

600 to 800 cows, the bulk of these will have been serviced before his competence is known, by which time a tremendous amount of damage may have been done.

Summing up the work on dose rate, it is considered that satisfactory field operations could be undertaken at present with a dose rate of 25 million sperms. With bulls selected for good fertility this would give a coverage of 3,000 to 3,500 doses during the first month of the breeding season, when the bulk of the herds have to be serviced. Since it has been our experience that an average wastage of 40 per cent. in available material occurs in practice, due to the varying numbers of cows in season at any one time, the effective coverage per bull may be estimated at 1,800 to 2,100 cows in one month. This estimate may be improved with further research.

(c) The Pedigree Group: In last year's report attention was drawn to the limitations of artificial insemination as a means of commercial herd improvement in New Zealand imposed by the grave shortage of fertile proven sires. In consequence, it was proposed that an attempt be made to study the possibilities of applying the method to pedigree cattle, with the object of increasing the supply of pedigree sons of proven sires, which could be used to improve commercial cattle through natural matings. The co-operation of pedigree breeders of Jerseys in the Hamilton, Cambridge, and Te Awamutu areas was enlisted and a group of 200 cows sought. Support was excellent, a total of 287 cows being mated to selected proven sires. Conception rate averaged 60 per cent. on the first insemination, and a total of 213 cows held to the bulls used. Including animals in the other groups, a total of 233 pedigree cows are in calf to proven sires. Thirty-eight breeders participated, each giving selected cows.

*Bull Fertility.*—The examination of bulls for fertility was continued during the year, 96 bulls being examined and classified as follows: good, 6; moderate, 38; unsatisfactory, 45; sterile, 7.

An experimental study of semen-production has been commenced, employing identical twin bulls. Preliminary observations of their reproductive behaviour when treated alike showed these animals to be considerably more valuable for such work than ordinary bulls. A uniformity trial to test semen-production and characteristics within and between pairs indicated that the group of five pairs of bulls employed would yield as much information as twenty-five pairs selected at random.

A comparison is being made between bulls grazed under natural conditions and those housed and given hard feed, but the results to date are of too preliminary a character to warrant publication.

*Cow Sterility.*—A preliminary field survey has been made of nine herds that had suffered varying degrees of infertility with a view to obtaining the experience necessary to permit planned experimental work next year. Reports continue to be received of early abortions characteristic of *Trychomoniasis*, but in most cases the presence of the organism has not been demonstrated. In view of the possible importance of this disease as a factor in dairy-cow sterility in New Zealand, plans have been formulated to obtain more definite information on its incidence and control.

The systematic examination of sterile cows with known breeding histories from the A.I. group has been continued and 32 animals were slaughtered for post-mortem examination.

The technical work on the project designed to study the relationship between the pituitary gland and the abnormal ovary has been completed. Preliminary analysis suggests that no gross pathological condition or abnormal histological picture exists in the anterior lobe of the pituitaries of cows suffering from ovarian cysts of either the cystic follicle or cystic *corpora lutea* type.

*Contagious Abortion.*—The results from vaccination continue to be very satisfactory. As the experimental stage has been passed, a scale of charges was fixed in collaboration with the New Zealand Dairy Board. This has not resulted in any falling off in demand for vaccination of calves during the 1947 season. The experiment with tail inoculation