Yellow Fever – The Scourge Revealed

CAPT Stanton E. Cope, PhD
United States Navy
Dr. Benjamin Rush

USS Maine Explodes
Walter Reed Birthplace
Virginia
Dr. James Carroll - 1901

Dr. Aristides Agramonte - 1902
Dr. Jesse W. Lazear

Goals of the Reed Board

- Nature of *Bacillus icteroides*
- Perform bacteriological studies
- Explore the *theory* of insect transmission
### Table II

<table>
<thead>
<tr>
<th>No. of case</th>
<th>Day of disease</th>
<th>Time of autopsy</th>
<th>Source of culture</th>
<th>B. lironsides</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Seventh</td>
<td>2 hours after death</td>
<td>Blood, liver, spleen, kidney</td>
<td>Negative</td>
</tr>
<tr>
<td>2</td>
<td>Sixth</td>
<td>13 hours after death</td>
<td>do</td>
<td>Do</td>
</tr>
<tr>
<td>3</td>
<td>Fourth</td>
<td>6 hours after death</td>
<td>do</td>
<td>Do</td>
</tr>
<tr>
<td>4</td>
<td>Eighth</td>
<td>4 hours after death</td>
<td>Abdominal cavity, blood, liver, spleen, kidney, bile, duodenum</td>
<td>Do</td>
</tr>
<tr>
<td>5</td>
<td>Fourth</td>
<td>do</td>
<td>Blood, liver, spleen, kidney, bile, duodenum</td>
<td>Do</td>
</tr>
<tr>
<td>6</td>
<td>Sixth</td>
<td>24 hours after death</td>
<td>Abdominal cavity, blood, pericardial fluid, lung, spleen, kidney, liver, bile, duodenum</td>
<td>Do</td>
</tr>
<tr>
<td>7</td>
<td>do</td>
<td>48 minutes after death</td>
<td>Blood, lung, liver, spleen, kidney, bile, pus</td>
<td>Do</td>
</tr>
<tr>
<td>8</td>
<td>do</td>
<td>1 hour after death</td>
<td>Blood, lung, liver, spleen, kidney, urine, small intestine</td>
<td>Do</td>
</tr>
<tr>
<td>9</td>
<td>Fourth</td>
<td>2 hours after death</td>
<td>Liver, spleen, small intestine</td>
<td>Do</td>
</tr>
<tr>
<td>10</td>
<td>Fifth</td>
<td>7 hours after death</td>
<td>Liver, kidney, spleen, small intestine</td>
<td>Do</td>
</tr>
<tr>
<td>11</td>
<td>Third</td>
<td>1 hour after death</td>
<td>Liver, kidney, spleen</td>
<td>Do</td>
</tr>
</tbody>
</table>

* Cultures from the blood during life had been taken by Dr. Laver in three other cases of yellow fever, not ending in the death of our colleague; the necessary data as to the day of the disease on which cultures had been taken cannot be ascertained. These cultures were negative as regards the finding of Mannheim's bacillus.
THE ETIOLOGY OF YELLOW FEVER.
A Preliminary Note.¹
By WALTER REED, M.D., Surgeon, U.S.A.,
and
JAMES CARROLL, M.D., R. AGRAMONTE, M.D., JESSE
W. LAZEAR, M.D., Acting Assistant Surgeons, U.S.A.

Camp Lazear

where the experiments with the yellow fever mosquito were first carried out and the transmission of the disease by this means proven
PVT John Kissinger
Dear Dr. Brown,

Just a line to thank you for the many interesting letters which have come during the several years ago. (I wish to be beautiful today.)

I found your letter today and am glad to tell you that the tea is almost here. I wish you had come down to Canoe (Kilosuchi).

Plan of the "Insected Sleeping House" at Cape Lekha. Men who were accustomed to the cleaner slept very little in this small room; some, without even leaving their faces.
Fomite House

Letter From Reed to Truby
Plan of the "Monoclonic Division" at Camp Logan. The men who for a short time occupied the bed in room marked "A" became infected by the virus of collection previously introduced, while those equally susceptible who occupied beds in rooms marked "B" remained in good health. Only a wire-screen partition separated the two compartments.
CONCLUSIONS.

1. The mosquito (A. fasciatus) serves as the intermediate host for the parasite of yellow fever.
2. Yellow fever is transmitted to the nonimmune individual by means of the bite of the mosquito that has previously fed on the blood of those sick with this disease.
3. An interval of about 12 days or more after contamination appears to be necessary before the mosquito is capable of conveying the infection.
4. The bite of the mosquito at an earlier period after contamination does not appear to confer any immunity against a subsequent attack.

5. Yellow fever can also be experimentally produced by the subcutaneous injection of blood taken from the general circulation during the first and second days of this disease.
6. An attack of yellow fever, produced by the bite of the mosquito, confers immunity against the subsequent injection of the blood of an individual suffering from the nonexperimental form of this disease.
7. The period of incubation in 13 cases of experimental yellow fever has varied from 11 hours to 5 days and 17 hours.
8. Yellow fever is not conveyed by fomites, and hence disinfection of articles of clothing, bedding, or merchandise, supposedly contaminated by contact with those sick with this disease, is unnecessary.
10. The spread of yellow fever can be most effectually controlled by measures directed to the destruction of mosquitoes.......

22 Total Cases Under Controlled Conditions

Mosquito Bite - 14
Blood Injection - 6
Filtered Serum - 2
He gave to man control over that dreadful scourge...."
The United States Army Yellow Fever Commission formed in 1900 and led by Major Walter Reed. Other members of the commission were Dr. C. Carroll (B), Dr. Josep W. Lazear (C), and Dr. Antonio Agronine (D). Photographs adapted from bookplate, courtesy of Brown Brothers.
Dr. William Gorgas -- 1920

Panama Canal

IN A NUT SHELL

WE ALL KNOW THE DANGER OF
YELLOW FEVER

INFECTION BY MOSQUITES
PLUS THE DIRECTION OF THE
MARINE HOSPITAL SERVICE

START IN ON
SUNDAY AT 10 A.M.

AND KEEP AT IT UNTIL DONE

GET RID OF THE MOSQUITO
BY BURNING
SULPHUR FOR FUMIGATION

SUNDAY AT 10 A.M.
“…A martyr to yellow fever….”
JOHN R. KISSINGER
1877 - 1946
Congressional Medal of Honor Recipient
"Quiet Hero - Few Know His Name"

John R. Kissinger, who lived in Huntington in his latter years, became the first volunteer to subject himself to the bite of an infected mosquito (1901) in an experiment to identify the cause of "Yellow Jack" (Yellow Fever). This successful experiment by the Dr. Walter Reed Science Committee was necessary to make possible the construction of the Panama Canal.
“…..swept away a hideous plague……”