

An attempt has been made to detect phyloerythrin and other photosensitizing substances at low levels in blood serum by following the destruction of ascorbic acid in serum exposed to light. The method gave promising results with phyloerythrin, hematoporphyrin, and hypericin added to serum in amounts approaching 0.05 mg. per 100 ml., but at lower levels was unreliable. Furthermore, simple practicable estimations of the ascorbic acid are liable to serious interference in the presence of bile pigments. The method has meanwhile been abandoned, but may yet prove useful in the study of those photosensitivity diseases, not associated with jaundice, in which the photodynamic agent is unknown.

*In Vitro Rose Bengale Liver Function Test.*—An attempt was made to evolve an *in vitro* rose bengale liver function test. Minced tissue in a medium containing rose bengale was agitated under oxygen + 5 per cent. carbon dioxide in a reaction flask in a modified Warburg bath. After a given period the concentration of the dye remaining in the medium was estimated spectrophotometrically. Assessment of vital activity was attempted by analysis of time-absorption curves, by comparison of liver with other tissues, by comparison of normal and pathological livers and liver of photosensitive Southdowns, and by comparison of normal and poisoned tissue from the same liver.

Inter-animal variation was about 9 per cent. for livers and 10.5 per cent. for kidneys. In any one animal, however, the greatest difference between the activities of two samples of one tissue was 1.6 per cent.

The photosensitive Southdown liver absorbed less of the dye than the average of Romney livers, but the difference was smaller than inter-animal variation in Romneys.

In the light of the most recent literature it now appears that the method estimates a preliminary physico-chemical adsorption stage and not the vital, biliary excretion stage, which is dependent on the intact liver, and in which interest lies.

*Portal Streaming.*—Examination of experimental factors in the production of portal streaming patterns by the dye-injection method showed that in rats general excitement, induction of anaesthesia, and excessive handling and cooling of the viscera are potent causes of scattering. Amyl nitrite inhalation before dye injection was found to be an effective preventative. Adrenalectomy, while reducing the effect, was not as reliable.

*Japanese Millet Photosensitivity.*—Seven cases of photosensitization developed in 76 lambs grazing on Japanese millet. Van den Bergh reactions were all negative. Three lambs were killed and histological examination showed slight but definite changes, consisting mainly of oedema in the portal tracts associated with some degree of hypercellularity and swelling of ductule epithelium.

*Hogget Mortalities in South Otago and Southland.*—The collection of data on hogget losses in this district by issue of a questionnaire formed the basis for intensified controlled vaccination trials. Closer contact was obtained by field work and by carrying out some of the laboratory work in premises made available by the Clutha Veterinary Club.

Controlled vaccination experiments covered 6,580 hoggets on sixteen properties, and the vaccines used were *Clostridium chauvoei* and *Cl. welchii* anacultures singly or combined. Losses were lower than usual in the experimental flocks and the results of the work were therefore inconclusive. In forty-eight outbreaks on other farms losses were caused by *Cl. chauvoei* and *Cl. welchii*, type D.

*Clostridium Welchii Types.*—During the investigations into entero-toxaemic conditions in sheep in New Zealand during the past two years a number of strains of *Cl. welchii* have been isolated from the alimentary tracts of sheep which differed toxigenically from the more familiar pathogen, *Cl. welchii*, type D.

Whilst these *Cl. welchii* strains appeared originally to be of the "C" type, they were atypical in that whilst capable of elaborating comparatively large amounts of the delta haemolysin, the lethal toxin produced was of low concentration. Final decision on type awaits the conclusion of current studies in collaboration with Wellcome Physiological Research Laboratories, England. Investigations are continuing on the etiological significance of the organisms in ovine mortalities.