

Attention is again drawn to certain cases where ground shells have been sold under the description "burnt shell" or "burnt lime." Samples analysed have usually contained only traces of burnt lime in the form of calcium oxide or calcium hydroxide. Evidently some heating or slight burning of the shell is practised in order to facilitate grinding, but is quite insufficient to convert the carbonate into oxide.

#### TOXICOLOGICAL.

A further case of suspected mangold poisoning of pigs has been investigated (see last annual report). The mangels consumed were found to contain nitrate equal to 0.56 per cent. of potassium nitrate and oxalate equal to 0.12 per cent. sodium oxalate. The mangels had been pitted for one week only. Post-mortem examination by the Veterinarian showed considerable amounts of blood in both sides of the heart and excess of serum in the belly cavity and chest in all cases.

Arsenic was found in appreciable amounts in specimens of the stomachs and ingesta of some eight cows believed to have been poisoned by eating vegetation in a paddock where blackberries had been sprayed with an arsenical weed-killer. Attention was drawn to the danger of carelessness in the use of such toxic materials.

In a case of mortality in calves, lead in quantity was found in the stomach contents. The animals were found to have been licking an old red-lead paint-tin.

Hedge-cuttings identified as English yew were almost certainly the cause of the death of a number of cows in the Taihape district.

Work on the toxicology of zinc in connection with suspected zinc poisoning of pigs has been continued in collaboration with Wallaceville Veterinary Laboratory. Feeding trials with young pigs under controlled conditions using pure zinc lactate showed that growth was retarded, and a characteristic "non specific" arthritis produced together with other symptoms. Analyses disclosed exceptionally high contents of zinc in the affected joints, and in liver and kidney. No significant storage of zinc occurred in the muscles. Further experiments to determine the approximate level of zinc consumption required to produce distinct effects have been commenced. An account of this work was published in the *New Zealand Journal of Agriculture* for April, 1937.

*Experimental Lead Poisoning in Rats.*—In connection with experiments carried out by the Research Officer in Animal Nutrition at Wallaceville to determine the effect on bones, teeth, and other organs of rats fed with varying levels of lead acetate, a number of analyses of rat organs for lead content were performed after the rats had been subject to post-mortem examination.

#### STOCK-LICKS, FOODS, AND MEDICINES.

Appointments of Analysts under the Stock Remedies Act have now been made.

Several pig-meals have been analysed and found to be of reasonably good composition, but priced excessively high.

A sample of cocoa-bean-husk meal for use in feeding pigs contained 0.48 per cent. of theobromine. Otherwise its composition was similar to that reported in the literature.

In connection with a proposal to import manioc-meal for pig-feeding a sample was analysed and contained 80 per cent. of carbohydrate and only 1.5 per cent. protein. It could not, therefore, replace meat-meal.

#### SAMPLES FROM FIELDS DIVISION EXPERIMENTAL TRIALS.

*Pastures.*—Regular determinations of dry weights of samples of pastures from mowing trials on limed and other plots at Ruakura have been undertaken for the Crop Experimentalist.

*Sugar-beet Trials.*—A large number of trials with different varieties of sugar beets under varying soil and climatic conditions have been laid down by the Fields Division during the past year in various parts of New Zealand suitable to this crop. To obtain the maximum amount of information from these trials it was decided to carry out a complete survey for sugar content in addition to the other data obtained by the Fields Division officers. Practically full-time services of one analyst have been made available for this work which is now in progress.

*Artificially dried Grass.*—Among other data the carotene content of samples from Ruakura farm was determined and found to range from 23.5 to 46.5 mgm. per 100 gm. dry matter.

#### MISCELLANEOUS.

Two samples of butter were submitted for official check analysis in connection with a projected prosecution under the Dairy Industries Act.

Several proprietary weed-killers have been analysed. In one case the material contained from 70 per cent. to 85 per cent. of sodium chloride, being very variable in composition, and contained only very small quantities of sodium chlorate or other chemicals generally recognized as active weed-killers.

*Borax Treatment of Lemons.*—Difficulty experienced in a lemon-curing plant owing to the formation of sludge in a borax dipping solution contained in a new concrete bath and resulting in an objectionable white deposit on the lemons was found to be due to chemical action between the hot borax solution and the cement. The flocculent white precipitate was found to consist of calcium borate plus some free boric acid. On continued use of the bath and removal of the sludge corrosion gradually ceased, but it was recommended that metal baths should be used in future installations.