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 *Phytomonas 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 Psysiologists.

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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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 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

By WALTER L. BIERRING, M.D.

Commissioner, Iowa State Department of Health

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-

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ous enough to warrant isolation. They say, "It's only a case of measles," or mumps or scarlet fever or one or another of the more common communicable diseases, and won't do any harm.

But they forget that the same disease may be more serious if contracted by another person. They forget that illness keeps children from school, men from their jobs, women from their work. They forget that one infectious case, exposed to others, may set an epidemic raging, disturbing the life of the entire community. They forget that communicable disease is public property.

And their forgetfulness, costly in times of peace, can be even more costly now in this period of national emergency. Observing the rules of isolation is a small thing which families that develop communicable diseases can do to help the national defense program. Measles, mumps, scarlet fever, chickenpox and the other so-called childhood diseases are especially dangerous when they strike adults, and every effort to prevent their spread is particularly timely.

Let them remember—the sick defense worker can't work, the sick trainee can't learn, and the isolation placard is an honorable symbol of defense against spread of disease, not a sign of shame.

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New Machines And Gadgets

Novel Things for Better Living

Badminton rackets are now strung with nylon, same synthetic fiber so popular for ladies' hosiery. They are resistant to moisture and remain taut even on the dampest days.

A forest of ultraviolet lamps purifies the air in a large factory, the first large-scale application of these invisible rays to air conditioning in a manufacturing plant. The lamps sterilize the air as it rushes past in the ducts.

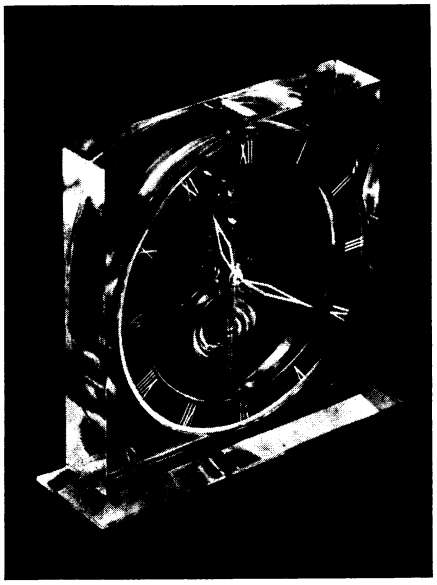
Boon to the erring typist would be a recently patented typewriter erasing key. When the key is struck, a small eraser at its tip moves sharply downward the moment it hits the platen, thus giving a good erasing stroke. If the erroneous letter is not at once removed, the strokes can be repeated. The key does not actuate the spacing or ribbon devices.

A toy lie detector, which should be lots of fun, is the subject of a recent patent. It consists of a small box which the interrogator holds in his hand while asking you a question. The movement of a pointer indicates, ostensibly, whether you answer truly or falsely. The secret of the device—but perhaps that should not be divulged. Anyhow, you have probably guessed that the movement of the pointer is under the control of the operator. But the manner is mysterious and not easy to discover.

Military airmen are now being clad in special suits for high flying that are coated from helmets to boots with a special synthetic material which makes them airtight, waterproof, and resistant to gasoline, oils, acids, and flames. The material is chemically produced from limestone, coke and salt. It is also used for raincoats, mechanics' aprons, covers for aircraft engines, tarpaulins, tents, and the like. In solid form it is used to make transparent belts and suspenders, gaskets, and many articles for Uncle Sam's Army and Navy.

A filter made of powdered metal provides a new means for filtering liquids and gases. It is used to prevent clogging up of Diesel engine nozzles and oil burner nozzles, for filtering the air supplied to paint spraying equipment, and in other ways. The porous metal can be bonded to steel and copper and so made an integral part of the rest of the machinery.

Feminine beauty can be enhanced by the use of an improved eyelash curler recently patented. The operation is simplicity itself. One squeeze of a tong-like instrument and all the eyelashes are beautifully curved upward.



What makes a new transparent clock tick anyone can plainly see, thanks to the plastic "lucite" in which it is encased. Many other beautiful objects are made from this crystal clear plastic, which is known to chemists as methyl methacrylate resin. Its remarkable transparency adapts it to many scientific and industrial uses.

Sensitized metals, plastics, and even plywood help to speed up defense production. They make it possible to photograph a pattern directly on the metal or plastic sheet which is to be cut out. Thus the pattern passes directly from the drawing board to the sheet and does not have to be redrawn on the latter. Another time-saving use is to photograph the markings directly on the dials of the many instruments required by airplanes and for other purposes. Name plates, escutcheons, and many other things can be quickly produced by the photographic process.

If you want more information on the new things described here, send a three-cent stamp to Science News Letter, 1719 N St., N. W., Washington, D. C., and ask for Gadget Bulletin 71.

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