There is therefore evidence to support the contention that cows once served by a bull of inferior fertility are difficult to get into calf even with a bull of proven potency.

Artificial Insemination.—Six hundred and thirty-seven cows in seven herds became available for artificial insemination, and Mr. A. L. Thompson attempted the work. A proven sire was chosen by the herd-testing association. Unfortunately, this bull injured a foot and was therefore not available for much of the work. Three other bulls were used. The percentage of conception was 31·6 per cent., ranging from 21·6 per cent. to 43·75 per cent. Valuable experience was no doubt gained, but this second departmental trial of artificial insemination on a large scale has again demonstrated the difficulty of using bulls untrained for hand service, and the even greater difficulty of obtaining daily, over a period of three or four weeks, the required amount of semen for a round of herds. Under these conditions of bulk insemination one cannot hope to obtain the somewhat better results of insemination as practised in continental countries, where cows are not required to calve on a given day of the year and where bulls are trained to lead and serve on the halter.

Bull-feeding Experiment at Ruakura.—This experiment, in which twenty-four bulls have been split up into four groups, is continuing, but many difficulties are being encountered. The control of the animals for semen-examination is difficult, and the training of the bull in the use of a dummy has not been possible. Consequently, seminal fluid is got by the Cambridge method.

Temperatures have been taken daily, but no difference in body-temperature could be noted between the groups.

Body-weight has varied considerably because of the difference in breeds. The semen-samples have been taken and observed by Mr. Thompson, and tests were made for motility, colour, density, pH, and morphology. At the present time the bulls vary more within the group than between groups, probably because of breed differences. However, the bulls are still very young and no conclusion can be arrived at for at least another year.

Because of the many difficulties to be overcome in handling twenty-four full-grown bulls of varying temperament, and the cost of attendance and feeding, the whole experiment may require modification.

Survey of Sterility.—Mr. Thompson is attempting a survey of the position regarding sterility in dairy herds of the Waikato. In general, he finds on normal farms that the plane of nutrition of bulls is high, the numbers in use satisfactory, while abortion in herds is low.

Dietary protein and sterility work carried out by Dr. I. J. Cunningham has been reported upon by him as follows :—

"*Male Rats.*—Some anomalous results have been obtained in the production of sterility in male rats. It was previously the experience that maize rations always produced sterile rats, but, more recently, it has been found that this is not invariably the case. Different varieties of maize are being tested to determine whether there is any difference between varieties in respect to their capacity to produce sterility.

"*Pig-feeding Experiment.*—Male sterility, judged by breeding tests and by examination of semen, has been produced in pigs fed a ration containing biologically poor protein. The histological examination of testes taken from sterile pigs, showed similar degeneration to that observed in rats under similar feeding conditions. The interesting feature is that the work first performed on rats has been repeated in pigs.

"*Females.*—The investigation of the relation of dietary protein to ovulation in the female has been suspended temporarily owing to pressure of other work."

Trichomoniasis.—One further herd has been found affected with *Trichomoniasis.* This is a herd of seventy-five head served by one bull, and ten cows have so far been found affected.

Collection of material from various herds for examination for *Trichomonads* has not shown the presence of the parasite. Over a three-year observation in the Waikato four herds have shown infection, so that the position cannot be regarded as serious. Effective treatment to diseased cows and useful advice to owners has been given by Mr. Blake.

Grass Staggers.—It was hoped to perform an experiment on a susceptible farm in the Waikato district to determine more exactly the prophylactic action of dolomite against grass staggers. Such an experiment was performed, but it was commenced too late to give all the information desired. Two ounces of dolomite administered three times per week to cows did not sensibly increase the blood magnesium over that of controls. The experiment must be repeated before any evidence can be adduced as to prophylactic effect against grass staggers.

Work in conjunction with Massey College.—An opportunity was provided to examine the bloods of cows from two experiments run at Massey College.

Experiment 1 contrasted the performance of dairy cows grazed on perennial rye-grass alone with similar dairy cows grazed on a mixed sward of perennial rye-grass and white clover. Supplementary feeding was provided when necessary from hay and silage.

Calcium, magnesium, and phosphorus determinations were made regularly on the bloods from the experimental animals.

In the eight cows fed perennial rye-grass alone one case of grass staggers occurred and ended in death. The case was typical, showing hypomagnesæmia and the usual clinical symptoms. No other animals showed hypomagnesæmia.

No cases and no reduction in blood magnesium occurred in six animals fed perennial rye-grass and white clover.

Experiment 2 contrasted the performance of two groups of three cows fed respectively Italian rye-grass and perennial rye-grass. Unfortunately, the design of the experiment provided for alternation of feeding every twenty-eight days, so that a comparison between Italian rye-grass and perennial rye-grass was not obtained. This will be available in a new experiment to be performed in the next season.