

BIOLOGY

New Science Developed

"Tropicalization" has been developed to combat the fungi that ruin military equipment in steaming jungle regions.

► AMONG the most deadly enemies our armed forces in the Pacific have to face are fungi, microscopic lower plants that thrive on heat and dampness. The battle against these enemies, carried on at headquarters of the Air Technical Service Command at Wright Field, Ohio, and by Wilfred F. Horner and Helen Conlon, biologists of the Belmont Radio Corporation, has added immeasurably to the furtherance of the war effort and will continue to benefit persons in tropical regions after the war is over.

Extreme difficulties have been encountered in Pacific and other combat areas, due to effects of tropical deterioration of electronic equipment, including radar radio communication and other devices. This menace was so severe that new methods of moisture and fungus control were necessary in order that the progress of the armed forces may not be impeded.

Laboratory research and field investigations, based upon experience in certain regions such as Florida, and the Gulf and Pacific coasts, have resulted in a new branch of applied science called tropicalization. This science undertakes to prevent failure of equipment due to moisture and fungus growth. Tropicalization can increase the life of equipment over 100 times.

Fungi that attack electronic equipment are molds which obtain their nutrition from deposits of organic dust that collect during handling. These molds produce organic acids, such as citric acid or oxalic acid. They grow best in a relative humid-

ity above 70% and in temperatures above 86 degrees Fahrenheit.

In addition to attacking electrical equipment, some of these molds are parasitic on the human body. For example, a species of *Aspergillus* grows on radar equipment and also grows in the human ear. The number of species for each genus of fungus is astonishing. There are, for example, 36 species of *Aspergillus* and over 600 species of *Penicillium*.

Some of the fungi that develop in the field equipment in the tropics are introduced in the United States at the time of assembly but do not develop until the temperature and humidity are increased. The extent of damage to electronic equipment varies with the type of equipment and the conditions under which it operates. Such units and materials as condensers, resistors, transformers, volume controls, various types of plastics, glass oils, waxes, paints, papers, leathers, felt glues and rubber support nu-

merous fungus growths. Eight species of tropical fungi were isolated from a growth on a pair of eyeglasses.

Fungicides in the form of fine liquid sprays, coatings and paints, as well as the vacuum impregnation of parts with waxes, lacquers and varnishes containing fungicides, have been developed to combat the menace. Among the fungicides that have given favorable results are *pen-tachlorophenol* and *salicylanilide*, in concentrations of 10% or 15% on the basis of solids content. The fungicides that have been tested are developed to protect against moisture and fungus growth without altering the basic features of materials such as electrical properties, tensile strength and so on.

Water repellents and drying agents are also used in packaging, to prevent the introduction of excess moisture in transit.

Science News Letter, March 24, 1945

Some *nemertean*s, commonly called sea-ribbon worms, may shorten their bodies to one-tenth the ordinary length.

The *Hawaiian goose*, or nene as it is known to natives, has feet less fully webbed than most geese and has become more of a land bird than water bird; it now lives on the slopes of the great extinct volcano Mauna Kea.

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