

PLANT PHYSIOLOGY

Transplanted Plant Tumors Grow, Free of Causal Germs

Cut Up, the Pieces Grew and That Was Repeated Again and Again Without Original Germs Appearing

PLANT TUMOR tissue, free of the bacteria that originally provoked its growth, has been successfully grafted into healthy plants and has grown and produced tumors there, in carefully controlled experiments by Dr. Philip R. White and Dr. Armin C. Braun of the Rockefeller Institute for Medical Research at Princeton, N. J. (*Science*, Sept. 5)

Plant tumors, commonly known as crown galls, have long been known to be caused by a germ, technically titled *Phytoplasma tumefaciens*. Transplanted bits of these tumors have been shown to produce tumors in healthy plants. However, the assumption has always been that these transplanted pieces of tumor tissue carried with them the germs that provoked the new unhealthy growth.

Drs. White and Braun have now shown that the continued presence of the germs is not necessary for successful transplantation. The situation seems to be analogous to that obtaining in the field of animal cancer research, where cultures of sterile malignant tissue, introduced into the bodies of mice or other animals, take hold and grow as well as if they had arisen spontaneously.

The two scientists cut up pieces of

plant tumors from sunflower stalks under carefully aseptic conditions. They planted these in dishes of a nutrient in which plant tissues are able to continue growing when detached from the parent stock. For the development of this culture technique, Dr. White was awarded a prize at the last meeting of the American Society of Plant Physiologists.

The tumor tissues grew, increasing considerably in size. They were cut up and replanted to grow again. This process was repeated five times. Close watch was kept for the presumptive causal germs but none appeared, although the culture medium is known to be able to support their growth. The tissues were sterile, so far as the most careful tests could indicate.

Then fragments of this sterile-grown plant tumor tissue, five removes from its parent stock, were inoculated into the stems of healthy young sunflowers. Development and growth of entirely typical plant tumors followed. And repeated examination of tissues from these new tumors has again failed to disclose the presence of any of the originally causal germs. The tissues themselves had taken on the capacity to produce tumors without the intervention of the germs.

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black frontier on the west well out into Pennsylvania.

Principal reason for this lessening of severity appears to be the overtaking of the beetles, especially in the larval stage, by their natural enemies—the phenomenon known as biological control. This arises partly in the course of nature, but it is assiduously promoted by federal and state entomologists.

Most promising of biological controls thus far found are the bacteria that cause the “milky disease” of the beetle’s larvae or grubs. It wipes them out by billions, greatly reducing the infestation where it is prevalent.

Entomologists carefully inoculate large numbers of grubs and after they are thoroughly riddled with the disease dry their bodies and grind them up into a white powder containing vast numbers of bacterial spores. They plant quantities of this powder in heavily infested areas, and let natural distribution take care of the rest.

One of the latest discoveries in this field, made by researchers of the U. S. Department of Agriculture, is that adult female beetles, which are themselves not subject to milky disease, may serve as distributing agents. They come to maturity under ground, like June beetles. As they crawl to the surface, bacteria present in the soil may cling to their bodies. Then, when they alight later on to lay their eggs, they unwittingly provide for the destruction of their own offspring by shedding some of the bacteria they have been carrying.

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PUBLIC HEALTH

Isolation Placard Is Symbol of Defense

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PROBABLY because no one likes to have labels attached to them or to their property, many persons and families take affront when the public health officer tells them it is necessary to post an isolation placard on their houses. Some even go so far as to ask their doctor not to report they have a communicable disease. Others rebel when the health officer informs them it must be done, and the upshot is that some succeed in avoiding isolation and thereby contribute to the spread of disease in their community and neighborhood.

Their excuse in many instances is that the disease which is present is not seri-

ENTOMOLOGY

Japanese Beetle Reduced To 'Normal Nuisance'

JAPANESE beetle, one of the most alarming insect pests that ever invaded America, shows signs of “settling down” and becoming only a “normal” nuisance instead of a veritable scourge. Evidences pointing in this direction have been turned up by entomologists working at the New Jersey Agricultural Experiment Station at New Brunswick.

Maps of the distribution of the beetle,

made in successive years, show that infestation is always worst in newly invaded territory. The first map, made when only northern New Jersey was afflicted, shows a limited area, all black. The next map, showing conditions after the active spread had begun, shows a lighter infestation in the original area, with the black of severe infestation in the newly occupied regions. At present the map is black from Washington, D. C., southward into Virginia, with the