3. **Estimation** of the financial returns likely from the utilisation of separated milk in veal production.

Two experiments have been completed, the first with a group of 10 autumn-born calves, and the second with a group of 12 spring-born animals. Though autumn-dropped animals are not likely ever to be very important in total available numbers, their performance under hand-rearing conditions was considered likely to be similar to that of spring-born stock, and their use made it possible for the work to start several months earlier.

The autumn calves were purchased when 2 days old from a nearby town supply farmer, and the spring lot from a butterfat supply herd in which the cows were predominantly Jersey type. Most of the calves varied from light to dark brown when bought, but were uniformly black when slaughtered. A few from one herd, though by an Aberdeen Angus bull, were red at birth and did not change colour with age. All were polled.

Procedure in Trial

The aim in feeding was to keep the amount of whole milk used at a minimum and the separated milk at a maximum. Thus whole-milk feeding followed the pattern found effective in the rearing of dairy calves at Ruakura. Whole milk alone was fed for 3 weeks at the rate of 8 pints per day in 2 feeds. In the next 3 weeks this rate was tapered off and separated milk was used to replace the whole milk, until at 6 weeks only separated milk was fed. Full feeding was practised thereafter. Table 1 shows the feeding rates used.

It will be noted that an even smaller whole-milk ration was fed to spring-born calves. This was to reduce costs. Tapering off started after the first week and separated-milk feeding began 2 weeks earlier. In another experiment there has been a further reduction in feeding of whole milk, feeding of it being stopped after 4 weeks instead of 6 weeks.

All calves were allowed free access to good-quality pasture from the beginning of the experiment. Rotational grazing was practised as recommended by Ruakura in the rearing of dairy calves. The experiment terminated at 17 weeks for the autumn calves and 18 weeks for the spring calves. The animals were slaughtered and the carcasses were examined carefully for quality. A sample of 6 calves (3 of each sex) was dissected to provide data on the make-up of the carcasses.

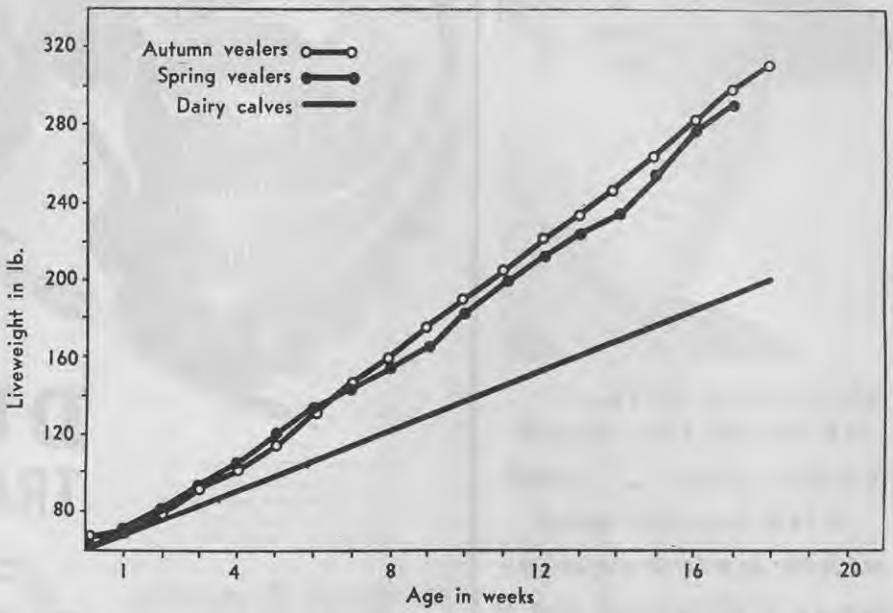

Fig. 2—Average weekly liveweight gains of autumn and spring vealers and dairy cattle.

Rate and Efficiency of Gain

All calves grew very well, making gains substantially better than very well reared Jersey calves fed similarly and rotationally grazed. Growth rates for the two groups and for straight Jerseys are shown in Fig. 2.

The crossbred calves averaged 63lb. at 2 days of age on arrival at Ruakura. This corresponds to a "birth weight" very close to that of both straight Jerseys and straight Aberdeens.

The autumn group averaged 292lb. at 17 weeks, an average weekly liveweight increase of 13½lb. The corresponding figure for the spring group was 296lb., so the weekly gain was practically the same. This group averaged 310lb. when slaughtered at 18 weeks. These growth rates are very similar to those of bust-fed straight Aberdeen Angus calves.

These gains were made on a total of 35 gallons of whole milk and 315 gallons of separated milk fed to the autumn group and 26 gallons of whole milk and 363 gallons of separated milk to the spring group. If whole milk is considered to have twice the feeding value of separated milk, the autumn group required 385 gallons of separated milk equivalent, and the spring group 415 gallons. Though the latter group were fed a week longer for a greater total gain, the efficiency of the two groups was the same. The calves of each group required an average of 16 pints of separated milk equivalent for each pound of liveweight, and 23 pints for each pound of final final dressed carcass.

The uniform behaviour of the two groups has thus justified the assumption that during hand feeding the time of birth should not materially affect performance.

TABLE 1—VEAL CALF RATIONS

Age weeks	Pints whole milk daily		Pints skimmed milk daily	
	Autumn	Spring	Autumn	Spring
0-1	8	8	—	—
1-2	8	7	—	4
2-3	8	6	—	8
3-4	8	6	4	8
4-5	4	2	12	18
5-6	4	1	16	24
6-7	—	—	24	28
7-8	—	—	28	ad lib.
8-18	—	—	ad lib.	ad lib.
Total (gallons)	35	26½	315	363

Carcass Quality

The type of animal resulting is illustrated in Fig. 3, which shows an average autumn-born calf at birth and just before slaughter at 18 weeks. It is a good-type beef-quality animal, showing marked evidence of the blockiness of the Aberdeen Angus.

The calves were slaughtered at Ruakura. The autumn group averaged 130lb. dressed weight, with a dressing-out percentage of 52. The spring group averaged 143lb., with the same dressing-out percentage. A typical carcass is shown in Fig. 4. The following is a fair summary of the average quality of the carcasses.

On a New Zealand grading basis all were in the prime class. They carried a good proportion of flesh and had light bone and no obvious waste. Despite the good grading results, however, a fair criticism was that they all had insufficient fat cover for really top-quality veal. This opinion was shared by experienced butchers.

As mentioned earlier, 6 carcasses were dissected. Carcass composition examination supported the above opinion. Fleshing was good, with an average carcass content of 70 per cent. muscle or lean meat tissue. Bone averaged 20 per cent. of the total carcass, which is reasonable for such lightweights. Fat was light at 8 per cent. Waste and dissection loss was very low at 2 per cent.

Of special interest was fat colour. In no carcass was there any evidence of yellow fat. Every carcass carried fat of a good white colour. This result is the same as that recorded at Ruakura several years ago when 20 bust-fed Aberdeen Angus-Jersey cross heavy vealers or runners were slaughtered at approximately 8 months of