

The cost of aerial application worked out at 7d. per acre, which compares favourably with an estimated 1s. per acre for top-dressing by hand. Aerial distribution is considered to offer a satisfactory solution to the cobalt top-dressing problems of hill-country farmers.

Copper and Molybdenum.—Experiments with calves on copper-deficient land have shown that, whereas normal growth and health are maintained by provision of copper as a drench, molybdenum drenching reduces growth rate, causes scouring, and results in a high percentage of bone fractures.

By plot experiments, suitable levels of molybdenum top-dressing have been determined to raise pasture molybdenum to levels found on some farms where peat scours is prevalent. Top-dressing has now been extended to paddock scale, and the effect on health of stock grazing molybdenum-enriched pasture will be determined and compared with natural cases of peat scours.

Attempts to control or reduce the copper storage in the sheep's liver by molybdenum feeding have not been as effective as with cattle. Trials with a number of other elements on sheep have also produced negative results.

Radio-active Tracers.—Over the past year work has been confined to preparation of facilities and collection and building of apparatus. Chemical and electrical laboratories have been set up in a detached building, and considerable progress has been made in equipping them and in instituting precautions for the protection of workers.

Equipment has been difficult to obtain, but sufficient has now been accumulated to commence investigations with radio-active cobalt, which it is hoped will lead to a better understanding of the functions of that element in ruminant metabolism.

PARASITOLOGY

Sheep-dipping Experiments.—An attempt was made last season to eradicate ticks and lice from the sheep on the Ruakura farm using a single treatment with a standard "Gammexane" preparation in a power spray unit. When the sheep were examined before treatment, ticks were present in moderate numbers, especially on the unshorn lambs. Biting lice were also present in considerable numbers on the ewes. Soon after one mob of lambs had been dipped a heavy shower of rain fell, and as the kill was unsatisfactory in this group the whole flock was redipped. The entire flock has been maintained completely isolated from all neighbouring flocks either by double fences, roads, or ditches. The flock was examined carefully at shearing-time, nine months after dipping, and no ticks were detected, but a light to moderate louse infestation was detected on a small proportion of the ewes.

A further attempt at eradication was made this season and samples of dip wash were taken at intervals during the operation. The samples are being examined by the manufacturers to determine the rate of exhaustion of the insecticide in the power spray unit for comparison with that observed in orthodox dipping-baths.

The Anthelmintic Activity of Phenothiazine Sulphoxide.—Following the demonstration of the presence of the sulphoxide as an oxidation product of phenothiazine in the gut of ruminants, a series of tests was made with this compound against certain worm parasites of sheep. The material was tested against the large stomach worm (*Hæmonchus contortus*), against which it showed an efficiency similar to that of phenothiazine itself. It also showed some action against the large bowel parasites *Chabertia ovina* and *Oesphagostomum venulosum*. This result is interesting, as the sulphoxide is the first derivative of phenothiazine, of which a large number have been tested by other workers, to show any appreciable anthelmintic activity against sheep parasites. The sulphoxide, however, possesses no advantage over phenothiazine itself and would be more expensive to produce.