ENTOMOLOGICAL NOTES OF VETERINARY INTEREST

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A crude survey of the literature indicates that there are about 150 different disease producing organisms transmitted to man and other warm-blooded animals by approximately 250 species of insects. This does not include the several hundred species that cause injury or annoyance by their direct attack on animals. It is therefore obvious that the subject of entomological notes of veterinary interest could be made to cover a lot of ground; we purpose, however, to confine our remarks to three items of local interest—Drosophilids in milk, **Eristalis tenax** larvae from a cow, and ticks.

Drosophilids in milk

Upon some five occasions, in 1919 and 1920, the City of Vancouver received complaints of insects, worms or hay seeds in milk, which were subsequently shown to be the pupae of Drosophilids. The record was of interest, as only two references of such parasites in milk could be found in the literature, one being recorded by Riley from Minnesota in 1918, and the other from Germany in 1913.

A milk bottle received by us showed eleven pupae firmly adherent to the glass. After being kept three days, six flies emerged, which were identified as Drosophilids by the late Mr. R. C. Treherne; the flies were subsequently sent to Ottawa, but no specific determination has as yet been received.

It was said that in every instance the pupae were found within a given distance from the bottom of the bottle, suggesting that some sour milk had been left therein, and that they were usually found towards one side of the bottle, indicating the heliotropic tendency of the flies.

The duration of life for the genus at living room temperature is given as being two days for the egg period, six for the larval, and five for the pupal; it is therefore interesting to note the apparent amount of interference that these parasits can stand, as the bottles were handled, as follows:

In washing, a 10% solution of "Wyandotte" soda is used. The bottles first enter a cold bath, then a warm bath, and thirdly a bath the temperature of which is from 160 to 165°F. They are then rinsed in hot water and allowed to dry by the heat left in the glass, which is almost too hot to be borne by the bare hands. It was thought that some dairies might have been economising on the amount of soda used, but this could not be definitely shown; the trouble ceased, however, when greater care in washing was taken and the dairymen were warned

that a repetition might lead to unsought advertising via the courts. No further cases have come to our notice.

Eristalis tenax larvae from a cow.

The point of interest is that these larvae were found to be living in a cow's vagina, and that only one other case is on record, which occurred in Maryland in 1909.

The cow in question was living on Vancouver Island, and was a Grade Ayshire calved about two months. The stable was in a filthy condition, and the animal had a vaginal discharge for which the owner had been douching several times before any larvae were seen. The vagina contained some inspissated pus and blood-stained exudate, and the animal showed a slight rise in temperature and a greatly reduced milk yield. The parasites, in spite of antiseptic douches, appeared to be vigorous and very active. We are unable to say just how many were present, but we received a dozen specimens. In this case it is probable that the diseased condition of the vagina was responsible for an odor that attracted the flies, with the result that they deposited their young in this unusual location. With proper attention the cow made a complete recovery.

Ticks

While we have a number of ticks in British Columbia, only two are of particular interest—**Dermacentor albipictus** and **D. venustus. D. albipictus,** known as the winter or moose tick; it is a one-host tick, commonly found on the large domesticated and wild mammals. When present in large numbers, it may cause trouble. We have reports of it causing anaemia and even death in horses in the Okanagan, and we have recently known of a mule deer brought down to the coast and placed on a game reserve that died from the effect of these parasites, and of another mule deer that nearly succumbed.

Being a one-host tick, it is comparatively easily controlled by dipping in the early spring or late autumn.

D. venustus feeds only on the blood of mammals and require three hosts. The adults are commonly found on the larger animals, chiefly horses, cattle and sheep. They may also be found on a number of smaller animals, such as rabbits, porcupines, bears, coyotes, mountain sheep and goats, deer, etc. The nymphal and larval stages are passed on rodents, such as ground squirrels, deer mice, field mice, chipmunks, pack rats, jack, cottontail and snowshoe rabbits, etc.

The life cycle from egg to adult is seldom completed under two years, and may take three or even four.

D. venustus is by far the most dangerous tick we have in Canada,

as it may produce paralysis and even death in man and animals, and is known to carry the organisms of Rocky Mountain spotted fever and of tularaemia. So far as known, spotted fever and tularaemia have not been reported as occurring in this country.

Spotted fever extends throughout the northwestern states and as far south as northern California. It is an acute febrile affection, with a tendency to stupor. The eruption, which appears about the third to fifth day, is not unlike typhus fever, and tends to become haemorrhagic. All stages of the tick may be infective. They have been known to be infective for seventeen months, which is approximately the maximum life period of an unfed adult.

Tularaemia in man is usually chronic in character and may last for weeks or months. It is characterized by fever, chills, headache, nausea, and marked prostration. Glandular enlargement may be present. That the disease is very highly infectious is evident from the large number of laboratory workers that have become affected while working with the disease; even the excreta of affected ticks is infectious. The disease has been noted from the Pacific to the Atlantic coasts, and, in addition to **D. venustus,** can be carried by a number of vectors—by the bed-bug, squirrel, flea **(Ceratophyllus acutus),** deer fly **(Crysons discalis),** rabbit louse **(Hemoddipsus ventricosus),** and the rabbit tick **(Haemaphysalis leporis-palustris).** The rabbit tick is of importance because of its wide distribution and the fact that snowshoe, jack, and cottontail rabbits are susceptible to tularaemia and therefore serve as reservoirs of infection.

Tick paralysis in British Columbia is essentially a disease of the early spring. Occasionally it occurs as early as the latter part of February, is common in March and April, and is rarely seen after the middle of May. The disease is confined to those sections in which the tick is found, that is over the drier sections of the southeastern part of the province, the furthest point north being about 100 miles north of Kamloops.

Children and sheep are chiefly affected, but cases have occurred in cattle, dogs, and adult men.

Symptoms in sheep are: Restlessness, staggering gait, later falls and cannot rise but struggles; as paralysis advances, struggles cease. Eyes bright and no elevation of temperature. Animals paralysed on an average about two days. The onset is sudden, and in some cases a sheep apparently well may an hour later be staggering, twenty minutes later be completely paralysed, and two hours later be on its feet again. Death may occur.

Treatment consists in removing rapidly gorging females, which will be found chiefly about the head, neck and within a few inches of the spine; the region above the hocks and knees should also be examined.

Recovery usually takes place in about four hours.

The symptoms in man are as follows: Onset sudden, has difficulty in walking, and in a few hours may be unable to stand. The hands and arms are affected next. There may be difficulty in swallowing and in articulation; it may be impossible to protrude the tongue, or, if protruding to withdraw it. Mucus may collect in the throat with apparent choking, but vomiting does not occur as a rule. Constitutional symptoms are slight; there may be some restlessness in the early stages and complaints of feeling "a bit seedy." In one case in an adult he described his condition as resembling that of being partially "drunk." There is no pain, the temperature is usually normal, and the pulse may be normal or faster than usual. The special senses are not involved.

The time elapsing from beginning of symptoms to complete paralysis, and even death, may be less than two days, but is usually from three to five. The chances of recovery are favourable if paralysis has not progressed so far as to effect the heart or respiration. At least two fatal cases have occurred this year in children, and it is regrettable that such should occur in view of the well marked symptoms and the simplicity of treatment, which consist in removing the tick. Usually only one tick is present in such cases, and it is generally situated around the nape of the neck; it may, however, be elsewhere. In our experience such a tick is always a rapidly gorging female, which, having increased in weight some five to six hundred times, is now about the size of a bean, bluish in colour and comparatively easily found. Improvement is rapid once the tick is removed. In removing, care should be exercised that the capitulum (false head) is not left in the skin, as it is liable to set up a pruritis that may last for months; indolent ulcers or abscesses may also form. If there is any doubt, it is advisable to nip off a small piece of skin with sharp scissors. Ticks may be induced to let go by covering them with any oil or grease, which has the effect of blocking their breathing apparatus, situated just back of the fourth pair of legs. A drop of chloroform is also effective, and touching with the hot end of a cigarette may cause them to let go.

The cause of tick paralysis is not known, but the negative inoculations, lack of fever, and rapid recovery are against infection. It is thought that when gorging rapidly a toxic substance is secreted in greater quantity than the body can accomodate in a given time. Where only one tick is present on a paralysed case, it will invariably be found to be a female, and with sheep, where there may be hundreds of ticks, recovery will take place if rapidly gorging females are removed and no attention be paid to the males or unengorged females.

Control measures against **D. venustus** must follow two main lines of attack: the control of the adult ticks, and of the immature forms through the rodents upon which they feed.