

used in trials. Exhaustive tests are still necessary to decide the technique of using all these compounds. Many other substances were tried on ragwort, but the group of chemicals mentioned above are still the most toxic of the large number of chemicals submitted to tests and further studies of their action on ragwort, &c., is well warranted. The matter of developing a technique for the proper use of thiocyanates under varied conditions is being continued as opportunity offers.

Judging by the correspondence and the number of inquiries received during the year in connection with the weed-eradication work of this Section, it would appear that farmers are beginning to realize more fully the seriousness of the weed problem in this country, and it would seem desirable to intensify the investigation of chemical methods of weed control.

WORK FOR THE DEPARTMENTAL DIVISIONS.

Live-stock Division.—The usual periodical analyses of public cattle-dips have been carried out. Other analyses include toxicological specimens, licks, medicines, meat-marking fluids, &c.

A serious case of poisoning of horses and cows occurred near Ashburton. Unfortunately no viscera were submitted, but no poison was found in samples of chaff and sacking associated with the feeding of the animals prior to their becoming ill. However, a bottle of liquid with a leaky cork which appeared to have been lying on one side for a considerable time was found to contain large quantities of copper, antimony, and arsenic.

Samples of whey and of bitumen paint were examined in connection with a case of mortality in pigs following the installation of a storage-tank and pipe-line system for distributing whey to pig-troughs. The paint was found to contain only mineral bitumen, and no tar-products such as phenol or cresol which might have been injurious. The mortality was not considered to be due to chemical poisons.

In connection with the death of two cows in the Putaruru district associated with the use of a proprietary spray for ragwort-destruction, the spray used was found to be an arsenical one, and significant amounts of arsenic were found in the liver and abomasum contents of one of the animals.

Several stock-licks were found to contain large proportions of carbonate of lime, and attention was drawn to the undesirability of such a practice, prominent veterinary authorities considering that the neutralizing of the gastric juice by carbonate of lime would unfavourably affect the digestive processes.

A considerable amount of work was performed in connection with the selecting and development of a suitable formula for a meat-marking fluid consequent upon the change from blue to brown dye in the interests of the export frozen-meat trade. Intermittent thawing and freezing of the carcass had been found to cause the brown stamp to run. Various suggested formulae were tried out and analyses made of the unsatisfactory inks. A formula suggested by the English authorities was eventually found to be superior to those in use.

Horticulture Division.—Several selected samples both of kiln-cured and air-cured tobaccos grown in the Bay of Plenty and Nelson Districts were analysed fully. The analyses were compared with those published in other countries for various grades of leaf, and attention was drawn to directions in which the composition might be improved. Further work in this connection is contemplated.

Fields Division.—Numerous analyses of liming materials were made, particular attention being given to samples of commercial crushed limestone in connection with applications for the free-railage concession.

Samples of soil from Wharekohe Block, North Auckland, on which the owner had had very little success with market-garden crops were examined for waterproofing substances which it was thought might be causing infertility through extreme dryness of the soil. A little kauri-gum was extracted, but there was no evidence of waterproofing waxes, and it was concluded that the high lime requirement (1·2 per cent.) and acidity (pH 4·3) were probably responsible for the infertility and that liming would be highly beneficial.

Summary of samples received :—

Soils	103
Liming materials	174
Reputed fertilizers	16
Fertilizers	21
Pastures	163
Dips	36
Licks and medicines	9
Thyroids	288
Waters	33
Toxicological	23
Weed-killers	5
Limonites	24
Miscellaneous	151
Total	1,046

Approximate Cost of Paper.—Preparation, not given; printing (705 copies), £70.

By Authority: G. H. LONEY, Government Printer, Wellington.—1935.

Price 1s. 3d.]