

Dr. Noble suggests that there may be more which never are discovered because, luckily, they fail to get rabies and have their brains examined after death. By the time the discovery of the second

brain was made and verified, both had been handled too much to make it possible to preserve them as museum specimens.

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BIOLOGY

Tumors Causes Traced

Tumor-causing bacteria, rendered harmless, are nevertheless able to produce harmful growths when hormones are added. Have cancerous effects.

► **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. 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 the 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.

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INVENTION

Portable Electric Fan Used in Any Position

► **TIMELY** in these dog-days is the invention of Edward A. Ebert of Buffalo, on which he received patent 2,325,754. It is a compact, easily portable electric fan, about the size of an ordinary baking tin and entirely enclosed. It can be set on a desk or table or hung on the wall, to blow a steady breeze in one direction. It can be laid flat on its face, in which case it sets up a milder general circulation that will not ruffle hair or disturb loose papers. Or it can be laid on its back, again to produce general air circulation.

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DESTRUCTION—This picture shows how the flow of lava uproots trees and burns them in its path.