

Laboratory examination revealed a definite gram negative organism constantly present. Lesions could not, however, be set up by any experimental means with this bacterium in healthy sheep, although temperature reaction occurred. Intravenous injection produced an arthritis from which the introduced organism was recovered.

No sign of parasitic damage of the lungs was observed, nor was the organism present similar to that described in New South Wales as causative of pneumonia in sheep there.

*Arthritis and Stiffness in Lambs.*—Further spraying of docked tails of lambs with culture of a sheep strain of *Erysipelothrix rhusiopathiae* has resulted in typical post-docking stiffness at six to nine days following the operation. Also, in lambs which have been received with stiffness as a symptom following docking, *Erysipelothrix rhusiopathiae* has been recovered from joint cavities and enlarged bursae.

The organism *E. rhusiopathiae* is not at fault on every occasion where paralysis or stiffness occurs, for lambs can be found showing spinal abscesses as a result of navel or docking infection, and due to a variety of organisms. It would appear, however, that the usual temporary stiffness results from docking infection with *E. rhusiopathiae* and only a small percentage of such cases become chronically infected to show enlarged joints.

*Pulpy Kidney.*—Vaccination experiments carried out by Mr. Dayus with a formalized culture prepared at Wallaceville have again proved satisfactory for lambs when the ewe has been vaccinated prior to parturition. Preparations have therefore been made to import quantities of vaccine from the Commonwealth Serum Laboratories of Australia, the dosage to be used being 5 c.c. and 10 c.c. for adult animals. Mr. Fitch is attempting to assess the degree of immunity conferred on the ewe and the lamb by vaccination, but has met with considerable difficulty because of the few healthy mice available. Results have not yet been finalized.

*Contagious Ecthyma.*—Quantities of dried scab were prepared and sent out to the field, principally Otago, to be applied to hoggets to prevent the condition known as stomatitis. The vaccine was standardized by sheep scarification methods before being issued. The final optimum dilution was found to be 1:500 in the material issued.

*Parasites.*—Various observations were made on round worm infestation of hoggets and the effect of drenching, but as the appointment of a Parasitologist (Mr. V. G. Cole) has been made, no report will be issued on the work until the results have been confirmed by the appointee.

*Blowfly-control.*—Mr. V. G. Cole has made valuable observations on the state of Blowfly Strike in Marlborough and is to continue this investigation next spring and summer in co-operation with Dr. D. Miller, of the Cawthron Institute, who is desirous of carrying out the biological work.

*Liver-fluke.*—Mr. W. V. Macfarlane, who had been temporarily attached to Wallaceville, but who recently was permanently attached, has worked on the intermediate host of the New Zealand liver-fluke. He has demonstrated successfully by rabbit-feeding of cercariae that the intermediate host is a pulmonary snail known as *Myas ampulla*. The exact type of swamp in which this snail may live has also been defined. It seems probable that the spread of sheep liver-fluke has been limited by the inability of this snail to live in all types of swamp.

*Ragwort-feeding.*—Four sheep and one cow have been fed since August with the green and fresh leaves of the rosette stage of Ragwort (*Senecio jacobaea*). The sheep have received 1 lb. each per day and the cow 2 lb. to the end of March, without ill-effect.

The experiment is to determine whether fresh rosette stage ragwort is toxic in prolonged feeding.

*Cobalt Trials.*—In the attached report by Mr. Josland on biochemical work of the Laboratory reference to cobalt experiments will be found. In addition to his report an experiment carried out in the Arohena district of the King-country has shown very conclusively the benefit which sheep and lambs derived from drenching at three days and weekly intervals as against a monthly interval. After several deaths amongst control sheep the remainder had finally to be drenched with cobalt. This drenching had the effect of stopping the mortality and keeping the sheep alive until the end of the experiment. A report on this experiment has appeared in the departmental *Journal*.

*Enzootic Icterus.*—Further cases of this disease have been examined, particularly for the Welch type of organism. Numerous attempts have now been made to isolate *B. Welch* or its variants, or to show the presence of a toxin in the gut by mouse inoculation, but without success. It is claimed in New South Wales that a type of *B. Welchii* is responsible for the condition of hæmolysis.

#### PIG DISEASES.

Specimens received from pigs during the year have been largely from mortalities of animals of the porker stage. Sudden death in fat porkers has been found associated very frequently with serious *Salmonella* infection. In fact, *Salmonella suispestifer* would appear to be the most serious organism in swine disease in the country. Streptococci also have, on occasion, been considered to be causative of mortality, but not to the same extent as *Salmonella*.

*Zinc Poisoning.*—Following upon the finding of excess zinc in the organs of pigs which died with symptoms of unthriftiness and stiffness, feeding experiments were commenced in conjunction with the Chemistry Division using zinc lactate as the most likely zinc salt to be found in the pig's food-supply. Zinc gains entrance by way of zinc lined iron pipes which are frequently used to run skim-milk and whey to the pig-yard. The zinc lining becomes converted to zinc lactate.

Experimental groups of pigs became stiff and then seriously lame and unthrifty. Post-mortem examination showed the epiphyses of bones to be softened and the cartilage to be separating from the bone in places. There was a collection of sterile fluid in affected joints. Apparently the zinc had partly replaced calcium in the bones, leaving the bones softened and porous. Muscle insertions were found to be torn from the bone in places causing extensive hæmorrhages. An article has been published in the *Journal* on the subject.

#### POULTRY DISEASES.

The main specimens during the year were cases of coccidiosis and lymphomatosis in its various forms. Loss from these two diseases has been increasing.

*Lymphomatosis.*—Fowl paralysis and leukemia have been common in the young birds of many flocks. Following the suggestion that fowl paralysis could be passed to clean birds by inoculation, numerous attempts were made by intravenous and subcutaneous inoculation of affected nerve tissue to pass the disease on to healthy birds. Affected birds have also been kept with healthy birds, but on no occasion has any trouble been caused by experimental means.

Cultural work on leukaemic birds has yielded no definite evidence to incriminate *Salmonella* types of organisms, as was suggested by previous work in that direction.