

WORK FOR THE DIVISIONS.

Live-stock Division.

A good deal of work has been done in co-operation with the Live-stock Division, and the following are the more important subjects:—

Stock diseases: The investigation of soils and general assistance with the experiments at Mamaku Farm and at Glenhope (Nelson) has necessitated periodic visits to these places. The preparation of stock-licks has been carried out at the Wallaceville Laboratory, and new stock-medicines have been made up for the Pathologist there. The Chemist has arranged for the supplies of chemicals, and has supervised the making of the licks.

Sheep-dips: A few samples of sheep-dip have been analysed during the year. Advice has also been given on the question of the registration of sheep-dips, it being suggested by the Chemist that this matter should be dealt with by means of introducing a comprehensive Insecticide Act on the lines of the statutory provision in the United States. The necessity for such a law in New Zealand as will regularize the sale of sheep and cattle dips, and plant sprays and disinfectants, is continually being felt, and it would be the means of protecting the honest proprietor against fraudulent competition, as well as safeguarding the producer.

Cattle-dipping solution: In connection with the Department's efforts to control the cattle-tick in the Auckland Province, arrangements have been made with the Live-stock Division for the testing of samples, in order that the dip may be kept uniform in strength. The first sample was received on 24th January, 1920, from the Oakleigh dip. In order to make comparisons from time to time, a request has been made for a sample of the original fluid to be sent for analysis.

Stock foods and waters: Two samples of calf-foods were analysed. The first compared favourably with stock-foods previously analysed by the Department, but a second was not up to the standard of the other samples, being low in protein and containing a large amount of undigestible carbohydrate matter due to the shucks of the grain being used. Waters for stock have been analysed.

Rabbit-poisoning: Information has been collected regarding supplies of carbon bisulphide, which has been found very effective as a rabbit-poison, and an article on this subject was published in the *Journal*. The local manufacture of carbon bisulphide has been suggested, and this phase has been the subject of a report by the Chief Electrical Engineer (Mr. Birks). It is doubtful if it would pay to install a plant for making rabbit-poison alone, but if the demand could be increased for other industries the project might be feasible. One settler desired authority to experiment with poison gases to cope with the rabbit pest, but owing to the danger to human life the Department did not entertain the proposal. Inquiries are being made with a view to securing a source of cheap strychnine-supplies.

Dairy Division.

At the request of the Dairy Division arrangements have been made for the analysis of condensed milk for export, and any consignment will be analysed, thereby providing the exporter with the same quality-guarantee as is in use in the Australian States.

The testing of export butter for moisture-content has been continued during the year, thirty-seven samples having been dealt with.

The analysis of potable waters for dairy purposes has been carried out as hitherto.

Horticulture Division.

Some samples of spraying-materials, a sample of fruit-juice, and a sample of fertilizer were analysed. In addition, several samples of poisonous honey have been received for examination, but owing to the difficulty of securing sufficiently large samples little could be done in the matter. General advice as to spraying-compounds has been given from time to time as required.

TOXICOLOGICAL.

The usual lead-poisoning cases have occurred, and have been detected in specimens sent in to the Laboratory. In one cow's stomach about 3 ozs. of lead-paint was found.

Periwinkle (*Vinca major*) has been suspected of poisoning a cow driven, it is supposed, by hunger to partake of it. Periwinkle is a naturalized plant which is spreading in some parts of the country.

Another plant suspected of poisoning stock was *Ranunculus sceleratus*, the "cursed crowfoot," a well-known poisonous introduced plant common on the margins of ponds and other wet places. Buttercup-poisoning has been mentioned in the *Journal* (June, 1918, p. 325). Poisoning of stock by any of the species of *Ranunculus* is extremely difficult to establish definitely.

The medicinal value of tutin, the active principle of the tutu-plant (first isolated in this Laboratory) is being investigated by two well-known New Zealand medical men. Dr. James Macpherson has already published a paper in the *New Zealand Medical Journal*, Vol. XIX, No. 89, in which he states (p. 13), "Much fuller investigation and observations of the action of the drug are necessary, but I feel that I am warranted at this stage in recording its manifest and striking physiological actions. Based on these, I believe the drug might prove useful (1) as a heart-tonic in cases of broken compensation with œdema, (2) as a diuretic, (3) as a purgative or adjuvant to purgatives, and (4) as a general tonic."

BEET-SUGAR.

When in Christchurch in February, the Chemist was interviewed by the gentlemen who are floating a company or syndicate to establish a beet-sugar factory in Canterbury—Mr. Tulloch and Mr. Taigel (expert in beet-sugar manufacture). They were supplied with all the information published in the 1907 8-9 reports of the Chemistry Division, and the matter was discussed at length. It appears that one of the conditions insisted upon by their supporters is that the factory should be established in Canterbury. This seems to be rather unfortunate, as it may afterwards be found that Canterbury with its abnormal climate and soil is not so well adapted as some other provincial districts, notably those of Otago and Southland, where the greater rainfall, longer growing-day, deeper soil, colder