

SESS. II.—1884.
NEW ZEALAND.

DAIRY FACTORIES IN NEW ZEALAND

(REPORT ON).

Presented to both Houses of the General Assembly by Command of His Excellency.

REPORT BY MR. G. BOWRON, INSPECTOR OF DAIRY FACTORIES.

THE Edendale Dairy Factory, Southland, is the property of the New Zealand and Australasian Land Company. This factory is conveniently situated close to the main trunk line from Dunedin to Invercargill, and placed in the centre of a fine vale in every respect well adapted for dairy purposes. Such is the capacity of this factory that 2,000 gallons of milk may be dealt with comfortably. One-third of the milk delivered at this factory is from farmers in the district, the other portion from cows which are the property of the company. The largest supplier was Mr. James Milne, who kept from eighty to ninety cows going, and sent all their milk to the factory. From 16th October, 1883, when the company began making cheese for the season, up to the 31st May last, Mr. Milne had drawn in cash from the factory the sum of £630, or an average of nearly £7 10s. per cow. Besides bringing him in this handsome return, his cows—by no means first-class dairy animals, but a mixed lot, many of which had to be broken in—reared calves, and kept the family supplied with milk. All the work of milking and sending the milk to the factory was done by the members of Mr. Milne's own family, so that he was at no expense for extra labour. A number of other settlers in the same neighbourhood have also been supplying the factory with milk, and their returns have averaged from £6 10s. to £8 per cow for the same period. The supply of milk during the last season amounted to 134,604 gallons, and was disposed of in the following manner: 125,408 gallons were manufactured into cheese, and produced 129,255lb. Here we have a clear gain of 3,847lb. of cheese over gallons of milk delivered. In the butter department 9,129 gallons of milk produced 3,203lb. of butter. The whole season's produce was sold to merchants in Dunedin at remunerative prices: the cheese realized 5½d. per lb., the butter 1s. 3d. per lb. This season's result is not a fair criterion by which to judge the capabilities of a factory, for many of the cows were of an inferior description. The average value of each farmer's dairy cows varied considerably (from £6 10s. to £8) and thirty calves were reared with milk. Many fine pigs were fattened near the factory, and sold to bacon manufacturers in Dunedin at 5d. per lb. There is not anything connected with farm produce which pays for attention like the pig. Over £100 was paid to the railway for the transit of its goods.

Waiareka Dairy Factory, Weston, Oamaru, opened this year, considering all things has done remarkably well. The factory stands in a fine open undulating district, and in an excellent position for the delivery of milk by railroad or otherwise. Their cheese operations were continued during the winter months. The manager favoured me with the results of one month's milk. From the 12th May to the 14th June 2,752 gallons of milk were delivered at this factory, and produced 3,210lb. of cheese—458lb. of curd more than gallons of milk. The quality of milk in this district is of a superior kind. Their percentage of cream is from 10 to 16 degrees, the average during the season is 13½ degrees. The standing order of this factory is to return all milk which yields below 10 degrees. A considerable quantity of this factory's cheese has been sold in London at prices from 62s. to 66s. per cwt., which was considered satisfactory, and a large consignment is now on its way.

Temuka Dairy Factory is strong and well built, conveniently situated in a rich dairy district, with excellent roads, and a short distance from Temuka Station on the trunk line from Christchurch to Dunedin. The size and convenience of this factory is equal to the milk from 800 cows, or 1,600 gallons. Here they have an excellent cold-water refrigerator, over which the evening's milk is run into the large vats; thus the temperature is reduced in hot weather, and all undue acidity is prevented. The price which the directors pay the farmer for his milk is 4d. per 11lb., and is satisfactory to all concerned. This factory, like others, demonstrates the fact that 11lb. of milk produces 1lb. of marketable cheese, and leaves a balance in favour of the factory. A considerable quantity of cheese had been sold at 5½d. per lb. The pigs have a fine run, and had done very well.

Flemington Dairy Factory, Ashburton, has been in operation two years. Great improvements have been made upon the first year's operations. Considerable loss was sustained through not being able to deliver their cheese in London at the proper time. This year, through the excellent arrangement of the New Zealand Shipping Company's fine fleet of steamers, the cheese has been delivered in London in prime condition, and at the proper time for making the highest price. A quantity of this cheese was delivered in London last May, when it was not more than twelve weeks old. The weather was exceedingly hot when the cheese was delivered, and the only complaint was that some of the consignment of 14 tons was soft, and would not realize the price of cheese matured with age. The quantity of cheese made this year is near 50 tons; the whole was sold as it matured for safe delivery, and many applications have been made which could not be supplied. One ton of Ashburton cheese was purchased at 71s. 6d. per cwt., and placed in a prominent position in the great Health Exhibition in London. The report of the operations of Flemington Factory, as given by Mr. Harding, the manager, is interesting and instructive, and is attached.

Wanganui Dairy Factory, Okoia: Opened in January, 1884, four miles from Wanganui, and close to the railroad. The factory is a substantial brick building, with a fine supply of cold spring-water. The water-tank is cut out of the rising ground on the side of the building; one tap supplies the engine-boiler with water and every part of the building where cold water is required. The whey-tank is also placed upon rising ground, and so situated that one person could serve any quantity of pigs by the removal of a plug: this arrangement is excellent, and saves a vast amount of manual labour. The season was far advanced before they commenced operations, consequently the milk-supply was small. About 14 tons of excellent cheese have been made this season, which found a ready market at good prices—from 6d. to 8d. per lb. Only 1 ton has been sent to London, to test its value in that market as a guide for future operations. The average percentage of cream varies in this district considerably, which led to considerable discussion whether milk ought not to be valued, and paid for according to its merits. The idea seems just, but for many reasons impracticable: milk varies in quality considerably during the season.

Greytown North Dairy Factory: The present year is the second of its operations. According to reports the past has not been remunerative, nor is it possible that it ever can be a paying speculation to the shareholders, unless different arrangements are entered into with the parties who supply the milk. No fault can be found with the manager. The cheese was sound and possessed of good keeping properties, and will take a respectable position either in the colonial or London market. The quantity sent to London realized 66s. per cwt., a little over 7d. per lb. If I am correctly informed, the farmers make no conditions, saving the price of the milk. They are at perfect liberty to supply the factory when milk is plentiful and butter cheap; but, when butter rises in value and milk is richer in quality, they politely withdraw their patronage, and the factory is closed ten weeks earlier than it ought to be. In the flush of the pasture the milk is thin and will not make much more than 14oz. of cheese to 10lb. of milk; in March and April you may safely calculate upon from 17oz. to 18oz. of cheese from 10lb. of milk; so it will be seen the milk is worth considerably more at the close of the season than it is at the beginning. The whey of some factories has returned the company over £100, but the Greytown Factory made the farmers a present of this valuable commodity.

Carterton Dairy Factory has been in operation during the former part of last grass season, but closed its operations, like the Greytown Factory, ten weeks earlier than it ought to have done. To engage expensive labour, and leave little to do for the manager for part of his time, is only the road to ruin. The quality of the cheese now on hand, valued at £62, is mild and of a pleasant flavour, and would be classed with the double Gloucester in London. The factory is conveniently situated in a fine district for keeping cows: any amount of milk may be procured, and, with proper management, a splendid Cheddar cheese may be made, worth in London from £65 up to £74 per ton.

Pukekohe Dairy Factory: This is the first year of its operations. It commenced business late in the season, and closed soon. If I am correctly informed about 14 tons of cheese were made in about twelve weeks. As butter sold at 1s. 6d. per lb., it was thought prudent to close the factory and keep the milk at home. Now, this factory possesses rare advantages. It is placed in a fine district contiguous to the main line of rails and not more than thirty miles from Auckland. With such an excellent market so near, and connected with the railroad, if all energies were devoted to butter-making and pig-feeding the company would find it to suit their purpose well. Factory butter, near a busy prosperous town like Auckland, will average 1s. 2d. or 1s. 3d. per lb. the year round.

Te Awamutu Dairy Factory: This is the second year of its operations, and has been well patronised. In the prime of the season 1,500 gallons of milk have been delivered, equal to near 14cwt. of cheese per day. The quantity made is larger than any factory on the Island, and has been sold in Australia and London. The pigs at this factory are reported to have paid 200 per cent. The balance of the year is on the wrong side, but bright hopes are entertained for the future.

Paterangi Dairy Factory commenced operations this year. This is the only factory which is conducted upon the co-operative principle, and is a model for all other factories. A number of respectable farmers in this fine open district agreed to build a factory and supply the milk. The entire management is in their own hands. The milk is weighed as delivered, and placed to the farmer's account, but no price is fixed. They engage their manager, and pay all expenses connected with the factory, and the balance is divided according to the amount of milk delivered. Then they are able to determine the value of their cows. This is the sound principle upon which they commenced in America, and upon which they continue to prosper. There are now considerably over 2,500 factories in America.

Waikato Dairy Factory, Hamilton: The report of its first year's operations is now published, and is attached. The document is drawn up with great care, and may be relied upon for correctness. This factory has paid £95 for the conveyance of its cheese by railroad.

There is another dairy factory about fourteen miles from Pukekohe, the result of private enterprise. Captain Gillmore, if I am correctly informed, built the factory principally for the benefit of the neighbourhood, and paid the farmers 4d. per gallon for their milk. The results of last season's make is not known. Part of the cheese has been sent to Scotland, but a large portion went to London.

Rukuhia Dairy Factory commenced operations this season. It is situated in a fine valley about four miles from Hamilton. The racecourse was purchased and the grand stand turned into the factory. This cheese appeared to be properly manufactured, and well taken care of in the curing-room. The size and quality of the cheese were proper for the colonies, but too small for London.

Katikati Dairy Factory, Tauranga, commenced operations during the last season, but closed soon. The cheese was sent to Auckland for sale, but with what results I am not informed.

There were five private factories in operation during the last season, and some of them made excellent Cheddar cheese, equal in quality to most of the best made in Somersetshire. One factory I know had 5d. per lb. bid for their Somersetshire make, but was declined. Others were enlarging their buildings, and making great preparation for the coming season.

There are nine factories now in progress; some are completed and others in a forward state. Five are intended for cheese principally, four for butter exclusively. Feilding, Palmerston, Inglewood, and one in the Waikato district are for butter.

The factory at Geraldine is an excellent stone building, and will be ready to commence operations when the milk supply can be obtained. The district skirts a fine range of mountains, with good roads for the delivery of milk. The directors have been fortunate in obtaining a manager from England who thoroughly understands his business both in the cheese and butter departments.

Woodville is a central position (in the bush) for a factory. Suitable land was obtained, the factory built, and all near completion. Some little differences in opinion relative to the value of milk has caused a ripple on the wave. A little light upon the subject will soon put all things into a proper turn for working.

Makaraka Dairy Factory, Gisborne, will occupy a prominent position in one of the finest grazing districts in New Zealand. Twenty-seven acres have been secured: there is space for a large number of pigs, and twelve cows may be milked upon the ground.

In this district it would not be difficult to procure the milk from 800 cows; then there would be a sufficiency of milk to conduct the cheese and butter operations at the same time. The idea was suggested that this factory would make an excellent training school for young people to learn the art of making cheese and butter, with the use of the cream separator.

There are a number of factories projected, the full accounts of which are not in my possession. A milk-condensing factory is to be started soon, which cannot fail to succeed if it is properly managed. Of all the factories in England connected with dairy produce those which condense milk seem to prosper most.

There are fourteen factories which have been managed by directors during the past season, and five conducted by private gentlemen. Most of the factories only made a commencement in the way of preparing for another season. Where ten tons were made in the past, fifty will be made in the future. There will be twenty-three factories at work in the coming season, exclusive of six or seven private ones. 414 tons of cheese have been made in the factories during the late season. Twenty factories with 300 cows each will produce, on the lowest calculation, 1,000 tons: that, at the average London price (that at which Ashburton and other New Zealand cheese have been sold, viz., £65 per ton) will produce £65,000. £22,900 have been expended in buildings and plant, and over £4,000 on the purchase of land where the factories are located.

There are other important points which should not be lost sight of: that is, the amount of labour and capital which dairy factories create wherever they are planted and worked successfully. In the United Kingdom 3,600,000 cows are kept, and 180,000 families are engaged in the occupation; by their industry wealth to the amount of £40,000,000 sterling is created per annum. We have no statistics before us to show the number of hands which this industry calls to its assistance. One thing is clear, that it sets in motion almost every other branch of industry. New Zealand has an area equal to that of the United Kingdom; the soil is more productive; and the climate, for dairy purposes, second to none in the world. Every factory creates labour, and pays for it with what the cow gathers from the soil. Take one factory: they have paid for milk £1,443, and produced about forty-six tons of cheese, which sold for £2,990 sterling, leaving a balance in the hands of the directors of £1,547 to meet all contingencies. If the whole balance was paid for carriage and labour it would exert a mighty influence, and make the pulsations of national life more vigorous. America, with her factories for cheese and butter alone, attracts 5,000,000 British sovereigns every year; Holland, for butter and cheese, £4,886,989; France, for butter alone, £2,826,586; Belgium, for butter, £302,993. It would be a strange thing indeed if New Zealand, with her space and productive powers, could not put in her claim for a share of British wealth. We have only to make the prime article in butter and cheese, then no power on earth can stay the flow of gold in this direction.

About one thing there can be no two opinions: England is the market for the largest quantity of New Zealand dairy produce. The first point is to ascertain what size and quality will meet the requirements of the British market, then the factories must bend all their energies in that direction. The first is Cheddar, the size from 60lb. to 100lb. weight. Then the double Gloucester; this is a thin cheese, $4\frac{1}{2}$ inches thick, 15 inches over. This class of cheese should be made at the beginning of the season; when about eight weeks' old they could be shipped off. The next is Leicester. I have cards now from three large Leicester cheese factors who would be glad of consignments. One has shown his sincerity and faith in the scheme by sending out six Leicester vats to mould and press the cheese in. These I have sent to Ashburton Factory by way of a beginning. The moulds

or pressing vats are 6 inches deep and 17 inches over. This cheese will not be more than $4\frac{1}{2}$ inches deep when properly pressed, and the weight will be about 36lb. There are other classes which would sell, but these are the best. We need one factory where prime Stilton would be made, and these would all be sold in the colony.

There are a number of first-class cheese-makers wanted at the present time. The success or non-success of the factory depends upon the manager. He must be a man of experience, and one who is able to keep the factory books in good order. The nearest and, I had almost said, the only way to success, is for the Government to allot 1,000 acres of land and build a factory. Four hundred cows could be kept, and milk bought of farmers near. Here students would be taught cheese- and butter-making, milk-condensing, and Wiltshire bacon-curing. The four processes would all be taught at the same time. The immense advantage to the factories would be, when they required first or second hands they would be supplied with competent persons. I feel persuaded that all the factories would contribute to its support. If the land was good it would do more than pay the working expenses. The untold enduring wealth of New Zealand lies upon the surface, and the cow is the first factor in the way of securing it.

There is another point of considerable importance which every farmer ought to duly consider before he enters into the dairy project: What do I make of rearing my calves and fattening my bullocks? A calf, twelve months old, is worth 24s.; a four-year-old bullock I have seen sold for £5, and that frequently. Now calmly study facts. The farmers who supplied Edendale Factory with milk during thirty-two weeks reared a number of calves, and their milk value was £6 10s., and they do not hesitate to say their cows are of an inferior description. Take the report of the Ashburton Factory: Here the farmer received 3d. per gallon for his milk; the average quantity for each cow was 418 gallons; add to this the Sunday milk and the milk kept at home three weeks before the factory opened and six weeks after it closed, and the value of each cow was £6 18s. 6d. It would not be difficult to show that her value was not less than £7 10s. Then take the Hamilton Factory, Waikato. The factory was at work eight months, and the farmers received 4d. per gallon for their milk; in every case the value of the cow depends upon its merits as a milker, and the farmer's judgment in its selection. The average value of Captain Steele's dairy is £8 2s. 9½d.; the captain stated the value of his cows to be not less than £10. Mr. Coates, who supplied the factory with milk, received £7 7s. 2½d. He adds the Sunday milk kept at home produced butter which sold for £20; this added £1 5s. to each cow, which brought up the average to £8 12s. 2½d. Any farmer, looking at these figures, will see clearly that the most inferior cow will make more money in thirty weeks than a bullock will make in four years, at least at the prices we witnessed in Taranaki and Gisborne.

This year there has been a great demand for small huckel cheese, weighing from 10lb. to 12lb. Ashburton had many applications which could not be met. This class of cheese is for India, China, the Cape, and other warm regions.

There is another question which often crops up, but no satisfactory answer has been returned. How much cheese may we expect from 10lb. of milk? Most of the best cheese-makers in England say, when we average the season's make, we find it about 1lb. of cheese to a gallon—that is, 10lb. What are the results of experience in New Zealand? The Waikato Factory state definitely that they have made 15oz. to every gallon; Temuka have made 17½oz. from 11lb. of milk; Edendale produced 125,408 gallons of milk, and made 129,255lb. of marketable cheese: a clear gain of 3,203lb. of cheese over gallons of milk. Then Ashburton has given us a lucid statement: 10½lb. of milk produced 1lb. of sound marketable cheese. The quality of Ashburton milk is the lowest, and therefore we may infer the quantity and quality of the cheese will be the lowest. It is not so, for milk rich in butter is often poor and deficient in the properties which make cheese. The quality of the milk has more to do with the weight of cheese produced than people generally are aware of. All cheesemakers know, or should know, when white whey runs from the press there is something wrong; that not only the weight of the cheese but the riches of the curd is running to the pig-trough, and will be found in fat hogs if not in the cheese. This is a state of things to be studied and avoided. The cause of white whey is not difficult to find: inferior rennet is one cause; the state of the milk when the rennet is mixed is another cause; but the manner of handling the fine delicate slip curd for the first thirty minutes has more to do with it than any thing else. The American "agitators," in the hands of inexperienced persons, are sure to produce thick white whey. I have seen them going like the paddle-wheels of an ocean steamer, and the invariable results are loss of weight and of quality. The tender slip curd ought to be handled with great care to avoid such a result, and the injury it inflicts upon the enterprise. We must not lose sight of the fact that the milk delivered in the first three months of the season is much inferior in quality to that which is delivered in the last three months. When the cows have newly calved and give large quantities, it is poor, and 10lb. will not make more than 14oz. of cheese; in the latter part of the season the same quantity will make 18oz. The average of the Temuka Factory this season is 17½oz. to 11lb. of milk. So it is clear that, while it suits the purpose of people to sell their milk when plentiful and poor, it is a gain to them, but a great loss to the factory. Every contributor of milk ought to be an interested shareholder, and none but such should contribute. Then, connected with the withdrawal of milk, there is another serious loss: to manage 800 gallons of milk will take three men, and a strong boy to feed the pigs and assist in the factory; withdraw half of the milk after three months, the same expenses are going on as with 800 gallons; the boiler and engine require the same attention in the case of 400 gallons as 800 gallons; the former would cost 1d. per lb. to manufacture, the latter 2d. Unhesitatingly do we state, unless the farmers supply milk for the whole season, and do it honestly, no factory can prove the success which it is desirable they should.

There is another matter of considerable importance which ought not to be lost sight of, that is, keeping the cheese in the curing-room. The prevailing notion is that the longer cheese is kept the better it will be; this is a great mistake. Some cheese is matured in three months, others

in six months. The only successful plan for the New Zealand factories to adopt is to have good curing-rooms, mature the cheese by natural or artificial heat as soon as possible, and when ready to ship send them to market. From ten to twelve weeks cheese will be ready to move; some were sent at the age of five weeks, but it is exceedingly risky to do so. April, May, and June are the best months for sending cheese to London; the two former especially. All the prime cheese ought to weigh from 70lb. up to 112lb.; at the beginning and end of the season smaller cheese may be made.

The report which is now presented is far from what it ought to be or will be in coming time. When all the factories get into proper working order we shall be able to give the number of cows that supply the milk to each factory, the quantity delivered, the weight of cheese produced, and the number of pigs fattened.

In looking at the operations of the last season, and the reports published, a superficial reader would consider that the outlook for the future is not bright. We must not close our eyes to the fact that every human enterprise at the commencement has unforeseen difficulties to contend with and overcome. Nor would it be difficult to show that this was the case with cheese and butter factories in America and England; and it is clear that New Zealand factories are not exempt from the common rule—that is, having to pay for your experience. A number of factories have been erected without proper knowledge of what would be required, and this involves considerable loss. First, the best market is to be found out, then manufacture, the quality and mould, and the cheese most adapted to the said market. Many changes will have to be made this year, for London is our principal market, and small lump cheese, suitable for colonial purposes, are not the cheese for London. Cheeses from 70lb. to 80lb. are most suitable. Buildings erected without mature consideration and inexperienced managers are certain to involve considerable loss.

There is another source which materially affects the interests of the company. There are farmers who supply milk to the factories whose only interest is to get as much out of the concern as possible without taking any risk; they willingly contribute milk during the season in plenty, when butter is only 5d. per lb. and withhold it in the time when it is scarce, with butter at 1s. 6d. per lb. Even shareholders, without mature consideration, do this; they have only to weigh the consequences to be convinced of the injustice.

Butter factories, where only butter is made, have yet to be tested; but three are nearly ready to commence operations, and a fourth is progressing—Inglewood; Makino, near Feilding; Palmerston North; and Whatawhata, Waikato. For many reasons, butter factories will be found a great convenience and a benefit in localities where the farm-holdings are small and capital difficult to obtain. A small building with a cool cellar is all that is required; the plant and convenient premises may be procured for about £500. A factory large enough to take 800 gallons of milk may be erected for considerably less, if horse- or water-power is substituted in the place of steam. No doubt steam is the best for working the cream-separator. One great advantage butter factories have over those for making cheese only, is that the same amount of skill and experience is not required, and that the butter when made is at once ready for market. Another advantage in connection with butter-making is that, both in the colony and abroad, remunerative prices may be obtained for the superior qualities which the factories cannot fail to make. Sound, well-made butter, in London, never remains on hand unsold. Good brands are invariably sold to arrive; and there are, at all times and seasons in the year, thousands of anxious buyers, and never enough to supply the ever-increasing demand. Granted that the present returns for New Zealand butter from London and elsewhere are not flattering, it must be remembered that thousands of firkins were sent away which could not be sold at any price in the colonial markets. Stale, inferior butter, nine months old, was not fit for any market, much less London. Send only sound, new-made butter, such as the factories will turn out, and good remunerative prices will be returned, and a demand will grow rapidly which New Zealand will not be able to supply.

August, 1884.

GEO. BOWRON.

REPORT ON THE WORKING OF THE ASHBURTON DAIRY FACTORY DURING THE SEASON 1883 TO 1884.

The MANAGER, Ashburton Dairy Factory, to the GOVERNMENT INSPECTOR of DAIRY FACTORIES
Sir,—

Cheese Factory, Flemington, Ashburton, 22nd August, 1884.

I have the honour to submit to you the following report of the work done in the above factory during the past season. A variety of circumstances had seriously militated against our success during the preceding year, which had largely arisen from the difficulties incident to the introduction of a new business of this kind. The effect of climate on the carriage of milk, its cheese-producing qualities, and the capabilities of the pasturage, were all matters of uncertainty, which made the undertaking one of more than usual interest to all lovers of progress in the colony.

The condition and quality of the milk received has been a subject of constant study during the whole time the factory has been at work. Attention to cleanliness and purity must of necessity be among the first duties which claim the attention of a manager, and any person who endeavours to deliver skimmed or otherwise deteriorated milk not only commits an act of petty larceny, but injures his neighbours as well as the factory, and ultimately has returned upon his own head the reward of his misdeeds. For if one man successfully smuggles such in, the fact oozes out amongst the patrons, and others equally unscrupulous follow his example. The natural result, of course, is lower returns, smaller profits, and next year a lower price for the raw material. It is hardly necessary to point out that milk which has been skimmed is always more or less sour in hot weather, as it must remain sufficiently long to allow the cream to rise, thus injuring it for cheese-making on account of too great acidity, independently of the detriment which it has previously received from loss of cream.

In order that a correct idea may be gained as to the quantity of milk required to make 1lb. of curd, I have carefully noted the variations as they have occurred during the various months.

The quantities required for this purpose have been as follow: 1883—October, 9lb. 14oz.; November, 9lb. 13oz.; December, 10lb. 1884—January, 10lb.; February, 10lb.; March, 9lb. 12oz.; April, 9lb.

The average for the season has been 9lb. 12oz., whilst 10lb. 8oz. has made 1lb. of cured cheese, and our average percentage of cream is 11lb.

The following table will throw further light on this interesting subject:—

1883-84.	Milk.	Curds.	Average per cent. of Cream.
	Lb.	Lb.	Lb.
October ...	91,456	9,237	12
November ...	193,156	19,575	10
December ...	207,445	20,739	10
January ...	205,004	20,342	10
February ...	168,900	16,564	9
March ...	145,320	14,739	11
April ...	70,907	7,913	12
	1,082,188	109,109	...

The quality of the milk has varied considerably, some patrons standing high in percentage of cream, whilst others range comparatively low; but the average is higher than that of last season, as is also the quantity of cheese made from the milk. The reason I believe to be that the farmers have been more careful in the selection of their cows, and their general management both in feeding and milking. The latter is a most important point, as cows regularly and cleanly milked, at the same time being quietly handled, always yield the best results.

The following statement will give a comparative view of the profit which the farmers have received from the establishment of this business in their midst.

We have this year given 3d. per gallon of 10lb., and the prices mentioned below are based on milk supplied on those terms:—

	Number of Cows.	Total Amount Received.	Amount per Cow.	Average per cent. of Cream.
		£ s. d.	£ s. d.	
1	11	80 9 9	7 6 4	9
2	20	83 12 0	4 3 7	9
3	20	124 12 8	6 4 7 $\frac{1}{2}$	11
4	11	81 15 2	7 8 7 $\frac{3}{4}$	10
5	10	37 7 4	3 14 8 $\frac{3}{4}$	9
6	25	141 0 6	5 12 9 $\frac{3}{4}$	12
7	20	90 5 9	4 10 3 $\frac{1}{2}$	12
8	8	50 6 6	6 5 10	10
9	7	48 18 8	6 19 9 $\frac{3}{4}$	10
10	20	100 17 10	5 0 10 $\frac{3}{4}$	11
11	18	56 2 10	3 2 4 $\frac{1}{2}$	8
12	15	59 14 5	3 19 6 $\frac{3}{4}$	10
13	3	14 13 8	4 17 10	10
14	15	54 18 9	3 13 3	9
15	25	84 12 9	3 7 8 $\frac{1}{2}$	11
16	2	10 13 11	5 6 11 $\frac{1}{2}$	10
17	20	97 1 7	4 17 0	11
18	10	38 9 6	3 16 11	10
19	5	40 6 9	8 1 4	9
20	7	48 13 9	6 19 1	11
21	4	17 2 10	4 5 8	11
...	276	1,361 16 11	...	...

Average per cow, £5 4s. 6 $\frac{1}{4}$ d.

These figures show a rather small return per cow, but there are other factors in the calculation which have to be taken into account. We commenced work on the 8th October and closed on the last day of April, consequently the farmers had nearly three weeks' milk before the factory was opened, and six weeks' after we closed. I value the produce of these nine weeks at the sum of £1,

seeing that the early and late milk is much the best of the season. We also did not take the Sunday morning milk. I value this at 6d. per cow per day. The true statement then stands thus:

				£	s.	d.
Each cow has produced to the factory—						
418 gallons milk, at 3d., amounting to ...	...	...	...	5	4	6
Value of milk kept at home made into butter, say ...	...	...	...	1	0	0
28 Sunday mornings, at 6d. per milking ...	...	...	...	0	14	0
Total value per cow for the season ...				£6	18	6

The next point is cost of production:

In labour and material 1lb. of cured cheese has cost ...	...	...	...	3d.
Shrinkage, 7 per cent. ...	...	...	...	4d.
				1d.

I subjoin an epitome of the results of the season's work:

				Tons	ct.	qr.	lb.
Quantity of green cheese made ...	...	...	...	48	14	0	21
Quantity cured and sold ...	...	...	...	45	8	2	21
Shrinkage, 7 per cent. ...				3	5	2	0

9lb. 12oz. milk produced 1lb. green cheese; 10lb. 8oz. milk produced 1lb. cured cheese: cost of production, 1d. per lb. The cream has shown an average of 11 per cent. Quantity of milk per cow received at factory, 418 gallons.

This return of 418 gallons of milk per cow, as a result of seven months' work, must be considered very satisfactory, as, in the best dairy districts of England, 4cwt. of cheese per cow is a high average, and would require at least 480 gallons of milk to produce it.

We may therefore conclude that this land, with proper management and careful attention to the breed of cows, will compare favourably in the production of milk with the far-famed pastures of the lowlands of Old England.

Upwards of 30 tons of the cheese have been placed on the English markets, and has averaged £3 7s. per cwt.; the top price was £3 13s., realized in Bristol by a gentleman who bought it from the factory and consigned it himself. It is a matter of congratulation that such enterprise has been so rewarded.

As to quality, one of our latest reports cautions us to be careful how we do anything to spoil the reputation we have already obtained on the London market.

There is no doubt that, when the expenses of transit have been reduced, we shall find London a steady market for our goods, and the system of dairying in factories will be a large source of revenue to this colony.

WILLIAM HARDING,
Manager.

WAIKATO DAIRY FACTORY COMPANY.—SECOND ANNUAL MEETING OF SHAREHOLDERS.

THE second annual general meeting of the shareholders in this company was held at the registered office, the Hamilton Auction Mart, on Thursday evening, the 24th July, 1884. There were about twenty-five shareholders present, and Mr. S. T. Seddon, chairman of directors, presided.

The Chairman read the report and balance-sheet as follows:—

CHAIRMAN'S REPORT.

GENTLEMEN,—In laying before you the balance-sheet for the year ending the 30th June, 1884, the directors regret that the accounts show, on this our first year's operations, a loss of £82 6s. 5d. This loss may be accounted for as follows: (1.) Mr. Bowron and Captain Runciman, gentlemen of high authority, held that one gallon of milk would produce 1lb. of marketable cheese, and upon this assumption our calculations were based, whereas our returns show only 15oz. instead of 16oz. to the gallon. This alone causes a monetary difference in the season's operations of £144 3s. 5d. In one sale in the Queensland market this miscalculation caused us a loss of £20, but this is to some extent repaid by procuring for our cheese a good reputation in that colony, and thereby assuring for us an additional market. (2.) The want of a tenant for our surplus land caused us a loss of £50. (3.) The profit shown on our pig account has not been so much as it ought to have been by at least £100. In consequence of our farmers having given up pig-breeding the last few years, for months after the factory commenced operations a sufficient supply of young pigs of from 50lb. to 80lb. weight could not be procured, but only large low-bred animals, incapable of producing a profit by any management. A further heavy loss was occasioned by our continuing to sell our pigs by live weight after the cooler weather had set in and when our milk supply was decreasing, instead of converting it into bacon. In these two respects the directors think a large addition to our profits may be secured another year. You will be glad to hear that the quality of our cheese gives general satisfaction, and our brand is established. It is worthy of notice that during the whole season the company has paid 4d. per gallon for the milk supplied, whereas the ruling price at the other factories has been 3½d. This alone would have made a difference in the balance-sheet of £235. The directors, however, think themselves justified in continuing to pay 4d. per gallon, as they confidently see their way to show a sufficient profit without lowering the price to the producers. The management of the factory by Mr. Thomas Shipherd Runciman has given every satisfaction, and the machinery, &c., is in excellent order. It will be the duty of the shareholders to elect two directors in place of Mr. John Blair Whyte and Mr. Brown Wood, who retire agreeably with our articles of association, but are eligible for re-election. Auditors will also have to be elected for the ensuing year.

SAMUEL THOMAS SEDDON,
Chairman.

*Balance-sheet of the Waikato Cheese and Bacon Factory Company (Limited), for the Year ending
30th June, 1884.*

Profit and Loss Account.

Dr.	£	s.	d.	Cr.	£	s.	d.
To Milk, 101,131·5 gallons at 4d.	..	1,686	0 3	By Cheese .. .. .	..	1,833	18 5
Labour .. .. .	..	224	4 0	Pigs .. .. .	..	108	14 5½
Interest .. .. .	..	102	15 0	Rent .. .. .	..	17	2 0
Discount .. .. .	..	20	11 0½	Capital to balance (loss)	..	82	6 5
Insurance .. .. .	..	8	11 0				
Total .. .. .	..	£2,042	1 3½	Total .. .. .	..	£2,042	1 3½

Capital Account.

Dr.	£	s.	d.	Cr.	£	s.	d.
To Loss as per profit and loss account	..	82	6 5	By Capital .. .. .	..	2,500	0 0
Balance .. .. .	..	2,417	13 7				
Total .. .. .	..	£2,500	0 0	Total .. .. .	..	£2,500	0 0
				Balance .. .. .	..	£2,417	13 7

<i>Assets.</i>				<i>Liabilities.</i>			
	£	s.	d.		£	s.	d.
Uncalled-up capital .. .. .	..	1,250	0 0	Loan account .. .. .	..	1,000	0 0
Arrears due on calls .. .. .	..	185	4 6	Advance on London consignment of cheese	..	231	2 11
Property .. .. .	..	936	9 3	Bills payable .. .. .	..	39	11 9
Buildings .. .. .	..	577	9 4	Accounts unpaid .. .. .	..	69	5 10
Machinery .. .. .	..	723	14 5½	Bank of New Zealand overdraft	..	1,063	8 9
License .. .. .	..	2	1 8	Balance .. .. .	..	2,417	13 7
Cheese on hand .. .. .	..	856	18 8				
Pigs .. .. .	..	21	6 8				
Outstanding accounts .. .. .	..	264	15 8½				
Cash on hand .. .. .	..	2	17 7				
Total .. .. .	..	£4,820	17 10	Total .. .. .	..	£4,820	17 10
Balance .. .. .	..	£2,417	13 7				

The accounts of the Waikato Cheese and Bacon Factory Company (Limited), consisting of the profit and loss account, balance-sheet, and statement of assets and liabilities, for the year ending the 30th June, 1884, have been audited by us, and, after carefully examining and comparing with the vouchers and books of the company, we hereby certify to their correctness.

GEO. EDGECUMBE, }
ANGUS CAMPBELL, } Auditors.

The Chairman, in moving the adoption of the report, said: Gentlemen, I shall make but few remarks, because but few only are required. You are all aware that in starting any new enterprise or industry certain initial expenses have a tendency to keep down the profits. Certain information has been gained, and this has had to be paid for. You are also aware that when the company commenced operations few, if any, dairymen understood how to make cheese upon the American principle. Captain Runciman, the managing director of the company, has given much valuable time to superintending the operations of the factory, for which he accepted a very modest remuneration. This sum will not have to be paid a second year. Then, there is another item of £102 15s. for interest. On this head I think a saving of £30 a year will be effected, from the fact that part of the land has been let to a tenant for that amount. The liability of £20 11s. 0½d. for discount was incurred in paying for the milk every month, whereas the cheese was not ready for the market for several months. I think it will be well in the future to pay the supplies quarterly instead of monthly. There is just one other item to which I would direct your attention: it will be seen that the amount of outstanding accounts due the company is set down at £264 15s. 8½d; to some this may wear an ominous look, but it does not represent the true state of the case, for this reason: the accounts were made up on the 30th June, and since that time nearly the whole of the money has been paid into the company's account. Gentlemen, I have much pleasure in moving the adoption of the report.

Captain Steele: I have much pleasure in seconding the motion. I can bear out what the Chairman has said in reference to the starting of new industries. In this one especially we have had to feel our way. I do not think we have wasted any of the shareholders' money, although we have, of course, made several mistakes, which we shall not commit another year. I have taken a great interest in this matter, because of its important bearing on the interests of the settlers generally. Though there has been a loss of £82 on the transactions of the past year, I am quite satisfied that the company is going to develop into a great success. You all remember on a certain occasion when Captain Runciman delivered an address in the public hall, that he told you a gallon of milk would make 1lb. of cheese, and what a farmer might expect to make upon each cow. Returns will be presented to you which will to a certain extent bear out those remarks. The statement cannot however be regarded as a fair one as showing what can be done, most of the

cows, as you well know, having been picked up at sales, without regard to their breeding or milking qualities. I think, by careful selection and breeding, we shall soon get a class of cow that will give a fair return, and in a few years, when factories are spread over the country—I should like to see fifty of them in Waikato—we shall be able to make much more favourable arrangements for the export of our cheese, and be in a position to command outside markets. At present the rates of freight and railway charges are too high altogether, and too much is paid by way of commission. Those shareholders who have not supplied milk to the factory have not received any dividend this year, but I think everybody has got a return for his money, and a good one too. We have produced £1,800 worth of cheese, and that is so much money put into circulation. It wants careful management, and the mistakes we have committed will not be repeated. I can bear testimony to the skill and energy of the manager, and he, I am sure, has profited by the lessons of the past year. I can also bear testimony to the high qualities and industrious habits of Mr. Runciman's assistant, Mr. Allen, who has qualified himself to take the management of a factory. I have always been in the habit of visiting the factory whenever possible, and from what I have observed I can speak in the highest terms of the management. If the shareholders will only have a little patience I feel certain they will get a good return for their money.

Mr. J. J. Barugh said: I think, gentlemen, we ought to be very thankful to the directors for the way in which they have managed the business of the company. They have done very well; they have got through many and great difficulties with a comparatively slight loss of money. The expenses, as was natural, were large, and I am bound to say that I did not think we should have got through the year with so small a balance against us. In future I have no doubt our most favourable anticipations will be realized. Of one thing I am quite certain, and that is, that we could not have better management.

The motion was then put and carried unanimously.

Milk Returns.

Captain Runciman, managing director, said it would be within their recollection that he had made certain statements concerning the yield of milk per cow, &c. He now proposed to lay before them returns which would, to some extent, verify those statements. Although the results did not come up to what he had told them, they would be very instructive. What he had told them before was based partly on theory and partly on practical experience. As it had been shown, a gallon of milk produced only 15oz. instead of 16oz. of cheese, which latter amount he had produced, though the calculations might not have been strictly accurate. He would now give the meeting the bare facts about the eight months' working of the factory:—

Monthly Statement.

Month.	Number of Cows.	Number of Days.	Number of Gallon.	Number of Gallons per Cow.	At 4d. per Gallons.	Average per Cow per Month.	Showing Average Percentage.
						£ s. d.	
October	144	27	7,275	50½	At 4d.	0 16 10	13
November	233	26	13,887·7	59	"	0 19 8	15
December	273	26	17,614·5	64½	"	1 1 6	14
January	310	27	18,410	59½	"	0 19 10	14
February	314	25	15,318	48½	"	0 16 3	14
March	306	26	12,991·6	42½	"	0 14 1	14
April	283	26	10,168·6	35½	"	0 11 11	15
May	199	27	5,466	27½	"	0 9 2	19

Quantity of cheese made, 94,211lb., from 101,131 gallons milk.

THOS. S. RUNCIMAN, Manager.

JAMES RUNCIMAN, Managing Director.

The following is the individual statement:—

Name.	Number of Cows.	Number of Days.	Number of Gallons.	Amount received.	Rate per Cow.
				£ s. d.	£ s. d.
Mr. S. T. Seddon	20	208	7,076	117 18 4	5 17 11
Captain Steele	22	210	10,744	179 1 4	8 2 9½
Mr. I. Coates	15	197	6,625	110 8 4	7 7 2½
Mr. J. B. Whyte	19	195	7,876	131 5 4	6 18 2
Mr. B. Wood	20	209	7,459	124 6 4	6 4 3½
Mr. James Runciman	23	210	10,584	176 7 0	7 13 8½
Colonel De Quincy	10	210	2,922	48 14 0	4 17 4½
Waikato Land Association	39	210	15,772½	262 17 6	6 14 9½
Mr. J. J. Barugh	23	201	8,529	142 3 0	6 3 7½
Mr. J. Cochrane	10	210	3,719	61 19 8	6 3 11½
Mr. S. S. Graham	15	179	4,698	78 6 0	5 4 4½
Mr. N. I. Hunt	7	150	1,796	29 18 8	4 5 6½
Mr. A. Primrose	10	156	3,652	60 17 4	6 1 8½
Mr. W. Coop	9	136	2,192½	36 10 10	4 14 6½
Mr. A. Swarbrick	14	133	2,422	40 7 4	2 18 4½
Mr. T. Robinson	7	88	349½	5 16 6	0 16 7½
Mr. B. Coleman	12	139	2,938	48 19 0	4 1 7
Mr. R. Gillett	5	99	1,024	17 1 4	3 8 3

The percentage of cream, from 13 to 18 per cent., was very large. In America 10 or 12 per cent. was considered a very high percentage, and the result here obtained was evidence of very good pasture. The amount received per cow nearly came up to what he had told them; and this money had come out of the soil, and would not have been available but for the factory.

The Chairman said the factory was doing good in another way, by creating a demand for pigs. This demand would be regular during the summer months, and he trusted the supply would be kept up. There was no more profitable branch of farming.

Captain Steele said it would be observed that his cows had earned £8 2s. during the few months he had been supplying milk; but in addition to this he had reared most of the calves. Some of the cows had been giving milk for a month before the factory commenced operations, and some of them were still giving milk. He considered that each cow had given a return of about £10, without counting the calves. He was quite sure that 10 to 15 per cent. of the cows at present used were not dairy cows at all. What they wanted to get was a few good cows, some Ayrshire bulls, and better feed. With these there was no reason why we should not get from £10 to £12 per cow each season. They had demonstrated the fact that dairying would pay, and that, to say the least, was eminently satisfactory.

Mr. Coates said no mention had been made of the Sunday's milk, which was a very important item. He had sold £20 worth of butter made from the Sunday's milk.

Mr. Knox said it would be interesting to shareholders to know that, though there still remained some cheese in the factory, it was there only because it was not fit to be moved. They had orders for every pound. They would also be glad to learn that not a single cheese had been sent back as bad.

Captain Runciman said it was worthy of note that those suppliers who had been engaged in dairying operations before got the best returns from their cows. Many had laboured under the disadvantage of being obliged to buy cows in the open market without knowing much about their qualities. Some of his own cows, for instance, were the progeny of animals that had been in his family for twenty-five years. On the other hand, many of them had been suckling calves for years before the factory opened, and others were young and had to be broken in. All these things militated against the success of the undertaking for the first year.

Mr. Coates remarked that his cows last year calved about July and August, but of course he would see that such would not occur again.

Mr. T. G. Sandes said he had visited the factories in the district, and had taken a very deep interest in the industry, and, so far as his experience went, he could speak most highly of the management of the Waikato Factory.

Captain Steele thought the members of Parliament should be asked to urge on the Government the propriety of granting a loan for the building of factories all over the country. The local factories had already done a vast amount of good, but they ought to be able to send large monthly consignments to foreign markets, and so secure better profits. There was no reason why butter factories should not be started in the district. They could be erected and worked at a much lower cost than cheese factories, and, unlike cheese, which had to be kept some time, the butter could be sold out of hand. He hoped the business people of the district would see it to their interest to assist in the development of these industries. He would like to see them multiply everywhere, and so circulate the money.

Mr. Coates said the high rate of freights took a great deal of the profit off the cheese. The railway charge was 45s. per ton from Hamilton, and 50s. from Te Awamutu to Auckland; while the cost of sending to England was 1d. per pound.

Mr. Knox said that in the success of the factory he had been amply rewarded for any little service he might have rendered. His object, and that of his fellow-directors, had been to keep the expenditure as low as possible, and in illustration of this he would tell them how the directors put their ideas into practice. Some time ago they sent away seven tons of cheese to England. If they had had to employ labour to pack this cheese the cost would have been considerable, but the directors got together and actually made the boxes and boxed the cheese themselves.

Mr. G. French said he had heard it mooted that none but shareholders were to be allowed to supply milk. He was not a supplier himself, and had taken shares in the company with a view to push it ahead; but he thought it would be hard on small settlers who were unable to invest in shares if they were not allowed to supply milk.

Mr. Coates said very little money was required to purchase an interest in the company.

Captain Steele said the directors strongly objected to take milk from people who were in a position to buy shares but would not. It was not fair that they should, because those people wanted to get the profits without sharing the risk. No man too poor to buy shares would be excluded from the benefits of the company. The object of the directors was, if possible, to relieve people like Mr. French, who had taken shares merely from a desire to assist the enterprise, by inducing farmers to become shareholders.

On the motion of the Mayor (Mr. Peat), seconded by Mr. T. G. Sandes, a hearty vote of thanks was accorded the directors.