

of 1 c.c. of vaccine will be completed this year, and results will be known before the commencement of vaccination in 1948.

Investigations have been conducted on the growth-inhibiting values of cattle sera against suspensions of *Brucella abortus*. In general it has been observed that the inhibitory activity of bovine sera is correlated with the agglutination titre.

Experimental studies have been directed towards improving the laboratory tests for the standardization of *Br. abortus* strain 19 vaccine. Some improvements have been effected in the routine viability counting procedures for standardization of this vaccine.

Ketosis in Dairy Cattle.—Field surveys in the Waikato during the spring of 1945 revealed that ketosis as a separate disease entity was relatively uncommon, whereas it was quite common as a complication of grass-staggers.

During the spring of this year the intensive study of the environmental factors was continued on two farms in the Morrinsville district where ketosis is usually common and, for comparison, on two neighbouring farms where the disease usually does not occur. It appears from the results of blood ketone, sugar, calcium, and magnesium determinations on a sample of cows from all four herds, both before and after calving, that the cows were in better health in the spring of 1946 than in 1945. This was also borne out by the disease incidence, there being only a few milk-fever cases in the herds usually affected by ketosis and ketosis grass-staggers. This may be explained by the different seasonal conditions. The spring of 1945 followed a very good autumn, when cows produced very heavily (Auckland average, 282 lb. of fat for the season), while the last spring was preceded by a very poor autumn (214 lb. of fat), when the cows dried off earlier than usual. Also, the spring of 1946 was poorer than in 1945, resulting in lower production again. This bears out the belief that full production is one of the factors associated with ketosis in affected herds. It is clear, however, that this is not the only factor, and that feeding and management must play a part, as, of the four herds under study, the highest producing ones are the two unaffected ones (294 lb. and 240 lb., as compared with 220 lb. and 210 lb. for 1945-46). While it is difficult to evaluate exactly all the effects of the various factors in the complex mechanism included under feeding and management, two main ideas have emerged. The feeding of about 7 cwt. to 10 cwt. of good hay per milker from early June to late September, together with the use of rationed autumn-saved pasture over the same period, provides a good foundation for calving and early lactation. A large proportion of short, young pasture in the diet with only 3 cwt. to 4 cwt. of hay per cow is a risky diet and, given a flush of early spring growth, one that will predispose cows to ketosis and grass-staggers or the two together.

Ketosis: Tablet Test.—Supplies of tablets containing all the reagents for the nitro-prusside test for acetone and acetoacetic acid were made to specification by a commercial firm. Provided that the necessary precautions are taken to exclude light and air, the tablets retain their potency for over a year. Furthermore, a stale tablet is readily detected by its appearance.

The tablets have been used by Wallaceville workers and a number of field veterinarians and have proved of definite value as a field test for ketonuria in sheep and cows.

DAIRY-CATTLE BREEDING

(a) *Use of Proven Sires*.—The numbers of daughters of proven sires and sons of proven sires continue to build up. The following shows the present position:—

—			Calves.	Yearlings.	Two-year-olds.	Total.
By proven sires	..	..	57	58	38	153
By sons	..	..	5	1	12	18
Totals	..	..	62	59	50	171