

## STUDIES ON SOUTH AMERICAN YELLOW FEVER

### III. TRANSMISSION OF THE VIRUS TO BRAZILIAN MONKEYS PRELIMINARY OBSERVATIONS

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It is our intention to state briefly some of the results obtained in attempts to transmit yellow fever virus to the species of Brazilian monkey popularly known as "prego." This species was used by Noguchi, identified as *Cebus macrocephalus*, and found by him to be susceptible to *Leptospira* infections; the lesions produced closely simulated those of human yellow fever.

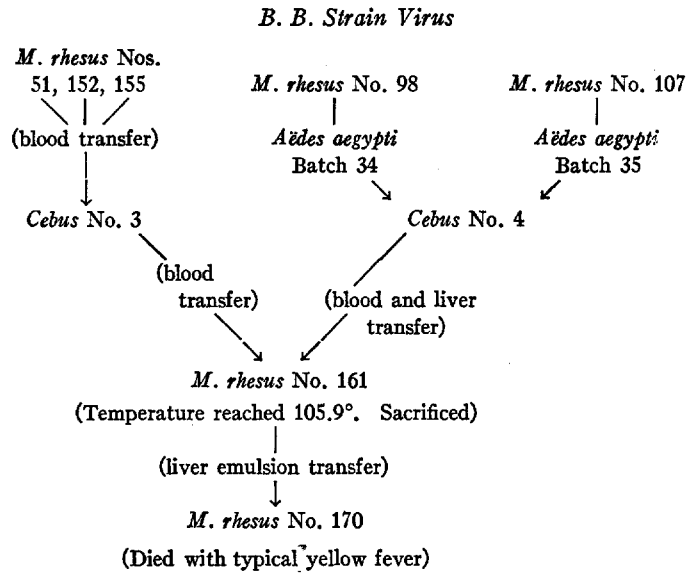
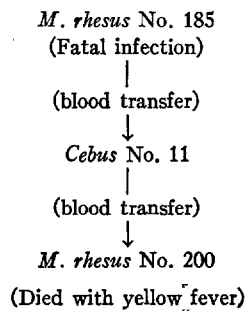
The temperature of all animals inoculated with the virus was taken morning and evening, and in a few instances it rose above 104°F. In several instances the fever appeared early and continued for varying intervals, usually with a tendency to intermissions. It is not improbable that the prolonged fevers may have been due to some other condition than to the inoculation with the virus.

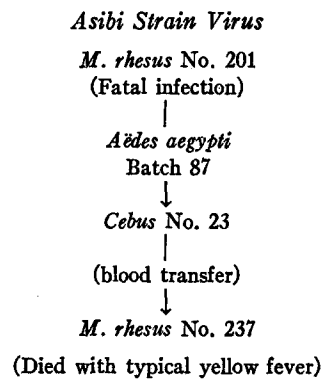
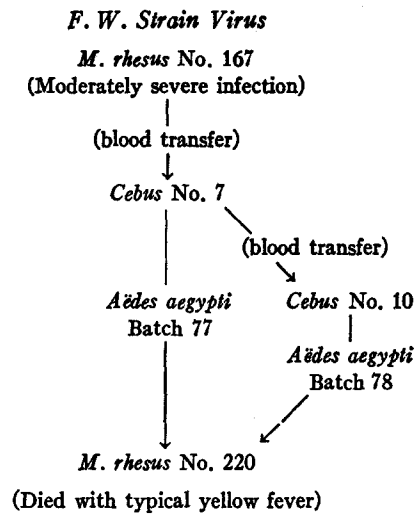
Some animals reacted mildly although the material inoculated was highly virulent for *Macacus rhesus*. Monkeys 6, 9, 12 and 24 fall in this category. In instances in which the inoculum was injected into two animals the effects might vary considerably (Nos. 1 and 2, and 19 and 20).

The virus has been passed from *rhesus* monkeys to *Cebus* and back to *rhesus* by the inoculation of blood and tissues.

On Nov. 16, 1928, *rhesus* No. 161 was given 5 cc. of blood from *Cebus* No. 3 (taken on second day following inoculation); on Nov. 18, 5 cc. of blood from *Cebus* No. 4 (24 hours after mosquito feeding) was inoculated into the same *rhesus* and on the 19th a further transfer of 7 cc. blood-liver mixture was made from *Cebus* No. 4. On Nov. 20 the temperature of No. 161 rose to 105.2°F. and on the 21st it reached 105.9°. The animal was then sacrificed. Liver emulsion from No. 161 was inoculated into *rhesus* No. 170; the latter died and showed typical

## Schematic Representation of Transfers Mentioned in the Text

*Asibi Strain Virus*



gross and microscopic lesions of yellow fever. On Dec. 10, 1928, *rhesus* No. 200 was injected with blood from *Cebus* No. 11 (taken on the second day after inoculation); again on Dec. 12 No. 200 received blood from the same *Cebus* (taken on the fifth day). No definite fever was detected but on Dec. 14 the temperature fell to 96.4° and the monkey died during the night. The gross picture was typical of yellow fever; microscopically, both liver and kidney showed pronounced necrosis.

The virus has been passed to *Cebus* monkeys by blood inoculation and back to *rhesus* by mosquitoes (*Aedes aegypti*).

On Dec. 4 *Cebus* No. 7 was inoculated with blood from *rhesus* No. 167, F. W. strain. On the 6th mosquito Batch 77 was allowed to feed and blood was transferred to *Cebus* No. 10. Mosquito Batch 78 was allowed to feed on the latter animal twice (Dec. 7 and 8). On Jan. 2 Batches 77 and 78 fed on normal *rhesus* No. 220. On Jan. 5 this animal registered a temperature of 105.2°F.; fever lasted 3 days and the monkey was found dead Jan. 9. The autopsy lesions were typical of yellow fever. Mosquito Batch 84, fed on *Cebus* No. 12 (B.B. strain), led to a febrile reaction in *rhesus* No. 222, but the animal survived.

The virus has been passed to *Cebus* monkeys by mosquitoes and back to *rhesus* by blood inoculation.

On Jan. 8, 1929, mosquito Batch 87 (infected from *rhesus* No. 201, Asibi strain) was allowed to feed on *Cebus* No. 23. On Jan. 10 this animal had a temperature of 104.2°F., and 1 cc. of blood was transferred to *rhesus* No. 237 by intraperitoneal inoculation. On Jan. 14 No. 237 showed a temperature of 105.6°; on the morning of the 16th the temperature was 96.0°F. and the animal died during the forenoon. Autopsy lesions were typical of yellow fever.

None of the *Cebus* of this series which died or were killed showed definite lesions of yellow fever, either in the gross or microscopically. The work is being continued with the species.

#### SUMMARY

Yellow fever virus from *M. rhesus* has been inoculated into a South American monkey (*Cebus macrocephalus*) by blood injection and by bites of infected mosquitoes. The *Cebus* does not develop the clinical or pathological signs of yellow fever. Nevertheless, the virus persists in the *Cebus* for a time as shown by the typical symptoms and lesions which develop when the susceptible *M. rhesus* is inoculated from a *Cebus* by direct transfer of blood or by mosquito (*A. aegypti*) transmission.

## BIBLIOGRAPHY

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