

YELLOW FEVER, ITS CAUSE AND THE SYMPTOMS

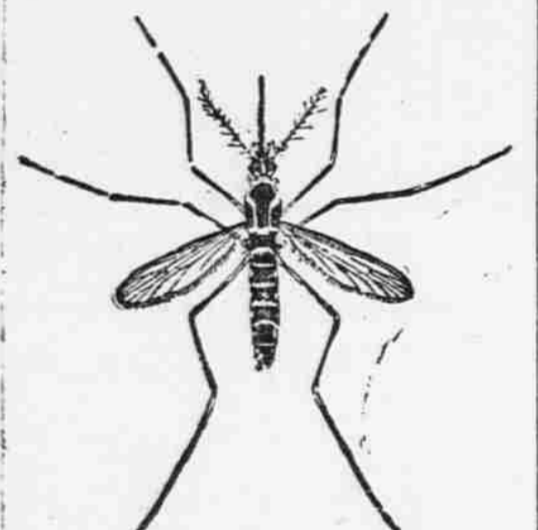
Experts Claim the Stegomyia Species of Mosquitoes Is the Only Transmitter of the Disease Now Ravaging New Orleans.

Its Real Origin Is in a Warm Climate—First Recognized Definitely in the West Indies in 1647—Survivors Become Immune From Further Attacks.

Details of Experiments in Cuba to Determine Cause of the Fever—Heroic Martyrdom of Dr. Jesse W. Lazear—Surgeon General Wyman's Views—How Present Epidemic Started.

A FRUIT ship, a bunch of bananas, a mosquito and an Italian—these four agents, according to the deductions of the health authorities of New Orleans, were responsible for introducing yellow fever into New Orleans as long ago as last May. The first appearance of the disease, according to the same deductions, was in the Italian quarter where the Italian laborer who unloaded the fruit ship lived.

From the originally infected vicinity the fever spread until there had been several deaths. The characteristic peculiarities of the Italian when confronted by an epidemic showed them-



YELLOW FEVER MOSQUITO.

selves in instinctive efforts to hide the fever from the health authorities, and the result was that the prevalence of the disease was not known even to the city health officer until the middle of July.

An attack of yellow fever comes on with severe chills or rigors when it comes suddenly. It may come on more gradually with languor, headache and malarial symptoms. The temperature goes to 105 degrees, sometimes higher. The fever lasts from three to five days, attended with pain in the back, limbs and head. There is nausea and vomiting. The yellow tint of the skin, from which the fever gets its name, begins on the second or third day. Yellow fever develops usually from three or four days after infection. Sometimes it takes seven days. In severe cases small hemorrhages take place into the skin and mucous membrane. The vomit is at first white. Later it becomes very dark in appearance, like coffee grounds, when it is known as "black vomit." There is bleeding at the nose, mouth and gums. Delirium usually follows, then unconsciousness and death.

First Recognized in West Indies.

Although yellow fever has been occasionally seen outside of the tropics, its real origin is in a warm climate. It was first recognized definitely in the West Indies in 1647, where it prevails, as well as on the west coast of Africa, Central America and southward along both coasts of South America and northward to the south Atlantic and gulf states. It has been brought to north Atlantic seaports by vessels. The coming of frost generally stops yellow fever. Survivors of one attack of yellow fever become immune from further attack. The mortality varies. In some epidemics it has been as high as 85 per cent; in others as low as 10 per cent.

Experts seem to agree that the first step to combat the spread of yellow fever is to attack the mosquito. In this connection Dr. Walter Wyman, surgeon general of the marine hospital service, who is in charge of the campaign against yellow fever in New Orleans and to whom belongs the credit of encouraging and urging the experiments leading to the acceptance of the theory that the stegomyia mosquito is practically the only carrier of the poison that causes yellow fever, recently spoke as follows to the Washington correspondent of the Pittsburgh Dispatch:

"Scientifically it is not true that the

stegomyia (female) is the only carrier of yellow fever. For all practical purposes the assertion is true. Until we know the cause of yellow fever we cannot truthfully say that that mosquito is the only disseminator. There may be other carriers of it, but we never have found any trace of them.

Mosquito Only Infection Agent.

"The best way in dealing with an epidemic, or any other thing, for that matter, is to proceed upon known facts. We know the stegomyia carries the cause of yellow fever. Therefore the order to all the men in the marine hospital service is 'kill the mosquito!' If the fever persists after the mosquito has disappeared we will know that there is some other way for carrying it.

"What have we to show? Havana, after 150 years of annual visitation, free from the disease. Laredo, Tex., treated by men believing in the mosquito theory and treated accordingly, with only about 10 per cent of the population attacked by the disease, contrasted with Laredo, Mexico, across the river, disbelieving the theory, 50 per cent of the people attacked.

"The stegomyia does not live north of Mason and Dixon's line. He does not live in all the territory south of it. The mountains of North Carolina are too cold for him. Before we knew anything about the work of that pest observation taught us the country was divided into two parts—the infectible territory and the noninfectible. After we got to know about the stegomyia we found that the limits of his habitat were coextensive with the limits of the infectible domain."

"Next to killing the mosquito by making it impossible for him to breed what is the best preventive?"

"The screening of every person with a fever for four days. Yellow fever is hard to diagnose. It begins like many other fevers.

"Screening during the first four days makes it impossible for the insect to become infected from the patient. Three days is the time in which a mosquito can get the poison from a human being, but four makes assurance doubly sure.

"After a mosquito has taken the blood from a patient who has had yellow fever for not more than three days it takes twelve days for the insect to become a source of infection. So you can see that if the first yellow fever case is caught in time the campaign against the mosquitoes will be beneficial if it is vigorously prosecuted during the next nine or ten days. After that if the insect that bit the patient is still at large the chances of infection are very numerous. It takes five days for the poison deposited in a human body by a mosquito to develop; hence the five day detention.

"The stegomyia is a slow moving insect. After a patient has been removed to a doubly screened hospital in a doubly screened ambulance it is the business of the doctors to return to the house as quickly as possible and



DR. JESSE W. LAZEAR.

burn sulphur there, because the chances are that the insect that bit the patient is still on the premises."

The fact that mosquitoes convey yellow fever was established by the late Major Walter Reed, surveyor of the United States army, when in 1900 and 1901 he supervised the experiments with yellow fever in Cuba after the United States came into control of the island, says the St. Louis Post-Dispatch. These tests were thorough and convinced the army officer that beyond a doubt the mosquito is the only transmitter of the fever germ. Following is the report of these experiments, and it should satisfy all laymen when it is borne in mind that all the subjects were Americans—United States soldiers who had volunteered:

Special Camp Built.

"A camp was especially constructed for the experiments about four miles from Havana. The inmates of the camp were put into most rigid quarantine and ample time was allowed to eliminate any possibility of the disease being brought in from Havana. The personnel consisted of three nurses and nine immunes, all in the military service, and included two physicians.

"From time to time Spanish immigrants, newly arrived, were brought in from the immigrant station. A person not known to be immune was not allowed to leave camp, or if he did was forbidden to return. The most complete record was kept of the health of every man to be experimented upon, thus eliminating the possibility of any other disease than yellow fever complicating the case.

"The mosquitoes used were especially bred from the eggs and kept in a building screened by wire netting. When an insect was wanted for an experiment it was taken into a yellow fever hospital and allowed to fill itself with the blood of a patient. Afterward, at varying intervals from the time of

this meal of blood, it was purposely applied to nonimmunes in camp.

"In December, 1900, five cases of the disease were developed as the result of such applications, in January three and in February two, making in all ten, exclusive of the cases of Dr. James Carroll and Dr. Jesse W. Lazear. Immediately upon the appearance of the first recognized symptoms of the disease in any one of these experiments a case the patient was taken from Camp Lazear to a yellow fever hospital one mile distant. Every person in camp was rigidly protected from accidental mosquito bites, and not in a single instance did yellow fever develop in the camp except at the will of the experimenters. The experiments were conducted at a season when there was the least chance of naturally acquiring the disease, and the mosquitoes used were kept alive by maintaining them at a summer temperature.

"A completely mosquito proof building was divided into two compartments by a wire screen partition. Infected insects were liberated on one side only. A brave nonimmune entered and remained long enough to allow himself to be bitten several times. He was attacked by yellow fever, while two susceptible men in the other compartment did not acquire the disease, although sleeping there thirteen nights. This demonstrates in the simplest and most certain manner that the infectiousness of the building was due only to the presence of the insects. Every attempt was made to infect individuals by means of bedding, clothes and other articles that had been used and soiled by patients suffering with virulent yellow fever.

"Naturally yellow fever is transmitted by the mosquito and always and only by the mosquito. The harmlessness of fomites has been fully demonstrated by our experiments in 1900 and 1901, in which three young Americans slept for twenty consecutive nights in a room from which mosquitoes were excluded garnished with articles soiled with discharges from fatal and other cases of yellow fever. Three and four large boxes were packed and unpacked each morning by these nonimmunes, who suffered no disturbance of health from these exposures. The room was 20 by 14 feet, double walled, tightly sealed, heated to about 90 degrees F. and dark.

"Two other nonimmunes then occupied the room for twenty nights, while additional articles of bedding and clothing were added. They slept in the garments and between the sheets that covered cases of yellow fever, some of which were fatal. The result of the second attempt was nil. A third attempt was then made with two additional nonimmunes equally without success. Not the slightest indisposition followed close and intimate contact with this repulsive material in any case. Temperatures and pulse rates were recorded at regular and frequent intervals. Four of these seven nonimmunes were subsequently infected by blood injections and by means of infected mosquitoes."

Dr. Lazear's Singular Death.

The first death from the mosquito experiments was that of Dr. Jesse W. Lazear in November, 1901. Dr. Lazear, an army surgeon, was one of an army board, all of whom submitted themselves to the bites of infected mosquitoes. The death of Dr. Lazear was singular. He had voluntarily been bitten for the sake of experiment and suffered no effects. Afterward while he was visiting the yellow fever ward at



SURGEON GENERAL WYMAN.

Las Animas a mosquito lit on his hand. He allowed it to remain there and bite him. Five days afterward he was taken ill and died.

A naval surgeon described some incidents which occurred in Las Animas hospital, Havana, during the height of the yellow fever epidemic in the American intervention days in Cuba, when another physician and he ran the institution, says the New York Herald.

Bedlam at Night.

"We managed fairly well during the day, but at night—midnight—when we were worn out, the bedlam produced by the patients in their delirium was awful. They made all sorts of noises in different languages, for there were different nationalities represented. The uræmia which resulted from the characteristic effect of the disease on the kidneys caused convulsions and particularly facial spasms.

"The sick would make the most distressing grimaces, which in the wee, sma' hours of morn would cause some of the female nurses to tremble and cry and beg for a short respite in the open air. They would go out on the verandas, steady themselves, then back to business. But the most horrible of all was the hemorrhages, too horrible to describe. And all this caused by the bite of a particular kind of mosquito!"

A CRUSHED GENIUS.

The First Musical Efforts of the Composer Grieg.

One day—I must have been twelve or thirteen—I brought with me to school a music book on which I had written in large letters: "Variations on a German Melody For the Piano, by Edward Grieg; Opus I." I wanted to show it to a schoolfellow who had taken some interest in me. But what happened? In the middle of the German lesson this same schoolfellow began to murmur some unintelligible words, which made the teacher call out half unwillingly: "What is the matter? What are you saying there?" Again a confused murmur, again a call from the teacher, and then he whispered, "Grieg has got something." "What does that mean, Grieg has got something?" "Grieg has composed something."

The teacher was not very partial to me, so he stood up, came to me, looked at the music book and said in a peculiar, ironical tone: "So the lad is musical; the lad composes. Remarkable!" Then he opened the door into the next classroom, fetched the teacher in from there and said to him: "Here is something to look at. This little urchin is a composer." Both teachers turned over the leaves of the music book with interest. Every one stood up in both classes. I felt sure of a grand success. But that is what one should never feel too quickly, for the other teacher had no sooner gone away again than my master suddenly changed his tactics, seized me by the hair till my eyes were black and said gruffly, "Another time he will bring the German dictionary with him, as is proper, and leave this stupid stuff at home."

Alas! To be so near the summit of fortune and then all at once to see oneself plunged into the depths! How often has that happened to me later in life!—Edward Grieg in Contemporary Review.

AN OCEAN GRAVEYARD.

Sable Island is a Most Dangerous Place For Navigators.

Sable island, sometimes and not too extravagantly termed the graveyard of the Atlantic, is set among shoal waters that afford the best of feeding ground for the particular kinds of fish that Gloucester men most desire, halibut, cod, haddock and what not, and so to its shoal waters do the fishermen come to trawl or hand line.

Lying about east and west, a flat quarter moon in shape is Sable island. Two long bars, extending northwesterly and northeasterly, make of it a full, deep crescent. Nowhere is the fishing so good or so dangerous as close in on these bars, and the closer in and the shoaler the water the better the fishing. There are a few men alive in Gloucester who have been in close enough to see the surf break on the bare bar, but that was in soft weather and the bar to windward, and they invariably got out in a hurry.

Two hundred and odd wrecks of one kind or another, steam and sail, have settled in the sands of Sable island. Of this there is clear and indisputable record. Of how many good vessels that have been driven ashore on the long bars on dark and stormy nights or in the whirls of snowstorms and swallowed up in the fine sand before mortal eye could make note of their disappearing hulls there is no telling.

A Gloucester fisherman needs no tabulated statement to remind him that the bones of hundreds of his kind are bleaching on the sands of Sable island, and yet of all the men who sail the sea they are the only class that do not give it wide berth in winter.—James B. Connolly in Scribner's.

Mother Nature's Children.

One of the most wonderful things Mother Nature does is to teach her children how to accomplish things with means and appliances that seem entirely inadequate for the purpose. A bird will build an intricate and beautiful nest with no better tool than her beak (birds do not use their claws for this purpose), a caterpillar can shape a symmetrical cocoon and bees the sharp angled cells of their combs. These are familiar instances of this, but by no means as wonderful as those shown in the work of some sea animals that live in shells.—St. Nicholas.

Curiosity Satisfied.

A woman cycled up to a butcher's shop and went in with a smiling face. "I want you to cut me off twenty-five pounds of beef, please," she said. The butcher was incredulous. "Twenty-five pounds?" "Yes, please." It was a big job, and when he had finished he asked her whether she would take it or have it sent home. "Oh, I don't want to buy it," she explained. "You see, my doctor tells me I have lost twenty-five pounds of flesh through cycling, and I wanted to see what it looked like in a lump. Thank you so much."

Explained.

An old Scotch lady who had no relish for modern church music was expressing her dislike of the singing of an anthem in her own church one day, when a neighbor said: "Why, that is a very old anthem! David sang that anthem to Saul." To this the old lady replied: "Weel, weel! I noo for the first time understand why Saul threw his javelin at David when the lad sang for him."

Encouraging Her.

Stationer—What do you do with all the lead pencils you buy, Mr. Smith? You average about three a day. Mr. Smith—Oh, that's all right. My wife is taking whittling lessons.—Columbus Dispatch.

Few enterprises of great labor or hazard would be undertaken if we had not the power of magnifying the advantages we expect from them.—Johnson.

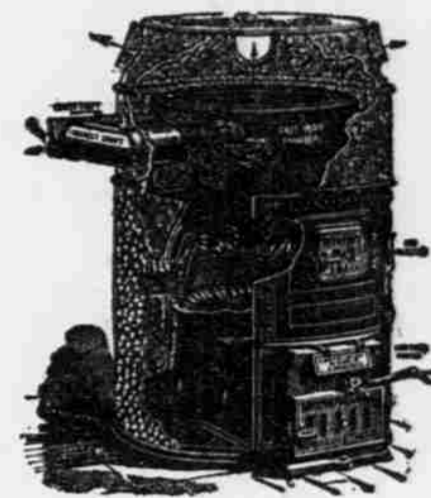
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