

grass instead of fresh to overcome the time growth factor. Results are still incomplete, but it appears that sheep may be able to replace cows for much digestibility work, that a saving in the quantity of feed needed may be still further reduced by feeding half rations, and that, while drying appears to lower the digestibility of pasture, the use of dried grass is still a possibility.

Improvements in drying might eliminate the reduction in digestibility, or it might be found that the reduction is a relatively constant figure for which a correction can be made.

TRACE MINERALS

Cobalt.—The present chemical method for cobalt is very slow, and an attempt is being made to perfect an improved rapid method. This involves the direct extraction of cobalt from wet digests, suitably buffered, using a-nitroso-beta-naphthol as colorimetric reagent and iso-amyl alcohol as extractant. Results so far obtained have been encouraging.

Copper.—The effectiveness of top-dressing with copper salts in the control of peat scours in dairy cattle has been further confirmed this year. Improved general health and production of cattle under observation on top-dressed farms have been maintained. The practice of top-dressing with bluestone is becoming widely established on peat-land farms, and copperized superphosphate, prepared commercially, is growing in popularity.

With collaboration from the aerodrome services of the Public Works Department, an experimental trial of aerial top-dressing with bluestone is projected. Preliminary work to find suitable diluents to promote free running of the ground bluestone has been completed and approximately 0.3 per cent. magnesium carbonate light has been found the most suitable.

While supplements of copper have effectively controlled peat scours, there is evidence that copper deficiency is not alone the cause of the disease. Experiments are being conducted to determine whether the presence of a small excess of molybdenum in the pasture is a contributing factor to the disease.

Control of enzootic ataxia in lambs is effective if ewes are placed on top-dressed pasture two months before lambing or if lambs are drenched regularly twice weekly from birth.

Chromic Oxide Method of measuring Total Dry Weight of Faeces.—The principle of this method is to dose chromic oxide each day for a period to a sheep and to calculate the total dry weight of the faeces from determination of chromic oxide in a portion of the faeces, the assumption being that chromic oxide is unaffected by passing through the alimentary tract and that consequently the whole day's output of faeces would contain, on the average, the weight of oxide in one day's dose.

The advantages of the method for field observations on appetite are obvious, since the collection of all faeces in bagging trials is extremely difficult.

It was found in the first instance that the chemical method for chromium required revision; improvements have now been effected so that the requisite degree of accuracy is obtainable.

With this new chemical method it has been shown that all the chromic oxide dosed is passed through the alimentary tract. There are no losses by absorption or by lodgment in the digestive tract. A more even distribution of chromic oxide in faeces is obtained by dosing twice daily with "explosive" capsules (containing about 10 per cent. of sodium bicarbonate). Even with these precautions, distribution is somewhat uneven and it is necessary to collect the majority of the day's excretion to get a reliable average concentration of chromic oxide.

There is some variation in day-to-day output of dry weight of faeces by sheep, and it was necessary, before the chromic oxide technique could be tried, to determine the minimum period that would give a reliable daily average. All the faeces were collected from untreated sheep each day for twenty days. An average for any six days was found to be very close to the twenty-day average.