nymphs molted in the laboratory to adults and on August 10 about half of them were placed on bull No. 73, the other half on bull No. 74. Between August 17 and August 21, five engorged females were removed from No. 73 and 9 from No. 74. A number of males, not counted, were also removed from each bull. Bull No. 73 reacted to anaplasmosis on September 13, and bull No. 74 on September 14. The incubation periods were, therefore, not more than 34 and 35 days, respectively.

Discussion

The data of the present paper appear to warrant the following general statements:

1. Larvae of *Dermacentor variabilis* may acquire anaplasmosis by engorging on a carrier, *i.e.,* a bovine in which the blood carries the etiological agent of this disease, and nymphs which develop from these larvae may transmit anaplasmosis to susceptible bovines.

2. Nymphs may become infected by engorging on a carrier, and adults which develop from these nymphs may transmit anaplasmosis to susceptible bovines.

In the present experiments the adult female ticks which engorged on carriers did not transmit anaplasmosis to the larvae of the next generation. More experimental work is needed, however, to determine whether or not hereditary transmission by this tick may occur. Had the experiment been tried, the nymphs or the adults of the second generation might have transmitted the infection, even though the larvae failed to do so. Furthermore, it may be possible for females to become infected either from larvae or nymphs rather than from engorging directly on a carrier and to transmit the disease to the larvae, nymphs or adults of the next generation.

It is possible, though not at all probable, that the nymphs and the adults which were used with success in the experiments of the present paper "inherited" their infections from the adults which were sent from Mississippi and from Florida. Be that as it may, the important feature of this work is that *Dermacentor variabilis,* which is one of the most widely distributed ticks in the United States, will serve in the transmission of anaplasmosis. This discovery warrants the serious attention of all those engaged in dairying or in the production of beef cattle because, as stated above, this destructive disease may be spreading at the present time into new areas.

It has been found that ticks of several genera can and do transmit anaplasmosis in various parts of the world, and with this evidence to the effect that the etiological agent of the disease has so little specificity in its requirements for an intermediate host one is safe in assuming that other ticks, not yet known to transmit anaplasmosis in the United States, actually do transmit it. Certain ones of these ticks, if incriminated, would suffice to make the known distribution of anaplasmosis coincide with the known distribution of carriers.

It is of interest to note that *D. variabilis,* convicted here of carrying anaplasmosis of cattle, has recently been incriminated as a carrier of a disease indistinguishable from Rocky Mountain spotted fever in man. These findings bring this tick to the front as a parasite of major importance.

Summary

Under properly checked and controlled conditions, the writer has succeeded in transmitting anaplasmosis by means of *Dermacentor variabilis* as follows: (1) Ticks engorging as larvae on clinical cases of anaplasmosis transmitted the disease as nymphs to two susceptible bulls; (2) ticks engorging as nymphs on a convalescing case of anaplasmosis transmitted the infection to two susceptible bulls.

The test of "hereditary" transmission was negative when the ticks engorged as adults on a clinical case and the larvae of the next generation engorged on two susceptible bulls.

The wide-spread occurrence of *Dermacentor variabilis* in the United States indicates the danger that anaplasmosis may spread into new areas that have thus far been considered as outside the enzootic range of this disease.

The recent incrimination of *Dermacentor variabilis* in the transmission of what appears to be Rocky Mountain spotted fever has focused the attention of the medical profession and of public health officials on this tick, and this finding and the writer's finding indicate the need of further research on it as a tick of major importance in human and veterinary medicine.

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