THE EAR TICK, OTOBIUS MEGNINI (DUGES) (ACARINA: ARGASIDAE), AND ITS RECORD IN BRITISH COLUMBIA

by G. B. RICH**

The ear tick was first described in 1884 from specimens collected in northern Mexico. Then it was known only as a parasite of domestic animals in Mexico and Texas. Records now show that it occurs in most of the United States, southeastern British Columbia, Peru, Chile, Bolivia, and the Argentine in both domestic and many wild animals. In addition to this presumed natural distribution it has been introduced into and has become established in Hawaii, India, and South Africa. It has not been found in Australia, Europe, or any Asian country other than India.

It was first found in British Columbia in the ear of a house cat at Ewing's Landing on Okanagan Lake in 1941. Since then it has been found to be rather generally distributed in the Province south of the 52nd parallel and east of the 121st meridian, in mountain goats, mountain sheep, elk, mule and white-tailed deer, and domestic cattle. Although extensive checks were carried out in flocks in areas of the Province where cattle and deer are infested, no ear ticks were found in domestic sheep.

The life-history of the tick may be divided into a parasitic phase consisting of the larval and nymphal stages, and a free-living phase consisting of the adult and egg stages. The nymph is the form usually seen and is peculiar in that it has never been found in any part of a host other than the ear canal and the lower portion of the interior of the outer ear.

The eggs are laid and hatch on the ground. The six-legged larva is extremely active and from its appearance and rapidity of movement may be readily mistaken for a mite by a casual observer. It enters the ear canal of the host and attaches by its mouth parts to the canal lining. As it slowly feeds, the legs shrink and the body swells into a heart-shaped form of whitish or reddish-brown colour. It reaches a maximum length of about three-sixteenths of an inch. It remains attached and quiescent until the first moult, when the eight-legged nymph emerges. During this quiescent stage it may be easily mistaken for a sessile, stalked papilla rather than a tick.

The integument of the nymph is covered with short, blunt spines. It is usually greyish or reddish-brown and is one to three-eighths inch long, depending on the length of time it has fed. Its body is roughly oval and slightly

*Contribution No. 3707, Entomology Division, Science Service, Department of Agriculture, Ottawa, Canada. Presented at the annual meeting of the British Columbia Veterinary Association, Vancouver, B.C., September 22, 1956.

**Assistant Entomologist, Veterinary and Medical Entomology Section, Entomology Laboratory, Kamloops, British Columbia.

constricted in the middle so that it has somewhat the appearance of the body of a violin. The mouth parts are beneath the body and are not visible from above.

During early feeding the ticks are usually deep in the ear canal and can be detected only by swabbing or by very careful visual examination. However, as they increase in size with feeding they may be forced into the lower part of the external ear and can be seen without much difficulty. During this stage they should not be confused with species of the so-called hard ticks such as the Rocky Mountain wood tick, *Dermacentor andersoni* Stiles, or the winter tick. *D. albipictus* (Packard), which may attach to the outer portions of the ears of moose, deer, cattle, horses and sheep, but which are leathery and smooth in appearance when fully engorged.

The nymph may remain in the ears of its host for over 200 days, after which it drops to the ground and moults to the sexually mature adult. The adults are unusual among ticks in that they do not feed. They mate and subsequently lay batches of eggs at intervals of a week or more.

The nymphs are considered to be primarily parasites of equine and ungulate species, but they have been found parasitizing a wide range of hosts, including dogs, coyotes, cats, humans, rabbits, and ostriches. There are many records of deaths of domestic cattle and horses attributable to the tick infestations. However, although the literature indicates that sheep and llamas are normal hosts, there are no records of deaths in these species.

The causative agent of death is not known. Kingston (1936) published an account of the autopsy of a demented horse which, after death by shooting, was found to be infested with the tick. He reported advanced necrosis of the auricular and adjoining nerves. However, only gross pathology was carried out and the history of the horse is so confusing that it is difficult to draw definite conclusions from it concerning the significance of the ticks.

In June of this year I obtained and prepared material for microscopic examination from a laboratory-infested calf. This calf showed indications of weakness of the front legs in the afternoon and died during the following night. The body was carefully autopsied by a competent veterinarian and both he and I were satisfied that we found nothing that could have caused death. The prepared material, consisting of a portion of spinal cord, the medulla, cerebellum and an ear bulla, was sectioned and examined by Dr. C. Aszkanazy, of the Vancouver General Hospital, and no abnormality was found.

Except in the case of this calf the clinical symptoms of infested cattle that have died in the Kamloops area, have been almost identical. For a few days the animals appeared to be "head-heavy", hanging their heads and sway-

ing them from side to side. This initial stage was accompanied by loss of appetite. They then appeared to lose the power of co-ordinating their leg movements and collapsed. Death occurred from a few days to two weeks after collapse.

I discussed the clinical aspects of death in tick infested cattle with Dr. G. T. Crenshaw, now of Dow Chemicals, Midland, Michigan, but formerly a practising veterinarian in an ear tick infested area of California. In his opinion there is no definite pattern of clinical symptoms. He remarked that when attending an animal with symptoms he could not readily diagnose, he regularly examined the ears for ticks.

The first known deaths of cattle from the ear tick in British Columbia occurred at Adams Lake in 1955, when 3 animals died. However, discussion with the owner indicated that a similar death occurred earlier in 1955 and another in 1954. Also, discussions with a neighbouring rancher indicated that he had lost an animal in a similar manner earlier in 1955. A young animal collapsed in the fall of 1955 at Lumby, B.C. and a few ear ticks were found and removed. This animal subsequently recovered and is the only one that I know to have recovered after the onset of clinical symptoms followed by removal of the ticks. Six animals were affected in the spring of 1956, also in the Adams Lake area. Four of these died from the infestations. The other 2 also died, but their deaths were complicated by deep snow conditions; although their deaths cannot be directly attributed to the tick, it was undoubtedly a contributing factor.

In all these instances the ticks were discovered accidentally; therefore it may be assumed that in infested areas many similar deaths of cattle have not been recognized. This aspect cannot be too strongly emphasized. My assistant and I have discussed the subject with many ranchers in the infested areas and in several instances have been informed that cattle die each year from undetermined causes.

The tick is controlled in the United States by drenching the ears of infested animals with a solution of 5 parts by weight of benzene hexachloride, 10 of xylene and 85 of pine oil. This and other dressings were described by Kemper (1947). Treatment of docile, stabled animals is relatively easy, but wild range animals can be treated only by stanchioning them; in large herds this is laborious and time-consuming.

The tick is insidious and difficult to detect; the clinical symptoms are unfamiliar not only to most ranchers but also to veterinarians. Furthermore, in most localities where the tick has been found in this province the cattle share their range with infested native ungulates. Therefore, it is considered in the public interest that all available information on this tick be given wide publicity among ranchers, veterinarians and agriculturists.

SUMMARY

The ear tick, which is native to and is widely distributed in North and South America, has been found in Canada only in the southeastern portion of British Columbia. It infests a wide range of hosts, including man, but is recognized primarily as a parasite of ungulates. In British Columbia it has been found in mountain goats, mountain sheep, mule and white-tailed deer, elk, cattle, and a house cat. Ten cattle are known to have been killed by this tick in British Columbia in 1955 and 1956. Symptoms are "head-heaviness" and loss of appetite, followed by loss of muscular co-ordination and collapse. No abnormalities were found during autopsy or by sectioning nerve and brain tissue. Because the nymphs are found only inside of the host's ears they are seldom detected. As the native ungulates and domestic animals share their ranges in infested areas of British Columbia, it is in the public interest that this tick be given wide publicity.

REFERENCES

1. KEMPER, H. E. The spinose ear tick and methods of treating infested animals. Farmers Bull. No. 980, U.S. Dept. Agric., Washington, 1947.
2. KINGSTON, J. S. Spinose ear tick in India. J. Roy. Vet. Corps *7*: 142-143, 1936. Abstracted in: Vet. Bull., *6* (11): 812, 1936; and Rev. Appl. Ent., B, *25*: 122-123, 1937.

UNE ÉPIZOOTIE EN FRANCE, EN 1714

by JEAN-RODOLPHE BORDUAS[2]

Au cours de longues et patientes recherches effectuées dans la région de Lyon (France), — lieu d'origine de ma famille, — je suis tombé par hasard sur la relation d'une épizootie qui, en 1714, ravageait le bétail de la région. Je m'empresse de vous la communiquer *in extenso*:

"Que cette présente année 1714, Dieu irrité contre nous a fait sentir sur le public les terrible effets de sa colère qui est que le bétail destiné au labourage, comme tous les boeufs et vaches, est presque tout mort d'une contagion inconnue, car on y remarquait différentes sortes de maladies. Dans cette paroisse de Genay, il est mort 300 couples faits, et par la miséricorde de Dieu qui s'est laissé fléchir à nos larmes et à nos prières, il en est resté environ un cent. Cette maladie a commencé à la fête dudit Genay, qui est de Sainte-Madeleine, le 22 juillet, et est finie à la fête de tous les Saints ou à peu près. Toute la

(1) Extrait des registres de catholicité de la paroisse de Genay, départment de l'Ain (France).
2. Traducteur officiel de l'Association canadienne des Médecins vétérinaires et bibliothécaire de l'Ecole de Médecine vétérinaire de la province de Québec.