

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 larvae 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, $\frac{1}{2}$ pint; linseed oil, $\frac{1}{2}$ 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.