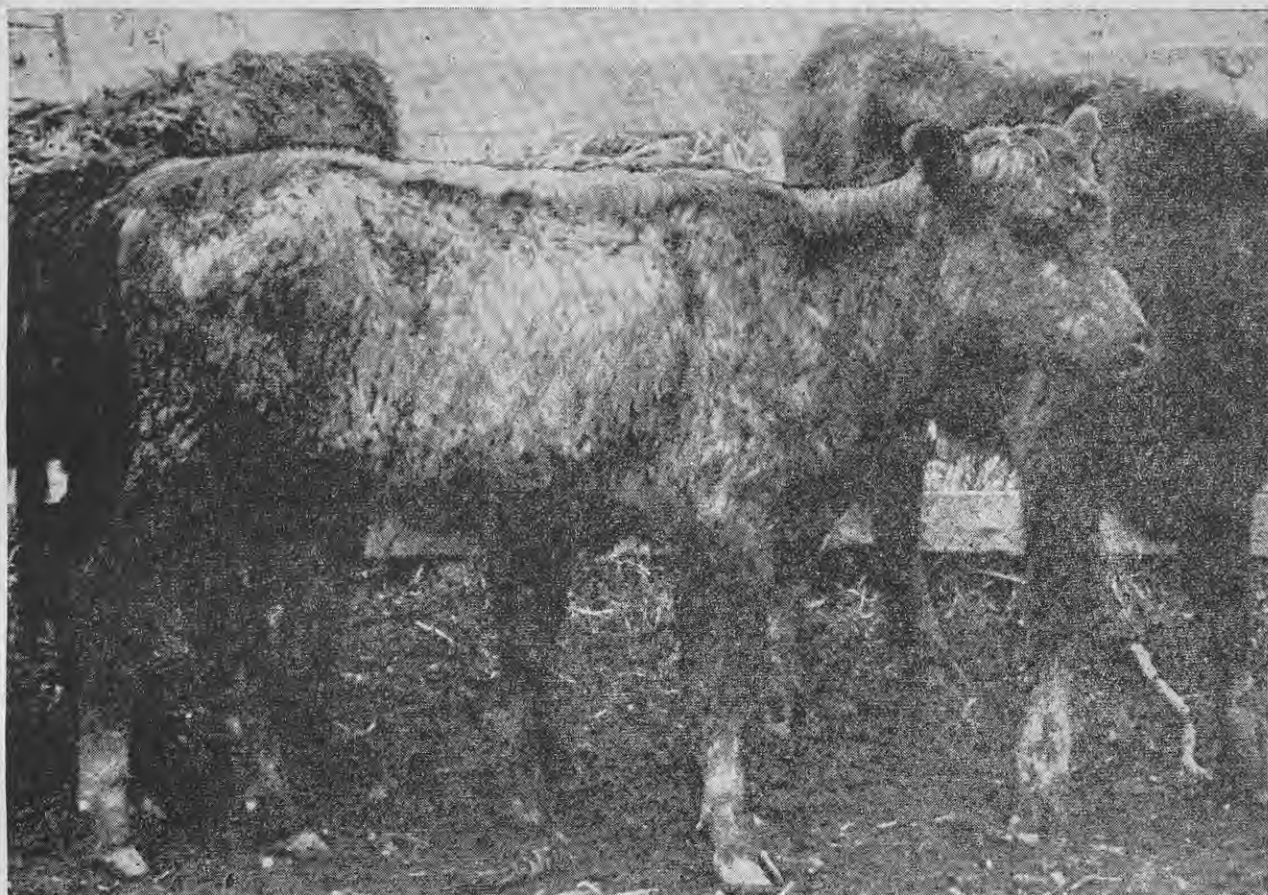


CONTROL OF MOLYBDENUM POISONING BY INJECTION OF COPPER



Severely affected animals are undersized and unthrifty and the whole coat is grey and has a lifeless look.

that would have to return the full cost of topdressing. The cost per animal that could be benefited would therefore be uneconomically high.

Licks could supply the necessary copper, but would also be expensive and would have to be put out in such a way that they were inaccessible to sheep, because a lick with sufficient copper to benefit the cattle would be dangerous for sheep.

Since neither topdressing of pastures nor provision of licks was likely to prove suitable, the possibility of con-

trol by direct treatment of animals was considered. Effective and cheap control of the disease was finally achieved by supplying copper through the injection of copper compounds.

After a number of trials, which ranged from intravenous injection of bluestone to subcutaneous placing of copper wire, the form of copper finally used was a compound known as copper glycinate, which is a blue powder containing 30 per cent. of copper. For injection into cattle the powder is suspended in a mixture of neat's-foot oil and marrow fat or of beeswax in

peanut oil and the suspension, known as copper glycinate cerate, is dispensed in small, collapsible, single-dose tubes holding about 1 c.c. The tube and its contents can be sterilised by heat when first filled and stored in this sterile state until required for use. The dose is administered by squeezing it through a hypodermic needle placed to deliver either subcutaneously or intramuscularly.

Dose

A suitable dose of copper glycinate was decided on in the following way: Measurements were first made of the proportion of the injected copper which reaches the liver. From this information, a dose was selected which would deposit in the liver about the same amount of copper as is found in normal animals. Finally the selected dose was tried in the field to learn whether it would protect susceptible animals against greying.

To measure what proportion of the dose of copper gets into the liver it is necessary to know the weight of the liver and the concentration of copper in the liver before dosing and several

TABLE I

Pasture:	Affected areas	Normal
Copper contents (parts per million in dry pasture)	7.3	10.0
	7.0	
Molybdenum content (parts per million in dry pasture)	17.5	1.5
	19.6	
Liver:		
Copper contents (parts per million in dry liver)	5.0 (adult steer)	150
	7.7 (adult cow)	
	11.9 (adult steer)	
Blood:		
Copper content (milligrams per 100 millilitres of blood)	Average 0.04 (45 animals 7-9 months old)	0.09
	Range 0.016-0.064	—
	Average 0.05 (36 animals 12-15 months old)	0.09
	Range 0.030-0.080	—