

during March and part of April there usually is an autumn flush. From the middle or end of April until the middle of September there is no growth. The change then is sudden. By the beginning of October there may be ample feed for the cattle. There is a good supply of excellent artesian water. The winters are severe. Frosts are frequent and there are occasional falls of snow. Owing to this severity it is necessary to cover the cows in winter and to house them during the colder spells.

Cow Population

In the supply area there are approximately 23,000 cows. Less than half of these are milked for town supply. The latest returns show that there are 9,364 cows on 497 dairy-farms, with permanent licenses for town supply and 714 on 27 dairy-farms with temporary licenses only. The following table shows the movement on dairy-farms with permanent licenses:—

Year.	Farm Dairies.	Cows.	Year.	Farm Dairies.	Cows.
1934	.. 590	7,973	1939	.. 510	9,000
1935	.. 567	8,300	1940	.. 505	9,000
1936	.. 560	8,244	1941	.. 514	8,860
1937	.. 548	8,000	1942	.. 508	9,522
1938	.. 537	8,935	1943	.. 497	9,364

The number of temporary licenses has remained about the same during the last two or three years. It does not follow that all the cows noted in the table are regularly used for town supply. Some farmers may hold and renew their licenses and yet cease to supply the town. In Christchurch, however, probably there are not many who are in this position.

It will be noted that throughout the period from 1934 to 1943 there has been a steady decrease in the number of licensed dairy-farms and an irregular increase in the number of cows milked on such farms. The latest movement in cows is downward. The decrease in the number of licensed dairy-farms is significant. It means that fewer farmers—the fall is *one-sixth* in ten years—produce for the town. And it may at any time prove serious. Under existing conditions farmers are finding it increasingly difficult to find the labour for this work. Evidence was before the Commission of farmers who were forced to reduce their herds or who were induced by more attractive prices and conditions to use larger parts of their land for other forms of production. In an area where farmers engage in mixed farming to the extent that is common in Christchurch this movement is a relatively simple one.

Methods of Production

In the herds on the dairy-farms close to the city, Jersey, Guernsey, Shorthorn, and Ayrshire cattle are prominent, with an appreciable number of Friesians. To the north of the city, in the Rangiora district, the herds consist almost entirely of Friesians. The average production of milk per cow is high, approximately 600 gallons per annum.

The methods of replacement of cows were discussed with dairy-farmers. The best results so far as volume of milk and freedom of cattle from disease are concerned are secured by the farmers who breed their own replacements. But the majority of the farmers appear to aim at depasturing and feeding only cows that are in or about to come into milk. They sell off dry stock and purchase other cows. To some extent use appears to be made of the service of stock agents whose business is to acquaint themselves with the needs of particular farmers and buy from one and sell to another. Buying replacements at saleyards appears to be condemned by almost all competent dairy-farmers, yet it is a very general practice. The necessity of approved feeding in winter if milk is to be produced all the year round is recognized. Probably Christchurch is better situated in this respect than any of the other metropolitan areas. It produces an abundance of winter feed and it produces a better winter supply (quantity) of milk than is produced elsewhere. But there is room for improvement; and there is need for improvement if threatening dangers are to be avoided and the standard of the milk supplied is to be raised and not further lowered.

Farm Dairies

The dairies on the town-supply farms in this area may be described as of a good general standard. Taking the supply area as a whole, they probably are the best in New Zealand. Some fall short of modern standards, but many are models of construction and equipment. Before the war checked the development, new standard sheds were being erected at the rate of one per fortnight; and this had continued for several years. The result is that now in every district one may see sheds that attain a high standard and provide a stimulating example to other farmers. This development was acknowledged on all hands to be due to the activity of the officers of the Department of Agriculture. The advice and guidance of these officers was readily given and most warmly welcomed.

These dairies have the advantage of an ample supply of cold, clear artesian water. Advantage is taken of it to reduce the temperature of the milk immediately after milking down to from 60° F. to 62° F. The cooler in general use is the washboard type.

Adequacy of Supply

There is not in this area, any more than there is in any other metropolitan area, any attempt to estimate the total quantity of liquid milk required month by month by the consuming public. It is left to each of the vendors individually to secure a sufficient number of suppliers to meet that vendor's requirements. And it is left to the producer to regulate his supply to secure the best return obtainable over the whole year. The "declared quantity" contract adopted by one of the vendors does introduce the element of estimating, and in this respect is an advance on other forms of which evidence was given throughout the inquiry. But it is only an introduction; and there was no evidence in the Christchurch area, or indeed in any area, of an appreciation of the importance of estimating total requirements and of ensuring by previous planning a supply adequate to satisfy these requirements, with a margin of at least 10 per cent. to meet exceptional developments. To this failure must be attributed in no small measure the increasing dangers that threaten the town milk-supply in respect both of quantity and of quality.

The supply has been maintained better in the Christchurch area than elsewhere. But it has not always been fully maintained. During the period from 1938 to 1942 (both years inclusive) it was usual to ration school milk during the winter months. In such rationing high schools and technical schools