

MEDICINE

Yellow Jack Is Still Threat

On hundredth anniversary of Major Walter Reed's birth, Pan American health expert says U. S. not cooperating in eradicating mosquito which carries yellow fever.

By WADSWORTH LIKELY

► LATIN AMERICAN nations want the United States to join them in eradicating from the Western Hemisphere the mosquito which can carry yellow fever, but the United States has not cooperated. This is what Dr. Fred L. Soper, director of the Pan American Sanitary Bureau, says on the 100th anniversary of the birth of Major Walter Reed, Sept. 13.

Major Reed was the man who first conclusively demonstrated that the dread "yellow jack" is spread by a mosquito. This was accomplished in 1900 in Cuba by dramatic experiments with human volunteers.

"Jungle" yellow fever still lurks as an animal and human disease in the interiors of Latin America and Africa, ready to come out, according to Dr. Soper, as a strictly human disease so long as the mosquitoes are permitted to remain in the cities. The particular mosquito which is the villain is the female of the *Aedes aegypti*, prevalent in this country in coastal regions from Norfolk, Va., down and around the coast to Brownsville, Tex., on the Gulf of Mexico and as far north as Oklahoma.

The 21 American Republics, including the United States, have been committed since a Pan American Health Organization meeting in Caracas in 1947 to the complete eradication of the yellow fever mosquito. Failure of the United States to begin sweeping *Aedes aegypti* from its own country has caused considerable comment and criticism among the health officers of other countries, according to Dr. Soper.

U. S. Public Health officials point out that there has been no case of yellow fever in the United States for about 25 years and no outbreak of the disease since 1905. To be dangerous, the mosquito needs a person with yellow fever to feed on. Thus, what might have meant death or sickness 50 years ago, is only the annoying prick of a mosquito today.

This is one of the reasons why American officials see little need to wipe out entirely the *Aedes aegypti* mosquito. Although Dr. Soper says that the cost of wiping out the mosquito has gone down since the advent of DDT and the job could probably be done in three to five years, the Public Health Service believes that the cost would be prohibitive. They point to the need to spend funds on other more pressing problems, polio for one.

With yellow fever vaccine and DDT, they say, any outbreak could be wiped out almost the instant it appears.

Furthermore, public health in this country is a sort of "states rights" affair. Any comprehensive campaign to wipe out the mosquito would have to be approved and administered by the public health officer of every state in which the mosquitoes exist.

Nevertheless, other nations of the world still worry about yellow fever. Last year, the World Health Organization brought up-to-date its delineation of the two zones of prevalence of the yellow fever virus in the tropical belts of the Americas and Africa.

According to this revision, the endemic yellow fever area in Africa is limited in the north by a line from the mouth of the Senegal River in French West Africa to Eritrea, except for the port of Massawa. The 18th parallel is the southern limit of yellow fever, enclosing part of Angola in the west, the major part of the Belgian Congo and all of Kenya in the east.

In the Western Hemisphere, the endemic zone comprises Venezuela, Colombia, the British, Dutch and French Guianas, and parts of Brazil, Peru, Boliva and Ecuador,

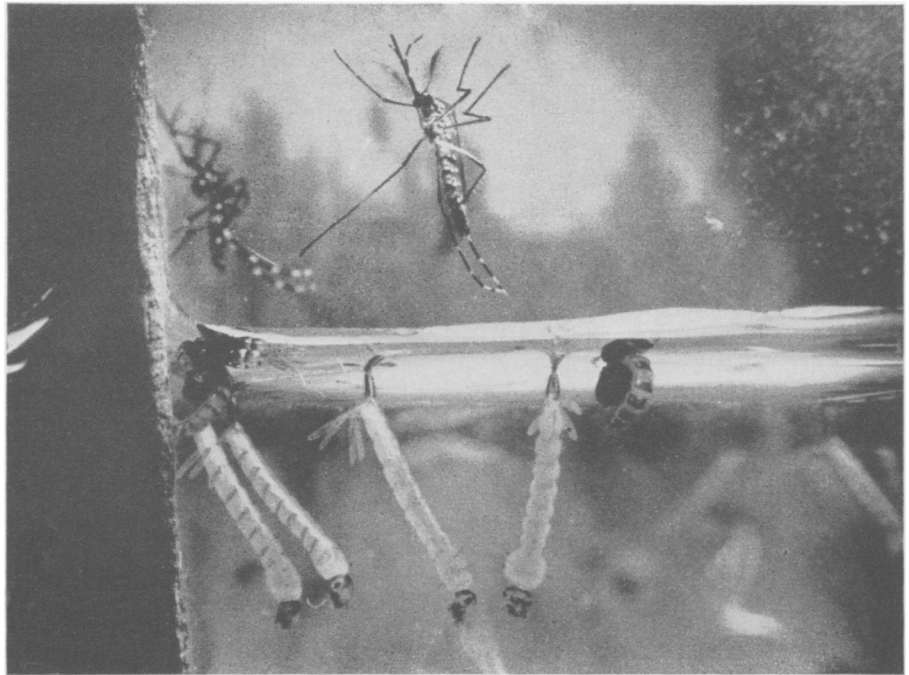
but excludes certain northern ports and Manaus, in Brazil.

Brazil has led the way in the eradication of the mosquito carrier from its vast territory and now no centers of infestation are known inside its borders.

Continuing Campaign

Despite what the World Health Organization says, Dr. Soper, whose speciality has been yellow fever, believes that yellow fever may be present quite extensively from time to time in jungle animals, with some human cases, from southern Mexico to as far south as northern Argentina, Paraguay and southern Brazil. Recent cases have been diagnosed in Panama and Costa Rica, and evidence of the disease in animals has been found in southern Mexico. Only a continuing and vigorous campaign against *Aedes aegypti*, he believes, will safeguard the Western Hemisphere from future outbreaks of yellow fever.

Nevertheless, the picture today is quite different than it was 100 years ago, when Walter Reed was born in a little town in Virginia. Epidemics raged in North American cities. Reed himself estimated that between 1793 and 1900 there were at least half a million cases of yellow fever in the United States, with 100,000 deaths.



MOSQUITO'S LIFE STAGES—Shown here are the three stages in the development of *Aedes aegypti*, the female of which carries yellow fever. The long white things below the water line are in the larvae stage; the dark round object below the surface is a pupa, and the full-grown female mosquito is shown above the surface of the water.

Although we now know that *Aedes aegypti* becomes sluggish and dies in cold weather, the disease extended, during the summer, as far north as Montreal in Quebec and Portsmouth, N. H.

One of the worst of the early outbreaks was in Philadelphia in 1793 when, it is estimated, 10 per cent of the population was killed off. People fled in panic from the city. Dr. Benjamin Rush, a signer of the Declaration of Independence, and a foremost physician of his day, worked long and hard, but of course in vain, against yellow fever. The epidemic died out with the coming of cold weather and the death of the mosquitoes. But the connection was not made, even though Dr. Rush wrote, as an incidental remark, that mosquitoes were uncommonly numerous that summer.

Besides the deaths, millions of dollars of property were lost in every epidemic. This was because the prevailing theory had it that yellow jack was transmitted by fomites—black vomit and excrement of the victims—and by the clothes they wore and the things they touched. Bedding and furniture—everything that had come in contact with a yellow fever patient—was burned. The disease continued to spread.

In 1881, a Havana physician, Dr. Carlos Finlay, wrote a paper in which he announced his belief that the disease was carried by a mosquito—and he named it—the mosquito which we now know as *Aedes aegypti*. The medical profession had respect for Dr. Finlay but, they believed, here he had gone wrong.

Walter Reed and his colleagues, of course, proved him right. Reed's work was preceded by much good research, notably that of Surgeon General George M. Sternburg, which disproved a mistaken theory about the disease, and Dr. Henry R. Carter, U. S. Public Health Service, who noted that two or three weeks elapsed between the first and second cases of a disease outbreak.

Human Guinea Pigs

Yet the world will always remember the brilliant and systematic demonstration carried on by Reed which demonstrated that the female of the *Aedes aegypti* carried the disease from man to man. The world came near forgetting the human guinea pigs who volunteered to be bitten by mosquitoes or to live in contact with fomites. It was only in the late 1920's that the survivors of the experiment were given adequate pensions by Congress.

Since Major Reed's day, the battle against yellow fever has gone on. First announcement of a successful vaccine came in 1932, from scientists at the Rockefeller Institute. But complications developed in the methods of preparing it and it was not until well after World War II began that the vaccine was foolproof. From that time on, all servicemen going into yellow fever zones were vaccinated.

Major Reed's work not only meant victory over yellow fever—it also pointed the way to the conquest of malaria, particularly in the Panama Canal Zone. And it opened a new era in preventive medicine, an era of protection against the insects which carry diseases to man.

Science News Letter, September 8, 1951

ENTOMOLOGY

Watching Insects to Time Proper Control Saves Money

➤ A UNIQUE method for controlling cotton and alfalfa pests has been developed by Ray F. Smith, professor of entomology, University of California College of Agriculture at Berkeley.

He calls it "supervised control," and it means money in the bank for the farmers because it cuts costs of insecticides and labor.

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Science News Letter, September 8, 1951

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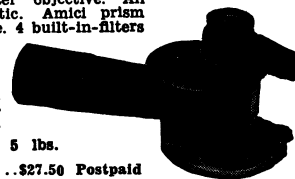
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