

Dietary Magnesium and Urinary Calculi.—From work with rats on low magnesium diets the interesting observation has been made that bladder and renal calculi are found in rats fed diets with high calcium content but with abnormally low magnesium content. Addition of magnesium so as to bring the content up to normal prevents the formation of these calculi.

VITAMINS.

Assays of the vitamin contents of New Zealand fish-liver oils and of pig-foods have been made in continuation of the general plan to investigate these classes of material. Results of the assay for vitamin D in livers of various fish form the subject of a paper published in the *New Zealand Journal of Science and Technology*.

The vitamin A content of meatmeal has been found to be 19 international units per gram, while that of groper-liver oil is in the region of 30,000 units per gram.

This high vitamin A potency of groper-liver oil and the high vitamin D content already mentioned show that groper-liver oil is an extremely valuable vitamin concentrate comparable with some of the halibut-liver oils. It would seem desirable to encourage the commercial development of this oil. In this connection contact has been made with an overseas firm which reports that groper-liver oil could profitably be employed in the vitamin industry. Quantities up to several thousand gallons could be absorbed annually. It seems a regrettable fact that the groper harvest is small and that it is not so organized as to enable advantage to be taken of this profitable sideline.

MISCELLANEOUS.

Analysis of pastures and of such materials as nicotine sulphate have been conducted in connection with inquiries received from field officers.

Further work has been carried out on the toxicity of smuts. Samples of smut-infected materials and of pure cultures have been supplied by the Plant Research Station, but the work has not yet reached the stage where a report can be made.

The toxicity to rats of neutral lead acetate was investigated. Amounts of $\frac{1}{2}$ per cent., 1 per cent., and $1\frac{1}{2}$ per cent. of the ration were fed for a period of six months without loss of weight or death occurring. The lead was found to be stored in liver, teeth, and bones in amounts increasing with increased percentage of lead in the diet.

PUBLICATIONS.

"The Distribution of Magnesium in the Animal Organism and the Effect of Dietary Magnesium"—I. J. Cunningham. *N.Z. Jour. of Sci. & Tech.*, 1936, 18, 419.

"Grass Staggers and Magnesium Metabolism"—I. J. Cunningham. *N.Z. Jour. of Sci. & Tech.*, 1936, 18, 424.

"Further Data on the Vitamin D Content of New Zealand Fish Liver Oils"—Marion M. Cunningham. *N.Z. Jour. of Sci. & Tech.*, 1937.

"Further Evidence of the Relation of Dietary Protein to Sterility"—I. J. Cunningham, C. S. M. Hopkirk, and Marion M. Cunningham. *N.Z. Jour. of Sci. & Tech.* (In the press).

BIOCHEMICAL LABORATORY.

Mr. S. W. Josland supplies the following sub-report:—

The volume of routine work continues to increase, the total number of specimens dealt with for the period under review being 743.

The experience in experimental procedure gained at Adelaide in 1935, and a brief period of hæmatological study with Dr. C. J. C. Britton of the Christchurch Hospital Pathological Laboratory staff, has proved invaluable in application to some of our animal-health problems in New Zealand. During the past year liaison has been established and maintained with those Cawthron Institute research workers who are engaged in animal-health problems.

The following problems have received attention:—

BUSH SICKNESS.

At Glenhope, Nelson, in co-operation with the Cawthron Institute, periodical hæmatological blood-examinations on experimental sheep are being made. From a limited number of observations it is evident that the anæmia associated with bush sickness does not appear until the condition is very advanced.

At Mamaku a comprehensive experiment has been instituted to determine the following points:—

(1) The nature of the anæmia of bush sickness.

(2) The curative efficiency of various mineral supplements.

Groups of sheep are being treated as follows:—

(a) Control group, on untreated pasture.

(b) Cobalt-drench group, 0.1 mgm. cobalt per sheep daily.

(c) Cobalt-salt lick, 1.6 drams Co. $\text{Cl}_2 \cdot 6\text{H}_2\text{O}$ per hundredweight salt.

(d) Limonite lick.

(e) Untreated animals on a paddock top-dressed with limonite.

The animals are being weighed and examined for blood histological changes at regular intervals.

In addition, sheep at Wallaceville are being fed hay from Mamaku in an endeavour to produce and study the condition under laboratory conditions.

COBALT METABOLISM.

The observation by overseas workers that the feeding of cobalt to rats produces a polycythæmia has been confirmed so far as massive doses are concerned, but in an experiment in progress where rats have been receiving 1 mgm. Co. daily each, over a period of ten months, only one out of eight receiving Co. has so far developed a polycythæmia. The reason for this unexpected result is being sought. When four healthy sheep were drenched with cobalt sulphate equivalent to 1 mgm. Co. per 200 gr. body-weight daily, only one developed a polycythæmia. Two became anæmic, while one remained unaffected.

Two hoggets drenched daily with 5 mgm. cobalt as sulphate became anæmic after a period of ten months. In all treated animals there was small but definite storage of cobalt in the organs, the organs mostly affected being the liver and the pancreas. The experiments showed that the toxicity of cobalt even in massive doses for sheep is not acute, and provided farmers keep to the small doses recommended, then no danger is likely to ensue.