

FERTILIZERS ACT.

Only nineteen samples were sent in for analysis during the year, compared with twenty-two the previous year. The results being satisfactory there was no cause for action. The Fertilizers Act is under discussion with a view to its amendment in the direction of giving credit for insoluble phosphates (rock phosphate) according to the fineness of the grinding it has undergone.

BUTTER FOR EXPORT.

Twenty-nine samples of butter have been analysed for the Dairy Division. These were chiefly to check the amounts of water found in the butter for export by the Graders, to ensure that a butter containing more than 16 per cent. should not be exported. Where more is found the practice is now to rework the butter at the expense of the dairy company, instead of prosecuting—a distinct advance in procedure and one dispensing with the analyst's attendance at Court.

Several samples of parchment paper used for wrapping butter have been examined with a view to detect a cause for unsightly discolouration of the butter and the growth of moulds thereon. Two samples contained sugars equivalent to 10 per cent. and 6 per cent. of dextrose respectively. For further information on the subject, see the writer's "Wrapping-papers and Mouldy Butter" in the *Journal*, Vol. 5, p. 506.

MISCELLANEOUS WORK FOR THE DEPARTMENT.

Live-stock Division.—A number of patent or proprietary veterinary medicines and stock-licks have been analysed for the Director, one of which proved to be of very little value compared with the price asked. A few calf-foods were also analysed. The analysis of poultry-foods elicited some interesting information. A sample of lucerne-meal prepared by the Department for feeding to poultry contained 20 per cent. of proteids, and should prove a most valuable food. An inquiry regarding the use of acorns for feeding poultry drew the statement from the Chief Poultry Instructor that they had the effect of discolouring the yolk of eggs to a dirty greenish colour, thus diminishing the apparent market value of the eggs.

Fields Division.—A number of fertilizers used in the field experiments have been analysed. The gum of New Zealand flax (*Phormium*) has been examined with a view to determine if it could be used as an adhesive gum, with a negative result. Farmers have been advised as to the best artificial and other fertilizers to apply to their soils.

Horticulture Division.—Some waters have been examined to determine their value in making spraying-mixtures. Some proved unsuitable owing to excessive salinity.

Dairy Division.—A number of milks have been analysed for preservatives. Some samples of imported cheese were found to be preserved with boron compounds, and also gave the reaction for formaldehyde. A number of waters have been analysed to ascertain their suitability for dairy-factory purposes. With a view to ensure the supply of pepsin to dairy factories the Chemistry Section inquired as to the amount immediately available in the Dominion, and obtained as a result of these inquiries, from seven different sources, 121 lb. of pepsin preparations. As a result of co-operation with the Dairy Division the labour of testing milk and cream samples in this Laboratory has been somewhat diminished. With the consent of the Director it has been decided to discontinue the testing in this Laboratory of calibrated dairy glassware for the public.

The trouble with the corrosion of tinned iron or copper vats in dairy factories, mentioned in my last annual report, has been apparently paralleled by an instance investigated in the United States of America in roofing-material of tinned copper; and the cause has been referred to the variation in the mechanical abuse, such as scratching, to which it is subjected, and also in the uniformity of structure and thickness of the tin-coating (Technologic Paper No. 90, Bureau of Standards, Washington, U.S.A., abstr. in *J. Franklin Inst.*, 1917, Vol. 183, p. 350). This, therefore, bears out the advice given in the last report.

Publications.—Six articles have been specially written during the year for publication in the *Journal*, including one not previously mentioned, viz., "Rats and their Destruction" (March, 1917).

WORK FOR OTHER DEPARTMENTS.

Defence Department.—The examination of potable waters for the troopships has been continued, 259 samples having been tested during the past year. Connected with this Department was the experimental use of light oil as an anti-vermin dressing for soldiers' shirts for the Mayoress's patriotic workers. The first experiment was made in this Laboratory, using the fraction boiling about 200° C. distilled from tar-oil. This is proving much less costly than the preparation previously used. Whether it will prove as efficacious remains to be seen.

FOREST PRODUCTS UTILIZATION.

The question of the utilization of those forest products other than timber, such as sawdust, firewood, wood-ashes, tannins, dyes, products of destructive distillation (acetone, acetic acid, methyl-alcohol (wood-spirit), charcoal, wood-tar and its products), potash, wood-pulp, varnishes, and resins, is constantly cropping up in these days of struggle for greater national efficiency and prevention of waste. No doubt the utilization of such by-products in timber-getting would best be accomplished by the management engaged in the main industry rather than by separate organization. A more cleanly clearing of the land by the sawmiller would liberate for immediate grassing large areas which under the present system are cumbered with stumps for a number of years. It is hoped to do some systematic laboratory work on forest products during the coming spring.

STAFF.

Owing to the war considerable changes have taken place in the personnel of the junior members of the staff during the year, changes which could only be expected to be productive of inconvenience and delay. I have to express my thanks to the staff generally, and in particular to Mr. F. T. Leighton, sen., Laboratory Assistant, for the way in which the work has been carried out.