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10663 P

Attempts to Infect Guinea Pigs with the Virus of St. Louis Encephalitis.*

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It is known that passage of influenzal virus directly from human patients to mice is extremely difficult,[1] but that passage to ferrets and then to mice is readily accomplished. It is also probably true that passage of smallpox virus directly from patients to calves or rabbits is difficult, while previous passage through monkeys converts the virus to vaccinia which is then more readily infectious for calves and rabbits.[2, 3, 4] Reasoning by analogy, it was suspected that susceptibility to St. Louis encephalitis virus might be transmitted to a wider variety of animals if brain-tissue of suitable animal species were used as inoculum. In spite of the fact that previous attempts to infect guinea pigs with human brain material[5, 6] or mouse-brain virus[7, 8] have been unsuccessful, we have considered this worthy of another trial with the view of using guinea pig brain virus for the inoculation of other animals.

In the first series of experiments, begun in the fall of 1937, mouse-brain virus suspended in Locke's solution was introduced intra-

* This work was made possible by a grant from Special Fund for the Study of Encephalitis.

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cranially into 2 guinea pigs. After incubationary periods of 14 and 17 days, both animals were found dead. The brains of these guinea pigs were in turn inoculated into animals, and in a similar way the virus was carried through 6 passages as shown in the accompanying diagram. As may be seen, some were found dead, while others were sacrificed when showing convulsions. On several occasions the brains from these animals were passed back to mice, the latter ani-

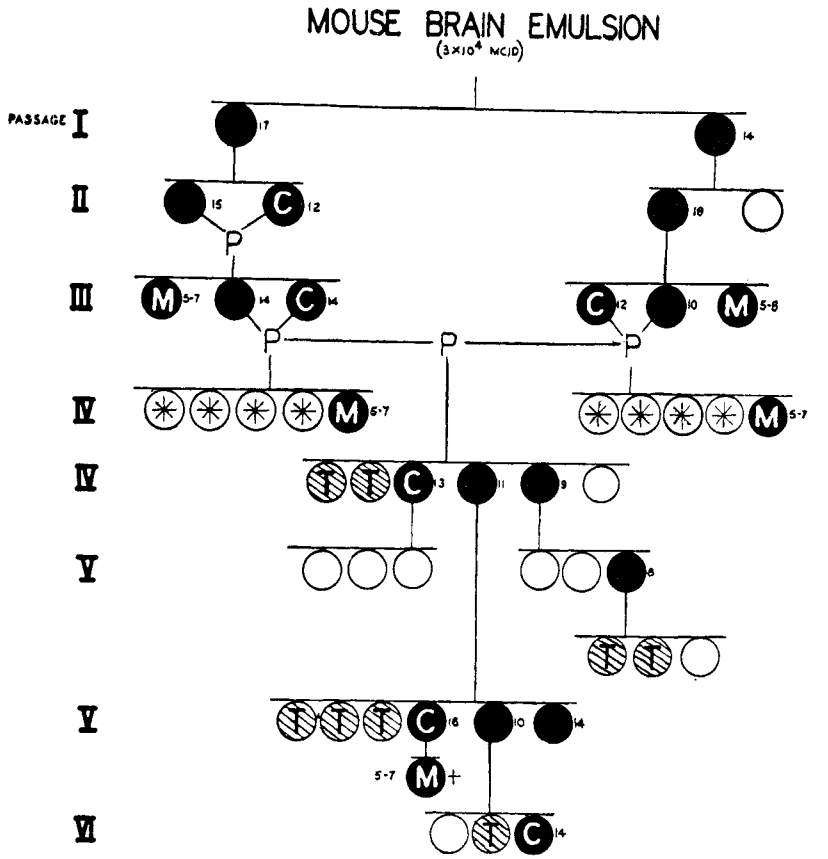

FIG. 1.

Solid black—Guinea pig found dead.
Black with letter "C"—Guinea pig in convulsions.
Black with letter "M"—Inoculated into 6 mice mixed with normal serum and into 3 mice mixed with human convalescent serum. Result: 6 inoculated with normal serum mixtures died with signs of encephalitis; the other 3 survived.
Black with M+—3 mice injected; all died with signs of encephalitis.
Shaded with letter "T"—Guinea pig died of trauma.
Solid white—Guinea pig survived.
P—Guinea pig brain material pooled.
*—Guinea pigs came from the dealer the same day and all survived.
Figures indicate length of incubation period in days.

mals developing typical signs of encephalitis which could be prevented by neutralization with convalescent sera. It may be noted particularly that on one occasion all of the guinea pigs purchased on a certain day survived while the same material injected into others at a later time produced encephalitis in 3 out of 4 animals.

In another series of experiments, in the spring of 1938, the virus was successfully carried through 5 consecutive passages in guinea pigs with essentially similar results. In addition, sections of brains of several guinea pigs in this series, including one from the fifth passage, showed histopathological evidence of encephalitis. However, when we attempted to carry the experiments further in the fall of 1938, we were unable to infect guinea pigs either with the brain of guinea pigs (preserved in glycerin and from the previous experiment), or with freshly passaged brains of mice. Several variations in technic were employed without success; these included the use of more concentrated brain-suspensions, uncentrifuged suspensions, and normal guinea pig serum as diluent.

In a personal communication, Doctor Max Theiler reported a similar experience with yellow-fever virus and found that the susceptibility to this virus depends on the genetic strain of guinea pigs used. Likewise, Sonto and his associates[9] have found a difference in susceptibility of different strains of guinea pigs to tetanus toxin. Since such a factor may have operated in our experiments, we are planning further trials with different strains of guinea pigs.

We wish to express our indebtedness to the late Doctor H. A. McCordock for pathological examination of the tissue of the guinea pigs.

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Susceptibility of Wild Mice to the Virus of St. Louis Encephalitis.*

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For the last 2 years we have been concerned with the question of the possibility of a reservoir in animals of the virus of St. Louis

[9] Sonto *et al.*, *Revue d'Immunologie*, 1939, **5**, 54.

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