

Figures for the production of the first crop will be available for next year's report.

(b) *Identical twins*.—The number, age, and sex of identical twins at present in use at Ruakura are shown below (data in "sets") :—

—				Heifers.	Bulls.	Total.
Mature	..	..	..	2	..	2
Rising three years	..	..	..	13	5	18
Rising two years	..	..	..	27	5	32
Rising one year	..	..	..	30	5	35
Totals	..	..	..	72	15	87

The uniformity trial with the first 26 heifers reared to calving under the same conditions is nearing the end of the first production season. Of the 13 sets, one twin proved empty and another aborted, leaving 11 sets calving normally for the uniformity trial. Complete season's data are necessary before analysis can be carried out, but on production records to date it would appear that the high hopes associated with these animals will be realized and that they will prove many times more suitable for production studies with dairy cows than normal animals.

At the twin dairy, 8 sets of three-year-olds and 16 sets of two-year-olds will calve down for next season and will be available for specific production experiments.

An analysis of the growth records of 42 sets of heifer twins between the ages of four and twenty-four weeks has fully substantiated the theory as to the special suitability of identical twins for growth work. The results show that 5 sets of twins will give the same accuracy in experimental work as 40 to 50 animals chosen at random.

Data on the grazing habits of cattle have been collected from the twins. Six sets of twins have been watched once a month for twenty-four hour continuous periods since November last. The information obtained will be of use in the interpretation of experimental results from cows under grazing conditions and will link up with attempts to measure the intake of the grazing animal. The information is also of general scientific interest. Results to date are tending to show how the grazing behaviour of the cow is affected by (a) individuality, (b) productive level, (c) weather.

*Sex Determination in Cattle*.—In view of recent publicity given to an alleged method of controlling the sex of dairy calves by controlling the stage of estrus at which mating occurs, 100 cows selected from the A.I. group of 1,000 cows as having been mated either during the very late stage of estrus or just after estrus had passed were examined for the sex ratio resulting. The sex data for the calves were collected while obtaining similar information for the 1,000 cows of the group, and the collecting officer and the farmers concerned were unaware of the identity of the 100 animals concerned. Eighty-one cows of those mated very late in estrus calved to the service under investigation. The remainder proved not in calf to this service, but to a subsequent one at a normal stage of heat. Of the 81 successful matings, 38 resulted in heifer calves and 43 in bull calves, yielding a sex ratio of 113 : 100—a normal ratio for cattle. It is obvious that, as in other species, the stage of estrus does not affect the sex of cattle.

#### DAIRY COW NUTRITION

*Nutrition Experiment*.—The design of this experiment has been covered in previous reports. For convenience, results will be reported in three stages—calf, yearling, and cow :—

(a) *The Calf Stage* : Seasonal body weights of the well-reared (rotationally grazed) and poorly-reared (set-stocked) calves for the 1946-47 season are shown below :—