

able, it is probably only partially effective against *Cooperia* and *Nematodirus*, while it is ineffective against fluke, tapeworms, whipworms, lungworms, and *Strongyloides* spp.

In horses it is highly effective against redworms (*Strongylus* and *Trichonema*), partially effective against large roundworms (*Ascaris*) and pinworms (*Oxyuris*), but is ineffective against bots and tapeworms. The drug is effective against roundworms and nodule worms in pigs, but in poultry only the caecal worm *Heterakis* is susceptible. In dogs it is practically useless.

Methods of Administration

Phenothiazine itself is a bulky, light-green or yellow powder, which is in-

soluble in water and practically tasteless. Its physical properties make it very difficult to obtain an even suspension of the powder in water, and for this reason it is generally sold mixed with a small percentage of a wetting agent. In the case of animals which are fed individually the dose can be administered mixed with the feed; with horses this proves very convenient, and most animals readily take the drug in their chaff or mash. This method should not be used where two or more animals are fed from the one manger.

Where animals are to be dosed, methods of administration differ from those used with other drenches because of the bulkiness and insolubility of the drug. It can be suspended in water to form a thin paste, which can

be delivered through a simple syringe type of instrument if the plunger is kept well oiled and cleaned regularly. Automatic guns and syringes involving the use of ball valves are unsatisfactory, because the powder causes clogging of the valves. An alternative is to use a more fluid suspension with an old-fashioned drenching funnel or bottle. Dosing with the powder or in the form of pills or capsules is possible but less satisfactory, and is more time-consuming than in liquid form.

Dose Rates

The dose rates which are recommended are as follows:—

	Grams.
Lambs—6 weeks to 5 months . . .	15
Sheep—5 months to 12 months . .	20
Sheep—Over 12 months	25
Calves—6 months to 12 months . .	25-30
Cattle—Over 12 months	30-40
Horses—6 months to 12 months . .	30-40
Horses—Over 12 months	20-30
Pigs—Up to 25 lb. liveweight . . .	5
25-50 lb.	9
50-100 lb.	12
100-200 lb.	20
Over 200 lb.	30

Animals need not be starved before or after treatment, but a short fast may ensure that the whole dose is consumed when exhibited in the feed. Doses greatly in excess of those recommended can be given without ill-effects, but care should be taken with weak and anaemic horses, as a few reports from overseas suggest that such subjects may react severely with larger doses. Repeated doses in calves and pigs may occasionally prove toxic, although such ill-effects are rare.

For a few days after dosing the urine of some animals becomes dark red when exposed to air for some minutes, due to the presence of oxidation products of phenothiazine, but, apart from a slight staining of the wool, it is of no consequence, although it may be mistaken for blood and cause some concern.

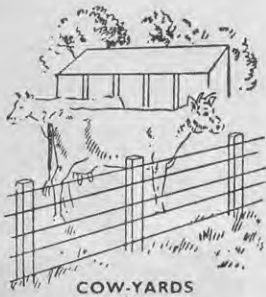
Because of its high efficiency against such a wide range of internal parasites and its wide margin of safety, phenothiazine, which is now available in New Zealand, is welcomed as one of the greatest contributions made in recent years in the field of parasite control. The present price of the drug is high, but a greater demand, manufacture on a large scale and improved methods will doubtless result in a reduction in cost and permit its more widespread use in reducing loss from internal parasitism.

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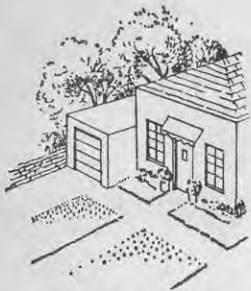
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