

CHEMISTRY-ENTOMOLOGY

# New Mosquito Repellent

**NMRI 407, Navy's newest and most potent insecticide, held mosquitoes at bay for over five hours in laboratory tests. Is used like a lotion.**

► NMRI 407, the Navy's newest and most potent mosquito repellent, is now being tried out under field conditions in Guatemala. In laboratory tests, it held mosquitoes at bay for over five hours. The average time to the first bite was 322 minutes, Lt. Michael Pijoan reported.

Associated with Lt. Pijoan in the mosquito repellent studies at the Naval Medical Research Institute were Lt. (j.g.) L. A. Jachowski, Jr., and Pharmacist's Mates 3rd class H. J. Gerjovich and M. L. Hopwood.

For men working or fighting in the jungle, mosquito repellents are important in spite of the development of the potent insecticide, DDT. The latter brings sure death to many insects, but it kills slowly. A chemical rubbed on the skin which scares the mosquito away before it bites would give good protection against malaria, yellow fever and dengue which are spread by mosquitoes, to say nothing of the comfort in mosquito infested regions.

Because fighting mosquitoes in the jungle is quite a different proposition from protecting yourself from a few bites when you sit outdoors on a summer evening, the Navy's medical scientists developed a "sweat test" for the new repellents. Tropical conditions, with a temperature of 90 degrees Fahrenheit dry bulb, 80 degrees wet bulb, were maintained in the cage full of hundreds of mosquitoes. The scientists and their assistants smeared some repellent on one of their arms and then sat with it inside the cage, holding a clock on the mosquitoes to time the first bite.

To make sure that the repellent would work under conditions of dripping sweat as well as "pool sweat," the kind that stays on the skin instead of dripping off, the testers engaged in vigorous exercise for some of the tests.

During the war dimethyl phthalate was the most commonly used insect repellent, but its repelling time was only 80 or 90 minutes. NMRI 201, announced by the Navy several months ago, had a repelling time of about five hours in the laboratory. When used by several groups in the jungle, this time was about twice

as long. Better ones have since been developed, among them 407 and 448.

The latter has a somewhat shorter repellent time than 407, 289 minutes on the average in laboratory trials, but it is much cheaper, costing less than one dollar per pound.

These two chemicals, which even now may only be known by their numbers in the long series tested at the Naval Medical Research Institute, are hydrogenated naphthols. Mixing them with another chemical, 2 phenyl cyclohexanol, prolongs their repelling time.

The repellents were developed in the course of more than two years of work during which many chemicals were screened and the most promising subjected to further study. After the naphthol derivatives were found to be apparently effective, a whole series of them was synthesized and subjected to various chemical manipulations until repellents that "are final and have solved the problem" were developed.

These new repellents are odorless and colorless liquids. They are used like a lotion.

The Department of Agriculture, Pan American Union and Office of Inter-American Affairs have cooperated and assisted in various phases of the work on the new repellents.

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AERONAUTICS

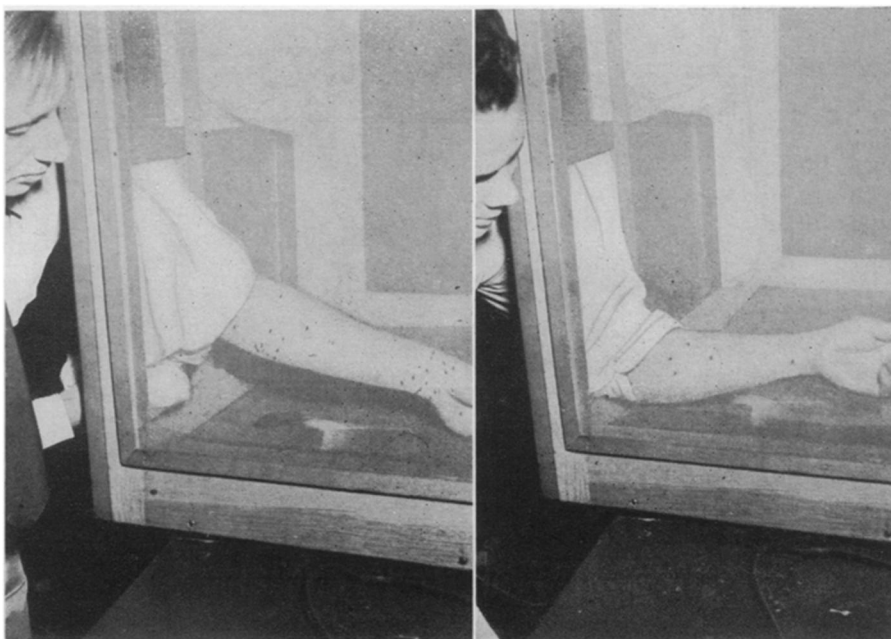
## Seamless Enclosure For Airplane Pilot

► THANKS to a special electric welding machine developed during the war, pilots and bombardiers on heavy fighting planes were enclosed in seamless plastic domes which gave them an unobstructed view out of the planes. By use of the machine, two large plastic sheets were quickly fused into a single sheet, the Libbey-Owens-Ford Glass Company now reveals.

The machine applies electrical heat to the two edges to be united by means of strip heaters. It controls temperature, timing and pressure automatically, and with the machine the welding of the sheets is put on a mass production basis, replacing former slow hand methods.

*Science News Letter, October 20, 1945*

Penned *turkeys* gain weight more rapidly if fed grass clippings.



**MOSQUITOES DISAPPEAR**—The man's arm on the left has not been protected with the new repellent and the pests cover his arm; on the right, the arm has been covered with NMRI 407.