

Normally for sheep of this age a 20-gramme dose would be recommended. Fifteen grammes were given, as these hoggets were poorly grown, and 30 grammes to determine whether the use of the larger dose would be justified by greater efficiency. No such greater efficiency was demonstrated.

The above weight differences are not significant. Soon after the completion of the trial with the spring pasture growth both groups showed a rapid improvement in condition.

Immunity in Sheep to Hæmonchus contortus.—The study of immunity to *Hæmonchus* was continued, using lambs reared under worm-free conditions. The effect of small repeated doses of infective larvæ which were begun at the age of two months was observed. At the age of eight months infected and control groups were dosed with phenothiazine and challenged with a large dose of larvæ. The infected and control lambs all developed heavy infestations, but a significant difference both in size and number of worms present in the stomach was observed.

In another trial repeated infections were continued until the age of fifteen months, when the lambs were drenched with phenothiazine and challenged with a large dose of infective larvæ. At the same time a group of three-months-old worm-free lambs were also dosed with the same number of larvæ. On post-mortem examination there were striking differences in the number and length of the worms in the infected and control sheep at fifteen months of age.

A comparison of the worm-free lambs at three months and worm-free sheep at fifteen months, after the challenge dose, showed that a smaller number of normal-sized worms was recovered from the younger animals and a large number of worms, all of which were retarded in development, was recovered from the older animals.

It is considered likely that fifteen-months-old sheep showed an age resistance (in retarded growth of the worms) and that the smaller numbers developing in the three-months-old lambs is because of the operation of some other factor. These results stress the importance of examining more than one criterion of worm resistance in trials of this nature.

The Effect of Tickicidal Sprays on the Cattle-tick, Hæmaphysalis bispinosa.—Preliminary tests of various compounds used as sprays against the adult cattle-tick were conducted in the North Auckland Peninsula. D.D.T., B.H.C., and Derris gave rapid kill, but within three days reinfestation had taken place and adults were engorging. Arsenical preparations were slower acting but gave more lasting protection. Reinfestation occurred within ten to fourteen days.

B.H.C. has the grave disadvantage that it is fat soluble and has a very persistent musty odour. For this reason its use in dairy herds and premises may result in severe tainting of cream.

BACTERIOLOGY

Salmonella Infections.—During the year an examination of organs and fæcal material submitted from cases of persistent and often fatal scouring in both cattle and fowls disclosed the presence of *Salmonella typhimurium* infection. This organism of the *Salmonella* group is one which occurs frequently in human infections and has been isolated from mortalities of ducks, pheasants, rabbits, and guinea-pigs.

Salmonella typhimurium has recently been isolated from a case in sheep involving several deaths.

Work on the role of *Salmonella cholerae suis* as a pig pathogen has been continued. Experimental results have shown that the feeding of freshly-isolated cultures or such cultures maintained in the dry state *in vacuo* may provide a reliable method of transmitting the disease to weaner piglets. Preliminary work on the possibility of establishing some degree of immunity by the use of vaccines has been begun, but for the assessment of the protective value of vaccines prolonged experimental work will be necessary.