

reviews the work on transmission of endemic typhus through the bites of tropical rat mites, the work of Dyer and his associates on rat fleas, and the work of Zinsser and his associates on bed-bugs and lice of rats.

*Some Peculiar Relationships Between Ectoparasites and Their Hosts.* Henry E. Ewing, Bureau of Entomology, United States Department of Agriculture.

Lice appear to lack the faculty of detecting their natural host. Thus the louse of the gray spider monkey, *Ateles geoffroyi*, when transferred to man readily fed. Likewise those of a baboon-like monkey, *Magus* sp., readily took to man and fed; and the sucking louse of the dog, *Linognathus piliferus*, sucked the blood of man. In all these cases, however, the lice soon died after feeding.

It is believed that differences between species of biting lice have arisen largely because of isolation on very similar hosts. If these hosts were not isolated would they have developed their own peculiar species? Nature herself has performed an experiment settling this question for the cuckoos and cowbirds. The young of these birds find themselves squeezed among nestlings of various sorts where conditions for the transfer of parasites are optimum. Our common cowbird, *Molothrus ater*, lays its eggs in the nests of 158 species of birds, yet it is only moderately parasitized, and its lice are characteristic only of those birds belonging to the same family as the cowbirds. The kangaroo-dog-louse, *Heterodoxus longitarsus*, has passed from its original host, the kangaroo, to the dog, finding on the latter the proper "ecological environment." Only man and the gorilla are infested with Phthirus species, constituting the family Phthiridae. If crab lice, Phthirus species, have evolved upon the great apes and man, as apparently they seem to have done, then this evolutionary period must have been long enough to develop family characters in these two louse species.

*The Effect of a Deficient Diet on the Susceptibility of Dogs and Cats to Non-Specific Strains of Hookworms.* A. O. Foster and W. W. Cort, School of Hygiene and Public Health, Johns Hopkins University.

Dogs that were kept on a deficient diet for considerable periods of time became susceptible to infection with the cat strain of *Ancylostoma caninum*, to which they had been extremely resistant while on an adequate diet. Cats also that were kept on a deficient diet partially lost their resistance to the dog strain of *Ancylostoma caninum*. These findings are of interest in connection with experiments reported elsewhere, which showed that the resistance of dogs to infection with the dog strain of *Ancylostoma caninum* which had been produced by age and previous infections, could be completely broken down by placing the animals on a deficient diet. On the other hand in a considerable series of old dogs kept on the deficient diet, attempts to produce infection with the human hookworm, *Necator americanus*, were unsuccessful.

*The Relation of Diet to the Susceptibility of Dogs to Ancylostoma caninum.* A. O. Foster and W. W. Cort, School of Hygiene and Public Health, Johns Hopkins University.

Studies on nine dogs carried over considerable periods of time gave an experimental demonstration of a definite correlation between undernourishment and susceptibility to infection with the dog strain of *Ancylostoma caninum*. The deficient diet resulted in a breaking of the resistance to infection in animals that had developed a very great resistance due to previous infection and age. There was also an increased rate of development of the worms and a greatly increased egg production of the females. When the dogs that had acquired an infestation while on the deficient diet were transferred to a good diet their recovery of resistance was indi-