DEPARTMENT OF AGRICULTURE
OTTAWA
HEALTH OF ANIMALS BRANCH

BULLETIN No. 28

INFORMATION FOR FARMERS AND RANCHERS

REGARDING

TICK PARALYSIS IN BRITISH COLUMBIA

BY
E. A. BRUCE, V.S.
Animal Pathologist,
Agassiz, B.C.

1920

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TICK PARALYSIS IN BRITISH COLUMBIA

E. A. BRUCE.

In British Columbia about a dozen different kinds of ticks are found. The female of one of these ticks (*Dermacentor venustus*) may under certain conditions cause paralysis, sometimes followed by death in man and animals. Those chiefly affected are children and sheep.

The Tick.

In the first place attention is drawn to the fact that the six-legged parasites commonly found on sheep and which are usually called ticks are not ticks at all but are in reality wingless flies (*Melophagus ovinus*). It would perhaps avoid confusion if they were more generally called by another common name, that of *ked*. While the sheep ked has only six legs the tick when fully grown has eight.

The paralysis tick (*D. venustus*) in certain parts of Montana is itself affected by small parasites which it passes on to man, causing the disease known as Rocky Mountain Fever or Spotted Fever. Although we fortunately have no records of these ticks carrying Spotted Fever in British Columbia, we have a number of records of them causing paralysis in man and animals.

Paralysis is caused by the female tick when she is feeding fast, if she is sucking blood slowly paralysis does not occur. The explanation for this is not properly known, but it is assumed that when she is feeding fast a large amount of the substance she secretes to keep the blood fluid, is injected into the body in a comparatively short time. The same substance is undoubtedly secreted when she is feeding slowly, but it is not injected into the body in a sufficient amount at one time to cause trouble.

A single tick may cause paralysis or even death.

Distribution.—D. venustus is found over the greater part of south-eastern British Columbia and in the adjacent portion of southern Alberta. It is known to occur 100 miles north of Kamloops. It is occasionally found in southwestern British Columbia, but is not plentiful as wet weather is detrimental to its early stages which are passed on small animals (see under life-history).

Life-history of the Paralysis Tick (D. venustus).

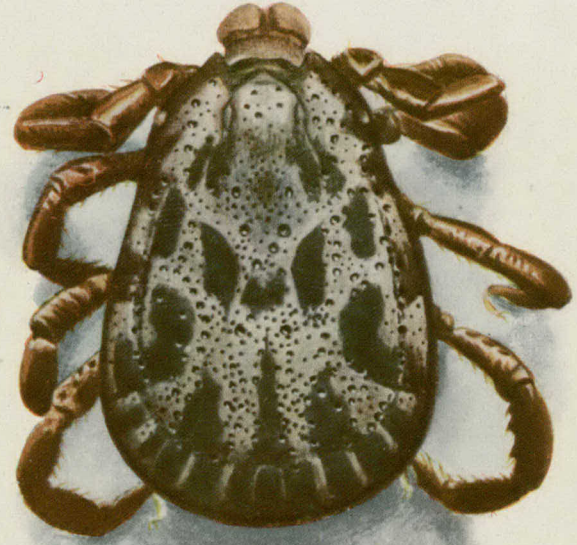
This tick appears as an adult early in the spring and attaches itself to the skin of large wild and domesticated animals and on man. The sexes mate when on the animal; the female after feeding for about seven days (sometimes more or less), and having increased five or six hundred times in weight, drops off on to the ground and lays about 4,000 eggs. After about thirty-six days the eggs hatch into minute six-legged larval or "seed" ticks.

The small larval ticks crawl up on to grass or other supports, and when the opportunity offers get on to small animals such as rabbits, squirrels, chipmunks, ground squirrels, field mice or other rodents. They remain on such an animal for about four days, drop off to the ground, moult, and after about thirty-eight days emerges as an eight-legged middle-sized tick or nymph, which is sexually immature.

The middle-sized tick or nymph attaches itself to the same kinds of small animals that the larval ticks feed on. After about seven days they drop to the ground, moult, and in about ninety days emerge as adult ticks.

Hot or cold weather influences the length of each stage; also, the length of time that the larval or nymph ticks have to wait for a suitable host may prolong the whole life-cycle.

Longevity.—Unfed larval ticks usually die in thirty days, but they may live for 117 days; unfed nymphs may live for 300 days; adults captured in the spring on vege-



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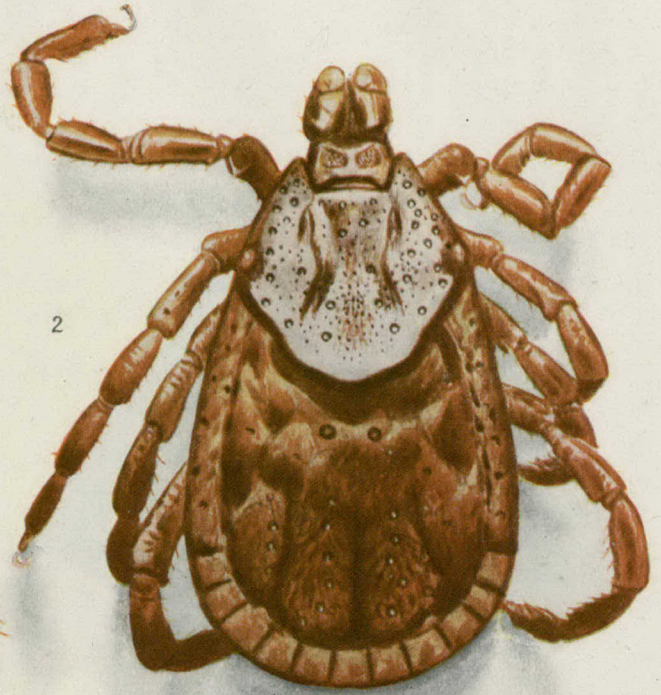

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tation have been known to survive for 413 days without feeding, and after fasting for 365 days readily attach themselves to a host. The life-cycle may be completed in sixty-eight days under most favourable circumstances, but usually two years is required, and sometimes three.

Effects of Tick Bites on Animals.

While it is possible that other species of animals may be paralysed by *D. venustus*, at present we only have definite records for dogs and sheep. The symptoms are practically similar in both animals; our remarks will therefore be confined to sheep.

The disease is seen in the early spring, and usually in dry warm locations. The first noticeable symptom is restlessness, followed by a staggering gait, the animal may bump into obstacles and fall down when trying to avoid them, a little later it falls down and can no longer rise but struggles a great deal. As paralysis advances the animal ceases to struggle. Some of these animals die, but others recover owing to the fact that the tick when fully gorged with blood falls off. Animals that recover apparently develop an immunity, that is to say they do not take the disease again or only in a mild form.

Treatment.—When only a few animals are affected the ticks may be picked off by hand. Attention should be concentrated on the large females as the males and unfed females are not causing the paralysis. Particular attention should be given to the head, neck, and along the back bone. The majority of those on the body will be found within a couple of inches of the back bone, the region just above the hocks and knees should also be examined. If the animal does not show signs of recovery by struggling in an hour or two, examine it again. In bad cases complete recovery may take some days. If a large number of animals are affected they should be dipped, if the weather will permit. The best dip for ticks is one which contains arsenic. Probably the safest method for any one not used to handling poisons is to use one of the proprietary sheep dips containing arsenic, such as Cooper's Dipping Powder, which can be readily bought and which should be used according to the maker's directions.

Ticks on Cattle and Horses.

Cattle and horses may carry the *D. venustus* tick, but the commonest tick on these animals, especially horses, is the "moose tick", *Dermacentor albipictus*. This tick is slightly larger than the paralysis tick, and is a little lighter in colour. To complete its life-cycle it only requires one host and not three as is needed with *D. venustus*. The changes from larva to nymph, and from nymph to adult take place on the same animal; the fertilized engorged female drops off in the spring to lay from 3,000 to 5,000 eggs, from which the larvæ emerge during the summer, but which do not usually attach themselves to their host until the autumn.

This tick is of some economic importance as it may be present in sufficient numbers to weaken an animal through loss of blood. Some time ago a correspondent in the Okanagan Valley who forwarded some specimens of *D. albipictus* off his horses, wrote: "I have lost about twenty head to date (March 25) through these pests; all the symptoms were alike, horses became so weak they couldn't get on their feet after laying down; seemed stiffened up behind." Similar cases have been reported from California, Montana and Oregon.

Treatment.—An arsenical dip such as Cooper's Powder as recommended for sheep will be equally effective on cattle and horses. Greasy preparations will kill ticks through blocking their breathing pores which are located near their fourth pair of legs. The following may be used: Kerosene, 10 ounces; lard, 10 ounces; pine tar, 2 ounces; sulphur, 1 ounce; or kerosene, ½ pint; linseed oil, ½ pint; sulphur, 1 ounce.

The fact that grease will kill ticks is well exemplified in examining the heavy woolled parts of a sheep, when it will be seen that a number of ticks are dead—killed by the lanolin in the wool.

Effect of Tick Bite on Man.

A number of cases of paralysis due to ticks have been seen by medical men in the interior of the province. The majority of cases occurred in children, but it has been seen in a youth of eighteen and twice in adult men.

The symptoms vary slightly in individual cases, but can be stated to be generally as follows: The patient perfectly well one day, may on the next complain of a numbness in the feet and legs and have difficulty in walking; a little later it may be impossible to stand up. The hands and arms are usually affected next. Often there is a partial paralysis of the throat muscles, there being difficulty in swallowing. The tongue is affected, there being difficulty in speaking properly; it may be impossible to protrude the tongue, or if the tongue is protruding it may be impossible to withdraw it. Constitutional symptoms are slight; there may be some restlessness in the early stages, or the patient may complain of feeling a bit seedy. There is no pain, and usually no fever, but the pulse is faster.

In two cases certain parts of the legs and arm had lost all sense of feeling, and a slight rash was seen on the chest and upper arm. Both of these symptoms are unusual.

With the exception of the two cases just mentioned it may be said that paralysis is confined to the nerves governing movement, and does not affect the special senses.

The time from the beginning of symptoms to complete paralysis and even death may be less than two days but is usually from three to five days. The chances of recovery are good if the organs of respiration or the heart are not affected.

Treatment.—Medical aid should be secured if possible. A search should be made for one or more ticks, especially around the nape of the neck, in the hair, and on the back and chest. The female tick will by this time be bluish in colour and about the size of a large bean, and should be found with comparative ease. In removing a tick care should be taken not to leave the head in the skin, otherwise it is liable to cause intense irritation, with the probable formation of an abscess or of an ulcer that is hard to heal. They may be made to lose their hold by covering them with kerosene, gasoline, oil of turpentine, or carbolized vaseline; touching with the hot end of a cigarette will also prove effective. They should be removed with a gentle pull, and if necessary the small piece of skin containing the head can be snipped off with a pair of scissors.

Eradication.

Ticks may be controlled (1) by treating affected stock with an arsenical dip which kills the ticks before egg laying begins, and (2) by destroying the small mammals upon which the young *D. venustus* ticks feed, by the use of poisoned bait or other means.

The following formula will be found effective against ground squirrels (gophers): Dissolve one teaspoonful of saccharine and one ounce of bicarbonate of soda in four quarts of water, add half a pound of gloss starch and heat the mixture until it is thick but do not cook, stirring all the time. To this solution add one ounce of powdered strychnine and mix it well. Pour this mixture over twelve quarts of whole oats or eight quarts of crushed oats, and mix it so that the grain is thoroughly covered with a poisonous coating.

About a teaspoonful of this grain should be placed in each gopher hole, and for preference on clean hard ground.

EXPLANATION OF PLATE.

Fig. 1. Male *D. venustus*, enlarged.
Fig. 1*a*. Male *D. venustus*, approximately actual size.
Fig. 2. Female *D. venustus*, enlarged (unengorged).
Fig. 2*a*. Female *D. venustus*, approximately actual size (unengorged).
Fig. 2*b*. Female *D. venustus*, approximately actual size (gorged); some specimens are slightly larger than the one shown.