

BOTANY-METEOROLOGY

Smog Injures Crops

Man-made pollution is costing thousands of dollars a year in damages to commercial vegetable and plant crops growing near industrial centers.

► AMERICA'S increasing smoke and fume nuisance probably causes hundreds of thousands of dollars damage each year to commercial vegetable and other plant crops grown in the vicinity of large cities.

Dr. F. W. Went of the California Institute of Technology reported this fact to members of the National Air Pollution Symposium meeting in Pasadena, Calif.

Previously botanists had found that lichens disappeared from trees and rocks near industrial areas and that the growing of plants in large-city greenhouses is becoming more difficult.

But during the past five years, said Dr. Went, a new type of plant injury had been observed in the smog-ridden Los Angeles area. This is a brown, dried spot injury, due to gaseous contaminants in the air. It has made such leafy commercial vegetables as spinach, endive and romaine unsalable.

"Since the damage is known to run into the thousands of dollars, and since no one single agency can be held accountable for the smog," said Dr. Went, "it becomes very important to establish beyond any reasonable doubt that this injury to plants is really smog damage."

"This damage is of such frequent occurrence that profitable culture of certain vegetables becomes almost impossible in some areas. This injury always follows days of extra heavy smog."

In work now being carried out in the Earhart Plant Research Laboratory at the California Institute of Technology, with the support of the Los Angeles County Air Pollution Control District and the University of California, Dr. Went and his associates are trying to determine which particular air-borne contaminants are responsible for the brown, dried spot injury.

The effects of concentrations of gases, known to occur in smog, are being tested on spinach, endive, romaine, beets, gladiolus, alfalfa, barley and tobacco.

"It can be assumed that most gases injurious to plants would be harmful to animals as well," Dr. Went pointed out. "For these reasons an attack on the smog problem from the plant angle seems worth while."

Dr. Went declared that man-made air pollution is at least partly caused by upsetting the natural cycle of assimilation and dissimilation by man.

"Instead of letting microorganisms decompose plant and animal remains," he said, "we burn them in a usually very ineffective way. Thus we not only produce air pollution, but also rob the soil of its

natural source of fertility: humus."

What is the solution?

Dr. Went believes that one of the most worthwhile contributions to smog abatement would be the organization of city-wide composting of refuse, hedge clippings, leaves and other combustible materials.

If this were well-organized, he thinks that collection and production costs could be paid out of the sale-value of the compost produced. This would improve soils which, in semi-arid and warm climates especially, are rapidly depleted of organic materials.

"Thus smog abatement and soil improvement become two aspects of the same problem which can go hand in hand toward amelioration of our environment—air and soil—using the processes which in nature have maintained an equilibrium for so many millions of years."

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PHYSIOLOGY

Design Apparatus To Study Body's Reaction To Cold

► A UNIQUE cold weather apparatus, which can measure the skin temperature and heat loss of 38 different areas of the body, is being used in sub-zero studies.

It is a hooded suit with built-in tubes and wires that connect with 38 body points. It works something like a telephone switchboard for you can dial any part of the body and receive its response recorded on a graph.

In addition, a chest panel on the suit is connected to another piece of apparatus which measures the heat production of the body.

Designed by University of Washington scientists, in Seattle, Wash., it was taken recently to Alaska to study the effects of Arctic temperatures on the human body. Dr. Loren D. Carlson heads the expedition. Other members of the party are Dr. Allan Young and Wayne Quinton who were in charge of the design and construction of the apparatus, and Henry Burns who designed the suit.

They will act as their own guinea pigs, operating from a mobile laboratory which will enable them to make tests under varying temperatures ranging down to 40 degrees below zero. Since the Air Materiel Command of the U. S. Air Force is sponsoring the project, headquarters are at the Arctic Aeromedical Laboratory at Ladd Field, Fairbanks.

The study should reveal what physical characteristics make men best suited for



GAGING BODY TEMPERATURE

—This suit is wired to keep in touch with 38 different parts of the body and is being used to study the effect of Arctic temperatures on the body.

life in the Arctic and how the body can be made more resistant to extreme cold, Dr. Carlson said.

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PLANT PATHOLOGY

Fungus Not Frost Causes Winterkill

► JACK Frost has been acquitted. For years farmers have held him guilty of winterkill, that annual round of cold-weather killings that takes such a heavy toll among the pasture grasses.

Long and patient detective work has finally revealed the true culprit, a cold-weather fungus with a string of aliases and a long record as a crop-spoiler. It goes by the names of crown rot, stem rot, and, when it moves in scientific circles, *Sclerotinia trifoliorum*.

Each year when the cool weather starts setting in, it has been noted that winter annual and perennial legumes, the pasture grasses like alfalfa, red clover, Ladino clover and others, are subject to an attack of what has been called up to now, winterkill. It was thought that frost and freezing caused it.

But plant pathologists at the U. S. Department of Agriculture's Regional Pasture Research Laboratory in State College, Pa., have now demonstrated that it is caused by this fungus, which lies dormant during the warm weather and stirs to its lethal activities as soon as the temperature starts to drop.

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