its attractions. Just a block north of Ambassador Morrow Street, named for the U. S. Ambassador who had a home in Cuernavaca, there is now a street that bears the name of the honorary president of the Mexican Academy of Sciences, Engineer Agustin Aragon y Leon. This honor to one of Mexico's leading scientists, born seventy-three years ago in the state of Morelos of which Cuernavaca is the capital, is considered but part of a movement toward greater appreciation of science in this important region of Mexico. Governor Jesus Castillo Lopez has already announced his support of a Mexican Council of Learned Societies and he has invited the Mexican mathematicians to hold their second convention in Cuernavaca next May. Engineer Aragon, for whom the street was named, was a member of the geodetic commission that set the border between the United States and Mexico. His career has been devoted to science, mathematics and philosophy as well as engineering.

MUSCLE tissue of a warm-blooded animal has been studied and photographed under the electron microscope, to disclose details of structure hitherto unknown, or at best inferred from indirect studies with x-rays and other means. This work, done at the Swedish Royal Academy of Sciences in Stockholm, is reported in a recent issue of the British journal, *Nature*, just received here, by Professor Fritiof Sjöstrand. Late in 1942, a group of investigators in Philadelphia reported electron microscope studies on muscle fiber, but this was the muscle of a cockroach. It is believed that the present Swedish research is the first carried out on a warm-blooded vertebrate. A guinea-pig supplied the muscle sample. Since the streams of electrons that are used instead of light rays in the electron microscope must pass right through the specimen, the muscle had to be sliced exceedingly thin. By a technique combining freezing and drying, Professor Sjöstrand was able to prepare sections that in places were only 20 millimicrons thick. A millimicron is a millionth of a millimeter or a twenty-five-millionth of an inch, so the areas shown in the photographs were slightly less than a millionth of an inch in thickness.