

The following is a summary of the year's operations prepared by the Officer in Charge, Mr. C. S. M. Hopkirk, B.V.Sc. (Melbourne):—

During the year a total of 3,292 specimens of various sorts have been examined, 291 less than last year. The slight reduction in the number of specimens has been largely due to the decline of the farmers' interest in mammitis which has resulted from the smaller number who are going in for the use of proprietary vaccines. Actually the specimens have been of wider range and interest than in the preceding year.

Mammitis.—Of 1,704 samples of milk received for examination in connection with this disease 48 per cent. were found affected. A large amount of work was undertaken in the further examination of these milks, and it was found that streptococci were causative in all but five of the cases examined. In these five a bacillus was found which was capable of causing intense mammitis experimentally. This latter form of mammitis is more destructive to the quarter than the streptococcal form, but, fortunately, is not commonly met with. Experimental work on this type of the disease suggests very strongly that it is a secondary infection occurring in a quarter already affected with the streptococcal form. Experimental work on the prevention and cure of streptococcal mammitis has been carried out throughout the year. Curative measures tried included the injection of antiseptics into the udder through the teat in liquid and gaseous form, injection of antiseptic into the circulating blood, and the giving of drugs by the mouth. No good results were obtained. Preventive measures took the form of a vaccine made from streptococci isolated from cases of mammitis in the herd on which the vaccine was to be used (so-called antogenous vaccine). The field-work was carried out by Mr. Webster, Government Veterinarian, Masterton, and the results, while not yet conclusive, distinctly indicate further experiments on these lines. It must, however, be admitted that this form of vaccination has been tried here and elsewhere in the past and has not been successful as a general rule. Mr. Webster also vaccinated some affected cows in an endeavour to obtain a curative effect, but this was quite unsuccessful. In addition to this aspect of the question, we have endeavoured to discover if there is some other way by which the cow may become infected in addition to entrance of infecting germs into the teat duct. Large doses of the germ were given to the cow by drenching, by inoculating the mucous membrane of the mouth, by injecting into the blood-circulation, and also by injecting into the womb after calving, but in no case was there any degree of mammitis resulting from these experiments.

GENITAL DISEASES OF CATTLE.

Contagious Abortion.—837 blood-samples were received for testing in connection with this disease. This season there is in Wairarapa, southern Hawke's Bay, and Manawatu a total of seventy heifers carrying their first calf which are receiving repeated doses of a specially prepared vaccine against this disease. Results will not be available till August or September, but, should the method prove sufficiently efficacious to warrant it, it is hoped to extend the treatment to embrace a considerably larger number of animals next season. On the Laboratory farm we are endeavouring to raise a clean herd from the calves of our adults which are badly infected with contagious abortion. The clean animals—eight heifers carrying their first calf, and a bull—are kept in separate paddocks and never come in contact with the old herd. So far the experiment has been entirely successful. Work has also gone forward throughout the year in the way of hastening the agglutination test in the hope of giving an even more rapid service to the farmer seeking help in this connection, and in other more technical matters.

Failure of Cows to conceive.—Following on observations made last season, which seemed to indicate a connection between this state and an inflammatory condition affecting the mouth of the womb, field officers have been making special observations throughout the spring and summer. Mr. Webster, together with other officers here, has given a great deal of time and attention to this work. This officer tried the effect of swabbing the inflamed areas with various preparations, but was not able to say that definite benefit had been derived. The cases treated, however, were, in the majority, complicated by the presence of discharge, &c., in the vaginal passage, which vitiated the effect of the dressings applied. A number of swabs were taken from the vagina and the mouth of the womb in such cases, but the most careful bacteriological work at the Laboratory failed to demonstrate any organism present which could be considered as causative. It appears from the results of a large number of blood-tests that there is no connection between this condition and contagious abortion.

Tuberculosis in City Milk-supplies.—Biological tests (guinea-pig inoculations) were carried out on 202 composite milk-samples, and in only five instances was it found that tubercle bacilli were present. More samples would have been tested but that sickness broke out among the guinea-pigs, and this reduced the number available for inoculation purposes.

B.C.G. Vaccine against Tuberculosis.—This is a vaccine prepared in France, and said to prevent tuberculosis in animals and man under certain conditions. Cultures have recently been obtained from France, and calves will be tested during the coming year. It must be realized that a considerable period will elapse before anything can be said as to its efficacy.

Tumours from Stock.—145 specimens of malignant growths were received for examination during the year; 118 of those were growths known as epitheliomata, affecting the eye, vulva, or brand-mark on cattle. The remaining 27 comprised 13 varieties.

Actinomyces.—A new iodine combination for the treatment of this disease having been found highly efficacious in human medicine, the same method was tried out on affected cows. One such cow was kept at the Laboratory and given a thorough course of the treatment, but the disease progressed without check in spite of it. Cases tried by field veterinarians gave similar results. The usual treatment, however, is quite effective except in cases too far advanced.

Disinfectants.—Seventeen disinfectants were tested as to their efficiency compared with carbolic acid as a standard on behalf of the Stores Control Board.

INVESTIGATIONAL WORK IN SHEEP-DISEASES.

Contagious Ophthalmia in Sheep.—This was mentioned in the last annual report. During the season outbreaks occurred in Wairarapa and Taranaki, and further investigational work was carried out. It was possible to show definitely that the condition is contagious, but although several different organisms were grown from affected eyes none was itself capable of causing the condition. Neither were we able to demonstrate the presence of a filterable virus, but further work is necessary in this direction. The disease only exists for a brief period in late summer, and, since it attacks young sheep preferably, it would appear that some immunity is gained.

Mortality among Fat Lambs.—An investigation into this condition was carried out in Central Otago in October and November. The results have been reported in full in the April number of the Department's *Journal*.

Abortion in Ewes.—Several reports of this were received last lambing season from the Wairarapa, and work was put in hand forthwith to discover the cause. A germ was eventually isolated from an aborted lamb which it is thought may be connected with the condition, and this suspicion will be tried out during the next lambing season. The organism in question has been inoculated into three pregnant ewes to find whether abortion is actually caused.

Arthritis in Lambs.—An investigation into the cause of this condition was undertaken this season, and specimens were received from four meat-works. An organism has been isolated from these with such frequency and uniformity as to strongly suggest that it is the cause of the arthritis, and this is further borne out by the fact that arthritis can be caused in lambs by injecting this organism into the circulation. It now remains to discover how the organism gains entrance to the body before means can be taken to prevent its occurrence, and this will involve field observations rather than laboratory work.

Braxy-like Mortality among Sheep.—Further work has been done in this connection, and much evidence has been obtained suggesting that the condition may be intimately related to invasion of the sheep's liver by young liver-flukes (*Fasciola hepatica*). It appears that the young flukes, when burrowing into the liver, cause the death of small portions