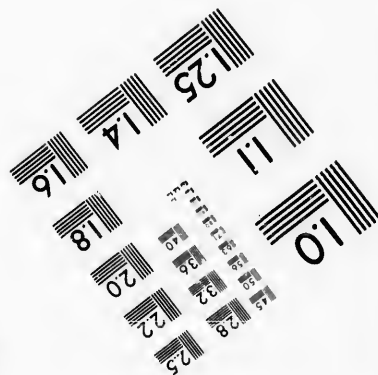
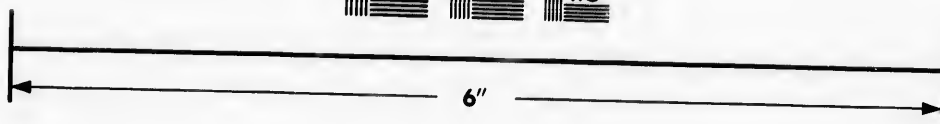
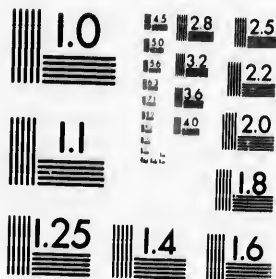


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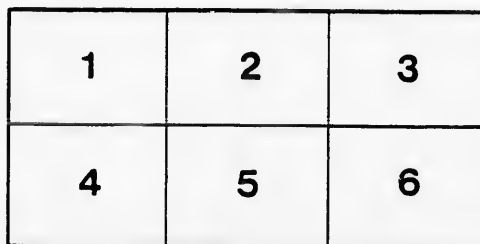
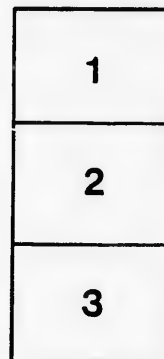
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JOHN S. PEARCE & CO.

# CREAM SEPARATORS

BUTTER AND CHEESE FACTORY PLANT.



Illustration of a Modern Private Dairy or Small Butter Factory, where our ALEXANDRA No. 3 Separator and Plant is being driven by our PATENT TRIPLEX HORSE GEAR.

**JOHN S. PEARCE & CO.,**

DEALERS IN DAIRY SUPPLIES

*Cheese Factory & Creamery Apparatus*

LONDON, ONT.


 Please hand over to some intelligent dairymen.

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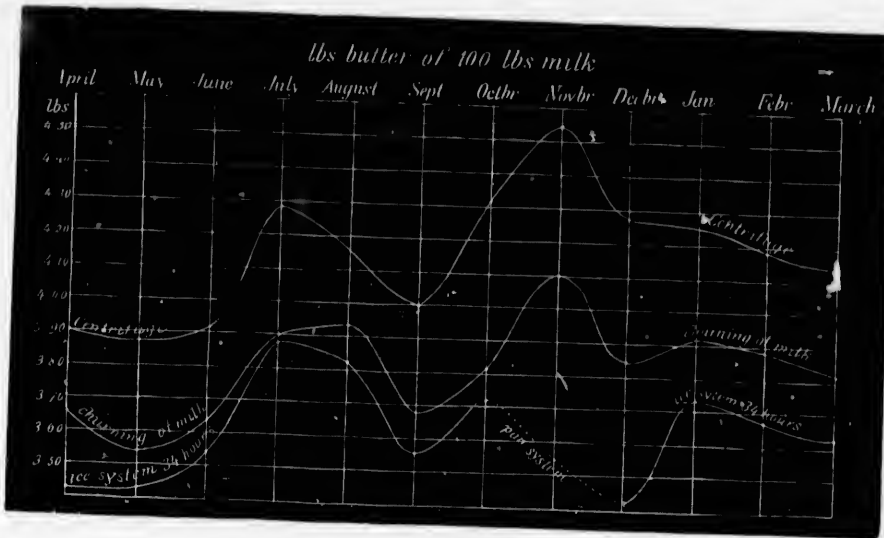
# TO CANADIAN DAIRYMEN

## THE QUESTION OF THE DAY

WHY SHOULD YOU BUY CREAM SEPARATORS?

### THE ANSWER.

WHEN separators were first introduced, rough as they were, in the typical dairy country, **Denmark**, comparative tests were made under Prof. Fjord, of the results that could be obtained with all the known methods of raising cream, — deep and shallow vessels, submerged cans, in ice or water and **Separators**. All that money, brains and science could bring forth was done, and here is the result of a year's thorough test:



Reduced to plain figures, this table reads thus :  
Table showing the quantities of Milk required to make 1 lb. of Butter by five different systems tested during the whole year

	Lbs. of Milk to lb. of Butter.		
	Average.	Minimum.	Maximum.
<b>Cream Separator</b> .....	<b>24.4</b>	<b>23.4</b>	<b>25.8</b>
Churning Whole Milk.....	26.7	25.4	28.2
Ice, 34 hours.....	27.5	25.8	29.2
Ice, 10 hours.....	29.5	27.6	31.4
Water (54½° F.) 34 hours.....	32.4	28.8	35.0

What was the result of this investigation into the merits of the new invention ?  
The Danes adopted the separators; they spread like wild fire. Butter factories were started all over the country, and the Danish export butter trade sprang up at the following wonderful rate :

During the years 1877 to 1882, <b>Denmark</b> exported.....	<b>19</b>	Millions Pounds of Butter per annum
from 1883—85 the export rose to.....	<b>26</b>	do do
in 1886 was exported.....	<b>32</b>	do do
- 1887 - - - - -	<b>abt 35</b>	do do
- 1888 - - - - -	<b>47</b>	do do
- 1889 the export is estimated at.....	<b>55</b>	do do
- 1890 - - - - -	<b>60</b>	do do

Now, with a few minutes consideration of the above cited experiments, the **increased quantity** of butter obtained, the **uniformity of results** the year round, added to what is a known fact, the **improved quality** of the product, will be found to explain this wonderful development and the **enormous sales** of separators. **Many thousands** are now in use the world over.

And you will have solved **the question of the day.**

## - - - - - BUY A SEPARATOR - - - - -

or get some one to do it, in your immediate neighbourhood.

## A BUTTER FACTORY

A butter factory is the **nee plus ultra** of agricultural pursuit and of dairying :

1. It will **raise** the standard of **quality** and **prices** in a whole section.
2. It will **centralise** the product and add **quantity to quality**, will afford **proper storage** and facilitate trade ; without it the **go between** will not be got rid of.
3. It will **insure farmers** against losses on bad butter.
4. It will leave **more elements of fertility to the soil** than any other system.
5. It will give a **long season of production** as fresh skim milk will always be available for farm uses, and will lead to **winter dairying** which pays best of all.
6. It will give every one a chance to **stock his farm** to its full capacity, because it does away with the **dairy help** question.
7. It will **place** both large and small **farmers on the same footing**, giving every one equal chances in the **struggle for life.**
8. It will bring more **ready money** to a section than any thing else,—a consequence of **quick cash sales.**
9. It will be the **most reliable source of profit.** Ups and downs of the market are not half so pronounced on creamery butter as on beef, grain, cheese, hay, horses, &c., &c., &c. Cows are the most reliable producers and the factory will give them the best backing by **making best butter at lowest cost.**
10. It will **reduce the bulky products** of the farm to their **highest, most valuable and most condensed** form,—**BUTTER**, and will put the remotest sections near the best markets by **reducing the long distance freights to their very lowest proportion.**
11. It will leave everyone's mind free for **undivided attention** to the farm, its produce finding a **ready and wealthy customer** in the cow.
12. It will **increase the value of farms**, a natural consequence of profitable factory returns which **any intending purchaser** will, with a certainty, **get just as well** as you ; A Butter-factory section is **always well quoted on the Real Estate board.**

### In what conditions will a factory be a success for all concerned.

It takes an average of 2500 lbs of milk per day for six months, to pay all expenses and interest on investment ; this will be obtained from 200 cows, at a very low estimate of production *per diem*. But the surplus milk over 3000 lbs a day will yield a nice profit.

The system on which butter factories are conducted with the greatest success is as follows :

The factory confines its business to manufacturing into butter, packed and ready for marketing, the milk delivered at the factory by the farmers. The products all belong to the farmers, who



daily get back the skim milk and butter milk, the directors or salesmen making it their business to sell the butter to wholesalers. Out of the proceeds of the sale, they pay to the factory either four cents per pound of butter, or 20 per cent of the selling price of the butter, this being the usual charge or indemnity to the factory for the making and furnishings (labor, tubs, salt, cotton, &c., &c.); and the balance of the proceeds is distributed at the *pro rata* of the milk delivered by each of the patrons.—Purchasing milk, especially at a fixed and uniform price throughout the whole season, will, as a rule, lead to failure. Farmers will readily understand that owing to the variations in market prices, no trader can afford to buy their crops at a price fixed in advance; and for the same reason, the factory should not buy the milk, unless placed in exceptional conditions for so doing.

The charge of 20 per cent or four cents a pound may at first strike people as a little high, but it is the current and accepted price in almost all factories. A close examination of the facts will prove that a factory run with our separators will return the farmers more money than they could get at home by making their own butter. Careful tests, conducted during years in Denmark, on the same milk treated according to the best known methods and by practical experts, have proven that centrifugal separators, on an average, will yield at the lowest 10 to 15 per cent more butter than can be obtained by the best other methods (see above, p. 1). Besides, the wholesale price obtained by creamery butter is on an average 15 to 20 per cent higher than the best Townships butter which is quoted highest of all dairy butter. Then, taking only 10 per cent increase in the yield, and 10 per cent increase in price, which the factory is sure to secure, the 20 per cent charge for making is wiped off; and still the factory furnishes labor, tubs, salt and all; it further affords *insurance* against bad quality, as the factory owners must produce an article of first quality or pay the difference under first quality. Further, by adopting the cooperative plan suggested below, the profit of the factory comes in as a direct rebate on the price charged for making.

The farmers, by drawing their milk to the factory, will save their labor, time, expenses, losses, and still will get more actual cash than they could get at home.

### How to secure a Butter factory.

In places where no person is willing to take the charge of starting a factory, we would suggest the following plan:

1° The farmers to form a joint stock company, each taking a certain number of shares; the company to own the plant and building.

2° The affairs to be managed by a board of directors.

3° At the end of each year's business, out of the profits, a dividend equal to a stated amount of interest (6, 7 or 8 per cent) will be first paid on the stock owned by each shareholder, as usual, and a reserve fund will be provided; but the balance of the profits will be divided only to the stock holders *without regard to the number of shares held*, and without any regard to the number of shares held.

This system is the most **cooperative** in character, as the surplus profits over the stated interest go to encourage the production and delivery of milk to the factory.

### Private dairy.

Now, if your fellow townsmen cannot be induced to start a factory, do not be stopped but

### Buy a Separator

for yourself. We have exactly what you want.

If your farm is small, **get a hand separator**, which is a much better investment than a piano and costs only one third as much.

If you own from 30 cows and upwards, or if you can get some neighbours to join you and send in the milk of that many cows,

### Get a small power separator

with our "**Triplex horse gear**", which will give you, at the cheapest price, all the horse power wanted on the farm. About this see the cut on the front cover of this catalogue and also page 12.

### This is in your interest.

We invite a careful perusal and study of **our Catalogue**, and we will be glad to furnish any additional information.

### To parties intending to Establish Butter factories.

We will contract for the whole plant of butter factories at a fixed price; and we will be pleased to hire butter makers of enough experience to direct the proper setting and disposition of the plant.

We will furnish sketches of how to make the buildings in order to secure economy and convenience of disposition.

We can send experienced mechanics to put up the plant, at ordinary fees and travelling expenses.

You can know the exact cost of your plant and factory, within a few dollars. The cost will be from \$1800 to \$2500, for a factory of 300 to 1000 cows, plant and factory being first class.

### To Mill-owners.

We wish to draw the attention of mill-owners, especially of water power mills, to the fact that a factory can be fitted in a mill where there is vacant place, for about one half of what it will cost in a new building and with steam engine to be purchased.

And as the cost of running will be about nothing in a mill already in operation, the investment of a few hundred dollars more, will materially increase the revenue of the property.

### Details wanted for Information.

When applying to us for information, if about cost of plant and building, the following details must be given, to enable us to answer knowingly:

Give the number of cows likely to be got for the factory within a distance of about 4 miles in every direction: how many expected for the first year, and possible increase in three or four years.

State if an existing building will be used, and if so, give its dimensions and a sketch and note the divisions that have to remain.

State if the ground is level or sloping, giving the inclination in the latter case; great advantage may be derived from a sloping ground.

Make a sketch of the site of the factory, showing the roads.

State if the factory will be run by steam or water-power; the latter is much preferable to steam on account of its regularity.

State if you wish to have only what plant is strictly necessary, or if you wish to get an extra plant as regard completeness, with due regard to economy.

### Notice.

We are in a position to quote special prices for several articles of the best manufacturers of dairy goods **either for cheese or butter factories** and respectfully solicit the favor of your correspondence.

It will cost you nothing to tell us what you want to purchase, and doing this may save you hundreds of dollars.

Write to

**JOHN S. PEARCE & Co.,**  
**LONDON, ONT.**



### GUARANTEE

Every separator will be sold by us, whether expressly mentioned or not, under the following special and definite guarantee :

#### We guarantee :

1° That the capacity of our separators as given is their actual working capacity. The capacity is 20 to 30 per cent greater on milk fresh from the cow and not transported than on factory milk; note this in comparing capacities and prices.

2° That for every dollar of the combined purchase price and cost of setting, our separators will, per hour, skim at the least 30 per cent more than any other machine, with a considerably lesser consumption of power.

3° That our separators will prove, in use, more economical than any other machine, as regards fuel, oil and attendance.

4° That the milk, skimmed at the perhour rate given above, will yield more butter than could be obtained by other machines, at the rate given as the capacity of the latter by their agents.

5<sup>o</sup> That on account of flat belts and weight, the skimming will be more uniformly well done than with other machines.

6<sup>o</sup> That with their accessories, our separators are the most complete and best constructed in the market.

7<sup>o</sup> That our separators possess all the general advantages which make centrifugal separation so much superior to the older methods of skimming milk, as regards quality and quantity. And we guarantee the special following points

### For the ALEXANDRA.

1<sup>o</sup> That it is the **only** separator in the world that requires absolutely **no fixing** or **foundation**, and that it works **loose** on the floor.

2<sup>o</sup> That it has **no tightening pulley**, being just placed at belt's length as required.

3<sup>o</sup> That it consumes **less power** than any separator of its size.

4<sup>o</sup> That it is the best machine for securing **cleanliness** in every respect, bowl and separator being easily taken around.

5<sup>o</sup> That the bowl will not catch, even if the spindle heats in the bearing, this bowl being **loose** on the spindle.

(See p. 9 for explanations.)

In order to appreciate the importance and practical results of the above guarantee, we shall be glad to furnish references or further information, on demand. Besides, it will be well to get the opinion of experts on each and every one of the above points.

### Some of the advantages of a good separator.

A customer to whom we sold a Hand Separator last spring, writes us as follows :

"It does all you claim it will do, and the separation is complete. From my nineteen (19) cows, it gives me an increase of 4 lbs of butter per day. I had no trouble in setting it up and it runs easy and is very easy to clean. Our women folks are delighted with it. They say the dairy looks so much better without the milk pans. The skimming can be done while you are milking and the warm skim-milk is ready for your calves; and, by the way, we want to say that for raising dairy stock or heifer calves, this warm skim-milk is better than whole new milk for them and will make them grow into better cows and milkers. They will drink it quite as readily as the warm new milk and won't know the difference. You will get from  $\frac{1}{2}$  to 1 per cent more cream per 100 lbs of milk than by the best pan or deep can system of raising cream. The cream will churn much easier and make better butter, seldom requiring more than 20 minutes to do the churning"

**The No. 8, Alexandra Hand Separator is just what every farmer and dairyman with 10 to 15 cows should have and it will pay for itself in one year.**

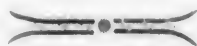
TRY IT.

**JOHN S. PEARCE & CO.,**

LONDON, ONT.



# INTRODUCTION.



**W**E beg to introduce to the Dairymen of Canada the **ALEXANDRA SEPARATOR**. The success of the "Alexandra" Cream Separators during the past year has been most gratifying and we can refer with much pride to the great triumphs achieved. As one of our largest buyers writes:

**"THE 'ALEXANDRA' LEADS THEM ALL."**

At the trials of Cream Separators at the Bath and West of England Show held at Exeter, 1889, the "Alexandra" was decided by the Judges to be **the best** Separator, and this decision has been most completely and unmistakably vindicated by the Judges appointed by the **Royal Agricultural Society of England** at the great Cream Separator trials just held at **Doncaster**, in **June** last, where the "Alexandra" **beat** all the best Separators **in the World**, and was awarded the **First Prize of £30**.

Our principals have spared neither expense nor trouble to bring out many improvements and probably no firm in the United Kingdom has taken out more patents for Dairy Plant than they have during the past two years.

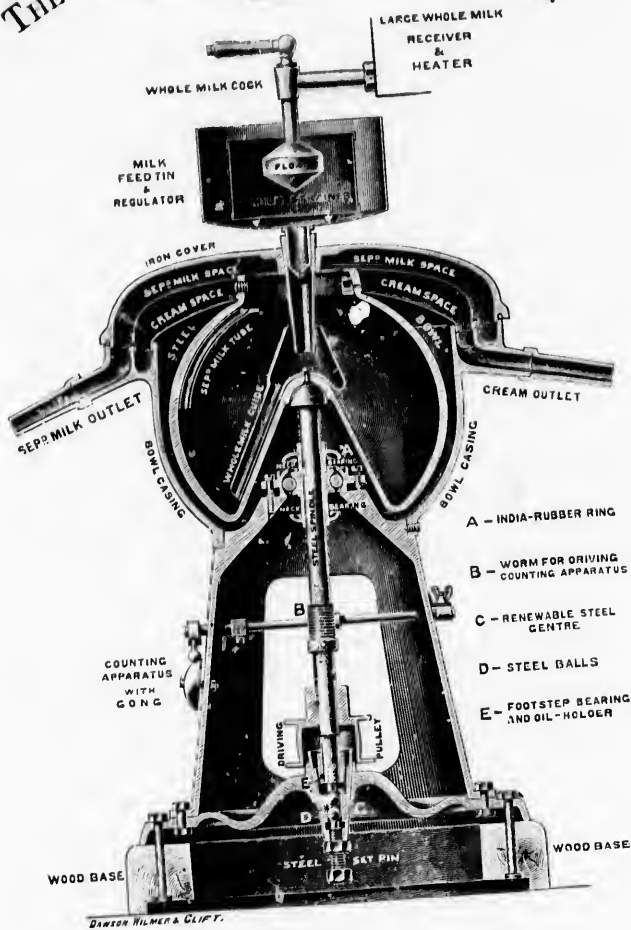
A glance at the few testimonials we reproduce will show how the "Alexandra" does its work in the hands of private users, and below we give a list of its most recent successes, and some of the principal Public Institutions at whose Exhibitions we have worked Machines during the past year.

The Royal Agricultural Society of England.  
 The Bath and West of England Society.  
 The British Dairy Farmer's Association.  
 The Highland Agricultural Society.  
 The Royal Manchester, Liverpool and North Lancashire Agricultural Society.  
 The Lincolnshire Agricultural Society.  
 The Yorkshire Agricultural Society.  
 The Worcestershire Agricultural Society.  
 The Glamorganshire Agricultural Society.  
 The Somersetshire Agricultural Society.  
 The Port Elizabeth Exhibition, Cape Colony.  
 The Alice Exhibition, Cape Colony.  
 The Pieter Maritzburg Exhibition, Natal.  
 The Adelaide Exhibition, Australia.  
 The Ballarat Exhibition, Australia.  
 The Launceston Exhibition, Tasmania.

**The Western Fair, London, Canada**

And many smaller Exhibitions and Country Shows.  
 Our principals have had the honour of supplying both Hand and Power Machines to—  
**The Canadian Government**, for their experimental Farms at Ottawa the "Alexandra" being specially selected for use at this Establishment by Professor J. W. Robertson, Department of Agriculture,  
**Lord Fitzhardinge's Private Dairy, Berkeley Castle.**  
**The Hon. Cecil T. Parker, Eccleston, Chester** (Dairy Steward to the Royal Agricultural Society of England).  
 And complete plants of Machinery to the  
**Land's End Co-operative Dairy Co., St. Buryan R. S. O., Cornwall.**  
**The Higham Dairy Co., Alfreton.**  
**The Berkeley Dairy Co., Berkeley.**

THE ALEXANDRA CREAM SEPARATOR.  
SECTIONAL ILLUSTRATION



THE above illustration is produced from a photograph taken from a drawing made exactly to scale of the Machine which was awarded the **First Price £30**, by the Royal Agricultural Society of England, at the Great Cream Separator Trials, lasting 5 days, held at Doncaster, June 1891, beating the "Laval Leviathan," and "Reading Royal," the "Petersen," and the "Victoria" Separators.

## THE "ALEXANDRA" CREAM SEPARATOR

Possesses the following ADVANTAGES over all other Machines:—

It requires **NO FIXING** or special foundation **whatever**, simply stands loose on the floor, and when not in use can be easily rolled out of the way. This is very convenient for cleaning the floor and a great advantage where room is an object. For the information of intending purchasers we may here remark that the "Alexandra" is the **only** power machine in the world that requires **absolutely no fixing or foundation**.

It requires **less than half the power** to drive it than any other machine of the same capacity. With our No. 1 machine, 300 gallons of fresh milk may be separated perfectly per hour. This is a great advantage when the power is limited and the milk required to be separated considerable. Our No. 3 machine exhibited at work in the Royal Society's Dairy and the Bath and West of England Societies' Dairy this year, at Plymouth and Rochester respectively, was driven by an ordinary lamp wick belt,  $\frac{3}{4}$  in. wide, and showed no sign of wear.

It is the **most easily cleaned**, and in the Exeter trials the "Alexandra" **was placed before all others in this respect** and as cleanliness is of such vast importance in a Dairy, this point cannot be too strongly advanced.

It is the best designed, most simple, most durable, and safest machine. As a proof of this we cannot do better than quote the **exact words** of the Judges' report of the Exeter trials:—

"The best designed Machine is undoubtedly the "Alexandra" exhibited by Messrs. LISTER, it is the only one which I consider has anything approaching to a proper proportion between the length and diameter of the bearings of the bowl spindle. In the other machines the bearings are too short.

"The Framework of the "Alexandra" is very compact and the rotating parts are well shielded by it. The centre of gravity of the bowl is kept low, so that it has less tendency to strain the spindle than in any of the other machines: this of course allows a much smaller spindle to be used with safety, and a great diminution of friction is the result.

"All the working parts are well boxed in by the frame, so that there is less danger of entanglement with the dresses of dairymaids than with any other machine exhibited. This spindle, too, is light, but of sufficient strength, and has a long bearing, a very important point where high speeds have to be used.

"The bowl is driven by friction on the ball shaped top of the spindle upon which it rests and balances itself perfectly in running.

"It can also be lifted off in a moment for cleaning, a matter of very great importance. Moreover the frictional driving of the bowl reduces the strain on the intermediate gearing and belts in starting: if too much power be applied at first, the spindle slips round and no harm is done; besides, in case of anything catching in the belt or spindle, pulley, or any part of the gearing when the bowl was rotating at full speed, the spindle would instantly stop and the bowl continue to spin on the top of it, whereas anything catching in the gearing of any of the other competing machines would be certainly far more likely to cause an accident."

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als, lasting  
" Reading

# Great Trial of Cream Separators

Held at Doncaster by the Royal Agricultural Society of England, June 17th to 22nd 1891.

DURING the past 9 months, makers of Cream Separators in all parts of the world have been invited to compete in the above trials, as hitherto no thorough and comprehensive trial of Cream Separators has ever been carried out in England. In previous Separator trials, no **thoroughly reliable** means has been provided to test the actual power consumed by each machine per gallon of milk separated; this is the most important feature in any Cream Separator as it not only shows the most **economical to use** but it also denotes the most **perfect in construction**. The machine consuming the least power **must** be constructed on the best and most scientific mechanical principles; that is, to run with the least amount of vibration, the least friction, and having the most perfect means of lubrication. We draw special attention to this point, as although we cannot at the present moment give the exact number of points awarded to each machine, yet we know that the power consumed by the winning machine—Messrs R. A. Linstead & Co's "Alexandra" No. 2, which is an exact type of all their power machines, viz., Nos. 1, 2, 3, 4—was by far the least of any.

In two tests previous to the Doncaster Trials the analysis of the skimmed milk, made by Professor Stein showed only 0.150 and 0.140 per cent, of fat left in.

The points representing perfection upon which the prizes were decided were as under:

Price	10
Power taken per gallon	20
Efficiency of Separation	20
Means of regulating thickness of cream	10
Facility for Dismantling and cleaning	15
Mechanical Construction	15
Freedom from Froth, both of skim milk and cream	10
Total	100

The **FIRST PRIZE** of £30 was awarded to the "**ALEXANDRA**" No. 2.

There were six machines entered for this competition, and especially:

The Dairy Supply Co., the "Reading Royal," made by the Laval Separator Co.  
The Dairy Supply Co., the "Leviathan" made by the Laval Separator Co.  
H. C. Petersen & Co., size "B," made by Burmeister & Wain.  
Frooth and Pocock, the "Victoria" made by Watson, Laidlaw & Co.

From the above it will be seen that the "Alexandra" has been successful in defeating the latest of the machines. In these trials, which lasted for five days and were conducted in the most thorough manner possible, "Alexandra" Separator has proved itself to be superior to all the leading machines in the market. The judges were

R. Neville Grenville, Esq., Butleigh Court Glastonbury (Engineer).  
Thomas Rigby, Esq., Sutton Weaver, via Warrington (Dairy Expert).  
Dr. J. Augustus Voelcker, 12 Hanover Square, London, W. (Analytical Chemist to the R. A. S. E.)

On points of construction every machine was examined by Wm. Anderson, Esq., C. E., D. C. L., F. R. S. House, Erith (of the firm of Easton & Anderson).

It is worthy of note that during the whole of these trials the "Alexandra" Separator stood **loose on the floor**, no belt tightener being required.

All the machines were driven by an electro motor driven by a dynamo worked by Dr. Anderson's balanced engine. The power absorbed by each machine was taken from the readings of the electric current. The instrument used for testing the power consumed has not previously been employed in Great Britain. This record **cannot be disputed** and is totally independent of individual judgment. Had this means been adopted when the "Alexandra" first met the Laval at Exeter, June, 1889, the result would have been as now, viz., a signal and decisive victory for the "Alexandra" Separator. Prentice's Patent Electric Motor was used, and the readings taken by Mr. Prentice himself.

From the result of these trials *our claim* is fully justified that the "Alexandra" Separator makes the most perfect cream, as there is no concussion or violent action on the milk inside the steel bowl. The milk is led gently down to the bottom of the steel bowl where the separation commences gradually, until it reaches the periphery of the bowl where the skim milk is taken off; by this means the fat globules are not broken off or disturbed, consequently it is possible to get pure cream with an entire absence of casing. The cost of maintenance and liability to accident must of necessity be considerably less in the "Alexandra" Separator than in any other, as the steel bowl being separate and distinct from the driving shaft it is not in the least affected when the latter wears. The fact of its not requiring any fixing shows that the machine is beautifully balanced, and constructed on true mechanical principles. The advantage of being able to move the Separator out of the way when cleaning up is *inestimable* in avoiding bad smells around the machine.



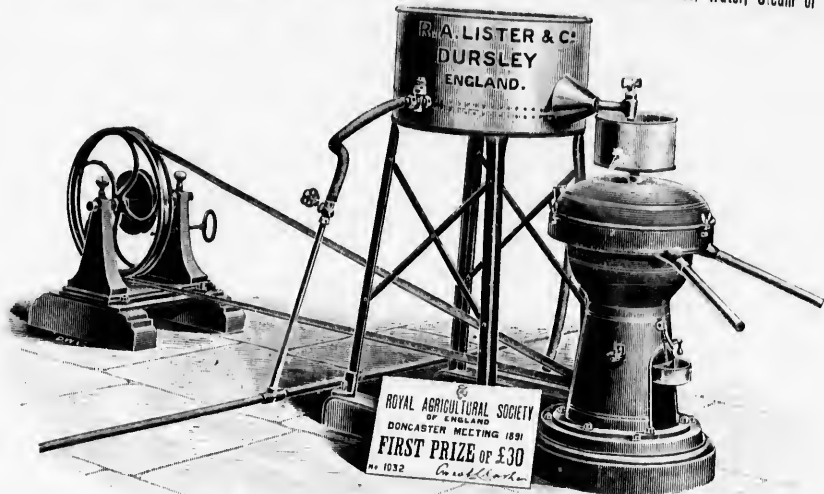
JOHN. S. PEARCE & CO.

11

# THE "ALEXANDRA" CREAM SEPARATORS

THE BEST IN THE WORLD!

Made in sizes suitable for Hand, Horse, Water, Steam or other Power



**ILLUSTRATION** of Power Machine, No. 2 (which is an exact type of all Power Machines, Nos. 1, 2, 3 and 4) produced from a photograph taken in the Royal Agricultural Society's Working Dairy at Doncaster, June, 1891, showing Intermediate Motion, Milk Receiver and Heater (top of Heater only 3 ft. 6 in. from floor) with Steam Pipe connected and Separator, standing loose upon the floor, exactly as it did during the whole of the five days' trial.

## LIST OF SIZES AND CAPACITIES OF "ALEXANDRA" CREAM SEPARATORS.

(1) Capacity on FACTORY milk is about 20 to 25% less than figures given.

SIZES—No.	SIZES					
	1	2	3	4	7	8
Skimming Capacity, leaving 0.25 per cent. of Fat; Fresh Milk Lbs.(1)...	3000	2000	1000	550	550	250
Horse Power required ... ..	1.20	0.80	0.35	0.20	0.20	0.08
Revolutions of Cylinder per minute	6000	7000	7000	7500	7500	8000
Revolutions to which the Cylinder is tested before leaving the Works per minute ... ..	8200	9600	10000	12000	12000	14000
Speed of intermediate Motion per minute ... ..	950	950	950	750	OF HANDLES.	
Diameter of Fast and Loose Driving Pulleys on the Intermediate Motion ... ..	Dia. Wid. in. in. 4 1/2 2 1/4		Dia. Wid. in. in. 4 1/2 2 1/4		Dia. Wid. in. in. 3 1/2 1 1/2	
Price ... ..	\$400	\$300	\$250		\$150	\$110

**PRICE** includes intermediate Motion, Inlet Tunnel, Strainer & Flout, Belt, Screw-driver, Wrench, Oilcan, and usual extras.  
**For Hand Machines and Price** includes Receiving Tin and Tap, Flout and Strainer, Screwdriver, Spuner, Oilcan and usual extras. See next pages.

# 'Alexandra' Hand Cream Separators

— THE BEST IN THE WORLD! —

*Will it pay to use them?*

**YES!**

THE ALEXANDRA NOS. 7 AND 8.

DO CALVES THRIVE  
ON SEPARATED  
MILK?

YES — undoubtedly far better than on hand skimmed milk. A practical farmer who is using the "Alexandra" Cream Separator says:—

"I give my calves nothing but separated milk, no linseed, calves' meal or condiments of any kind, and they thrive and grow well. Since using the separated milk my calves never scour. They are fed directly it comes from the separator, which is within an hour after it leaves the cow whilst it is still fresh, sweet and warm. I believe that the enormous advantage of having skimmed milk in this condition for calf feeding is one of the strongest points urged in favour of the separator."



Style of Nos. 7 and 8 Machines.

No matter how small or large your number of Cows Separate your Milk directly as it comes from the Cow. Save all the trouble of Setting Pans.

You will have new, sweet, warm, Skimmed Milk for rearing Calves night and morning (saving your present trouble and expense of heating Skimmed Milk for Calves); a wholesome drink for children, and for making pastry, &c., &c. You will make better butter, and in hot weather **20 per cent. more** in quantity. All the impurities are removed from the Milk in the process of separation."

**PRICES**—Which include Milk-receiving Tin and Tap, supply of small wearing parts, all the usual extras, and packing.

Size	No. 8	Easy to work for a Lady	Capacity,	25	galls. per hour.	\$110
"	7.	"	"	Man	50	" \$150

Letter from Mr. THOMAS KIRBY Bromley Kent:—

"The Separator gives me entire satisfaction in every way, and does its work wonderfully well."

Letter from Mr. C. W. FROWDE, Newent, Glos.:—The 'Alexandra' Separator has been running twice daily for two years without a fault, and has materially increased the profits of my Dairy

Mr. F. S. STOCKWELL, Cherry Valley Creamery, says:—

"The "Alexandra" is the creaming machine for a factory man."

An English farmer's wife says:—"I would rather part with any piece of furniture in the house than the "Alexandra" Cream Separator."

The leading Dairy Authority in Australia says:—

"The "Alexandra" surpasses any other machine brought under my notice."

One American customer says:—"The 'Alexandra' leads them all."

Stanley Park Farm,  
Salsley, near Stroud,  
Sept. 15th, 1890.

Messrs. R. A. Lister & Co.

Referring to the "Alexandra" Hand-power Cream Separator I purchased of you in April last, I am glad to say it is giving me every satisfaction and the cost of it will soon be repaid by the extra price I am making of my separated milk, which I have no difficulty whatever in selling in the neighbourhood. I make 2d. per lb. more for my butter than my neighbours, and at least 1lb. per cow more in quantity weekly. The time and trouble saved is very great.

I am sirs,

Yours truly,

(Signed) FANNY ROUND.

# The Babcock Milk Tester.

For years dairy scientists and inventors have been trying to invent some easy and inexpensive method of determining the amount of butter fat in milk. The demand for such a method is apparent to everybody on all sides. The creamery, cheese factory, and every man that keeps a half-dozen cows, all want to know what the quality of the milk is that they buy and sell. It is not unfrequent that creameries and cheese factories, as well as patrons, have great cause for complaint from the large amount of very thin milk that is delivered daily, and paid for at the same price that the better article is sold for.

Every dairyman who keeps a half-dozen cows ought to provide himself with one of Dr. Babcock's Milk Testers, if he cares the snap of his fingers to know whether he has a cow in the herd that is worth keeping. More than one cow "eats her head off" every year she is kept.

There is nothing about the whole work but what is simple and easy learned and understood. Of all the Milk Tests that have been brought out, Dr. Babcock's, for simplicity and accuracy, is most nearly perfect. The machine itself is of our own invention and manufacture, but the method of testing and determining the butter value of the milk belongs to Dr. Babcock. Directions for operating go with each Tester.

## —••• SIZES AND PRICES. •••—

4-bottle Tester, with everything complete, including acid for	60 tests	.....
10 " " " " " " " " " " " " " "	60 "	.....
15 " " " " " " " " " " " " " "	60 "	.....
20 " " " " " " " " " " " " " "	110 "	.....
30 " " " " " " " " " " " " " "	110 "	.....

An extra charge of 75 cents is made for boxing.

# PATENT CENTRIFUGAL MILK PUMP.

Awarded FIRST PRIZE Special Silver Medal, London Dairy Show, October, 1890.

THE MOST SIMPLE EFFICIENT & DURABLE PUMP MADE.

No Valves to wear No packing required. No Joints to make. No Wrench wanted. Can be taken apart in half-a-minute. Cleaned as easily as a milk bucket.

WORK raising Separated Milk several feet, in order to pass it through our patent Separator and over the Refrugal rotor, into a tank, or sending it on to piggeries at a distance, the Patent Centrifugal Pump is invaluable; and we have no hesitation in saying it is the most simple, durable, and efficient Pump ever introduced. It is self-lubricating, easy to clean and take apart, requires very little power to drive it, cannot get out of repair, and can be worked from the Separator Intermediate Motion, or any other suitable shaft, with a piece of hemp or cotton rope belt.

It should run from 2000 to 2500 revolutions per minute, and will deliver from 1000 to 1300 gallons per hour to a height of 15 feet.

PRICE, No. 2, . . . \$35.



COPY.

Messrs. R. A. LISTER & Co.,  
DUNSFERRY,  
Gentlemen.

J. P. EVANS & CO., MERCHANTS,  
131 & 131½ GEORGE STREET, & 1, BRUNSWICK STREET,  
LIVERPOOL, August 22nd, 1891.

As dairy Engineers, we do a very large business in the erection of dairies in this country. Our principal, Mr. Thos. H. Cleve, who is also the Managing Director of the business known as the Condensed Milk Co. of Ireland, Ltd., and who has the largest experience of milk and dairy business, in the United Kingdom, had his attention directed to the "ALEXANDRA" Separator some few years ago, and had one over from Denmark. When some alterations were made that he considered satisfactory, he took up from you the Sole Agency for Ireland for this firm, and this year alone we have placed upwards of twenty Machines in the South of Ireland, every one of which is giving unqualified satisfaction. Some of the dairies we have erected this season are running three largest size Separators (namely, the No. 1), each capable of dealing with three hundred gallons per hour; and in a dairy receiving considerably over 2000 gallons of milk daily, we have proved to the satisfaction of ourselves and the proprietors that the Separation, Churning, and Butter working, was all done simultaneously with an engine 5 H. P.

The Separators deliver the cream in much better condition than any other Separators we know of. The mechanical construction is very simple and the cost of keeping in repair is trifling. We shall be pleased to give the address of any of the Model Dairies we have erected to intending visitors on application.

We are, dear Sirs,  
Yours faithfully,

J. P. EVANS & CO.

## FOR THE LARGE FARMS OF THIS PROVINCE

### Cream Separating by Horse Power.

THE "Alexandra" is the most suitable Cream Separator for being driven by a Horse Gear.

We have it in convenient size for farms; cheap and simple.

It costs nothing to set it; and it can be set anywhere on a level floor.

We refer to our front illustration, of a dairy fitted with an "Alexandra" Separator driven by the

## PATENT "TRIPLEX" HORSE GEAR

Runs easy for a Pony, or is strong enough for two strong Horses.

Speed of Lay Shaft. 193 Revolutions Per Minute

When Horse makes three revolutions per Minute.

### ADVANTAGES.

Specially adapted for driving Cream Separators, Grinding Mills, Centrifugal Pumps, and other high speed machinery, as well as Chaff Cutters, &c.

It is fitted with a Safety Clutch of special design, and as the lay shaft runs right through the Gear the clutch can be attached at either end.

It is three times as strong as other Gears of the same weight, owing to the first motion being taken from three different points.

The parts of a Horse Gear most liable to breakage, viz., large bevel wheel and pinion for first motion and the pole cap, are abolished.

The internal strains are reduced to a minimum as tubular iron poles attached to the outside of the geared ring convey the strain **direct** to the teeth, thus rendering the large centre shaft usually employed unnecessary, with a corresponding reduction in weight and friction. No footstep is required, which is always most difficult to oil.

The absence of keyed wheels (only **one** key being used instead of **seven**, as in other Horse Gears, to run the same speed) in case of breakages or renewals, this is a great advantage.

No intermediate motion is necessary. A 2 1/2 in. Pulley is large enough to drive a Cream Separator running at 7,000 revolutions per minute.

This Gear takes half the space for packing required by other gears of the same power (the No. 2 size, suitable for two strong horses, occupying only 16 cubic feet), including two poles, whippetrees, and lay shaft, when packed in cases for shipment.

No timber is used. This is also important to export buyers, securing it from the ravages of the white ant and destructive climate influences.

Special and improved facilities for oiling are provided. The whole of the Gear can be oiled from the outside without raising or removing any cover.

All the working parts of the Gear are covered in and protected from dirt and danger to cattle when not in use. All parts are marked and made to template and interchangeable.

Every Gear guaranteed to give satisfaction.

The Price, for No. 2 size suitable for 2 strong horses with bodkins, leading rods, complete, ready for work, 64 revolutions to one of the Horses.....

Price for No. 1 for one horse same speed.....

## COMPLETE LIST OF APPARATUS

USED FOR

# MAKING FULL CREAM CHEESE.

We have such frequent inquiries for lists of apparatus required to handle the milk of a certain number of cows that we have prepared the following for the convenience of our customers who desire such lists. They will be found to contain all that is absolutely required to do the work, but individual requirements may suggest changes or additions.

Prices and full descriptions of each article in the list may be found in our illustrated Dairy Goods Price List.

### TO MAKE THE MILK OF 50 COWS INTO CHEESE.

One 200-gallon, Self-Heating Vat.....  
Three 14½-in. Hoops with Followers.....  
Three Press Screws and Press.....  
One 8-blade Card Knife, perpendicular.....  
One 6-in. x 20-in., horizontal.....  
One Card Scoop.....  
One Card Pail.....  
One 240-lb. Union Scale.....

### TO MAKE THE MILK OF 100 COWS INTO CHEESE.

One 300-gallon, Self-Heating Vat.....  
Six 15-in. Hoops and Followers.....  
Six Press Screws and Press.....  
One 12-blade Card Knife, perpendicular.....  
One 8 x 20 Card Knife, horizontal.....  
One Dairy Thermometer.....  
One Card Scoop.....  
One Card Pail.....  
One Card Mill and Card Sink (if desired, not  
absolutely necessary).....

### TO MAKE THE MILK OF 400 TO 500 COWS INTO CHEESE.

One 6-horse power Boiler, complete.....  
One 5-horse power Engine.....  
Two 600-gallon Steam Vats.....  
Two Fraser Gang Presses.....  
Eighteen 15-in. Hoops and Followers.....  
One 14-ft. Card Sink.....  
One 600 lb. Platform Scale with wheels.....  
One 60-gallon Weight Can.....

One Card Mill.....  
One Milk Conductor Head.....  
Six feet Conductor Pipe.....  
One Perpendicular Card Knife, 15 blades.....  
One Horizontal Card Knife, 8 x 20 inches.....  
One Whey Syphon with Strainer.....  
One Card Scoop.....  
One 1-gallon Dipper.....  
One Card Pail, flat side.....  
Two 10-inch Nickel Plated Thermometers.....  
One set Testing Instruments.....  
One doz. Test Tubes, heavy.....

### FOR 500 TO 600 COWS ; FOR CHEESE OR CHEESE AND BUTTER.

One 6-horse Boiler, complete.....  
One 5-horse power Engine.....  
Three 600-gallon Steam Vats.....  
Two Fraser Gang Presses.....  
Twenty-four 15 in. Hoops and Followers.....  
One Card Mill.....  
One 600-lb. Platform Scale with wheels.....  
One 80-gallon Weight Can.....  
One 14-ft. Card Sink.....  
One Milk Conductor Head.....  
Six feet Conductor Pipe.....  
One Perpendicular Card Knife, 15 blades.....  
One Horizontal Card Knife, 8 x 20 inch.....  
One Whey Syphon and Strainer.....  
One Card Scoop.....  
One Card Pail, flat side.....  
One 1-gallon Dipper.....  
Three 10-inch Nickel Plated Thermometers.....  
One set Testing Instruments.....  
One doz. Test Tubes, heavy.....

Considerable reduction from List Price will be given on application.

## Creamery Outfit.

### LIST OF APPARATUS

NECESSARY TO MAKE

# BUTTER FROM GATHERED OR SEPARATED CREAM

When it is only intended to handle the cream from a certain quantity of milk for butter making, the list below will be found to comprise all the articles absolutely required in the creamery.

#### CREAM-GATHERING OUTFIT. 200 COWS.

One 5-horse power Engine, complete.....  
 One 6-horse power Boiler, complete.....  
 One 300 gallon Cream Vat, with Ice Box.....  
 One 300 gallon Curtis Improved Factory Churn.  
 One Mason Power Central Drip Butter Worker.  
 One No. 2 Curt's Oil Test Churn .....  
 Three No. 1 Driver's Cases.....  
 Three Driver's Skimming Pails.....  
 One Covered Crank Suction Pump.....  
 One 400-lb. Platform Scale, without wheels....  
 One Rensselaer Scale,  $\frac{1}{2}$  oz. to 240 lbs.....  
 Three No. 1 Refrigerator Tanks, or.....  
 Fifteen 20 gallon Curtis Refrigerator Cans.....  
 One Vat Strainer.....  
 One No. 2 Lakin Buttermilk Strainer.....  
 Two Iron Glad Pails.....  
 One 1 gallon Dipper.....  
 Two 12 inch Thermometers.....  
 Fifteen feet Cold Rolled Shafting, 1 7-16 inch.  
 Six feet Cold Rolled Shafting, for Counter  
 Shaft.....  
 Five 12 inch Rigid Drop Hangers.....  
 Two-hundred feet 1 inch Gas Pipe, (estimated).

Six 1 inch Globe Valves, (estimated).....  
 Six 1 inch Tees, (estimated).....  
 Six 1 inch Elbows, (estimated).....

#### CREAMERY SEPARATOR OUTFIT. 300 COWS.

One 5-horse power Engine, complete.....  
 One 6-horse power Horizontal Boiler, complete.  
 One Alexandra Separator.....  
 One 300 gallon Milk Receiving Vat.....  
 One 300 gallon Cream Vat.....  
 One 400 gallon Curtis Improved Trunk Churn.  
 One Mason Power Worker.....  
 One 500 lb. Platform Scale, without wheels....  
 One Rensselaer Scale.....  
 One 60 gallon Weigh Can.....  
 One 20 bottle Babcock Tester.....  
 One Milk Conductor Head.....  
 Six feet Milk Conductor Pipe.....  
 One 1 gallon Dipper.....  
 One 8 oz. Graduated Glass.....  
 Two 10 inch Lee's Perfect Thermometers.....  
 Two large Butter Ladles.....  
 One Box Marking Paste and Brush.....  
 One Covered Crank Suction and Force Pump..  
 One Separator Tempering Vat.....

Size and number of Pulleys, lengths of Shafting, Belting and Pipe will depend upon size of building and location of machines. Upon receipt of these data we will estimate for them, and give net price on complete outfit.

**Address: JOHN S. PEARCE & Co.,  
London, Ont.**

# JOHN S. PEARCE & CO.

## USEFUL INFORMATION.

**MILK** :—A gallon of water weighs exactly ten pounds.—A gallon of milk weighs 10 3-10 pounds ; A quart weighs two pounds and nine ounces in round figures.—Milk is thus 3% heavier than water.—Average cream (market-cream) weighs about the same as water, and is consequently lighter than milk.

**MILK COWS PRODUCTION** :—The factory will get, on the average, for six months, from a very good milker 25 lbs. per day, a good milker 20 lbs. per day, an average milker 15 lbs. per day. On several hundred cows, taking everything in consideration, the average factories get : In Quebec, for 5 months, 15 lbs. per day, per cow ; in Ontario, for 6 months, 17 lbs. per day, per cow.

Quebec milk, as a general character is 10 to 15% richer than Ontario milk.—This is on account of the breed of cow prevalent in those provinces.—We venture to give a table of yields in a factory season, which we know is correct from the results obtained throughout the country.

100 LBS MILK	Will yield in cheese.	Will yield in butter.
With prevalence of Durham blood.....	9.50 lbs.	4.00 to 4.20
“ “ Ayrshire blood.....	“ “	“ “
“ “ common cattle and low grades...	10.00 “	4.10 to 4.40
“ “ Quebec “Canadian”.....	10.50 “	4.40 to 4.75

**FAT CONTENTS AND BUTTER YIELD.**—The factory yield in finished butter will be 12 to 15% more than the **Pure fat** contents of the milk (Bahcock tester or analysis).

## CHEESE AND BUTTER FACTORIES.

**SEASON** :—The Butter factory season is from 5 to 8 months duration. It should be the year round.

The Cheese factory season is from 5 to 7 months ; should be lengthened by fitting separators in the factory.

**MONEY RETURNS** :—The average price, for the last five or six years, brought by the dairy products, is for Cheese about 8½ cents per lb., for Butter about 20 cents per lb. The whey (or residue of cheese making) fed to pigs, should bring from 5 to 15% over and above the net dividends to the patron of a cheese factory. The **state or quality** of the whey has a good deal to do with its value.

The sweet separated skim-milk and hutter-milk properly fed to pigs will bring 25 to 40% over and above the net dividends to the patron of a butter factory.

**CHEESE OR BUTTER.**—It costs less to start and run a Cheese factory than a Butter factory with Separators. More can make the risk of starting a cheese factory, and there is more danger of opposition with a cheese factory than with a hutter factory.

But farmers, for obvious reason, will stick hetter to the hutter factory, and will give a longer season.

The money returns being the ultimate aim, and the richness of the milk being the material factor in this, you had better make cheese where the milk is under the average in fat contents, and hutter where the milk is rich.

**AN ESSENTIAL POINT.**—Unless you are a great **conductor of men**, do not attempt making the education of your friends and neighbors without binding them by a contract to a **course** of 3 to 5 years at the factory you are going to start.

You can safely start a hutter factory with 300 cows **bound** to the factory, and a cheese factory with 250 cows.

## COMMON LAW OF FACTORIES :

**CHARGES** :—Usual charge for making Butter, 20% of the selling price, or 4 cts per lb. Cheese 15 to 20% of the selling price, or 1½ cts per lb.

The factory proprietor has to provide hands and all furnishings, and to pack the butter in tubs and put the cheese in boxes ready for the market ; he is responsible for the quality of the product.

The proprietor manufactures for the patrons' account ; the butter or cheese belongs to the latter and they sell it through a board of directors.

Unless specially stipulated to the contrary, the goods are shipped at the huyers' risk, delivery being considered made at the point of shipment, subject to weights certified by public weigher at the huyer's business place. Boards control these matters where any exist.

Salesmen and secretary are paid by the patrons. Two to three cents per 1000 lbs. milk, would be a fair remuneration for making dividends.

## RUNNING EXPENSES

In making out the estimates of the running expenses of a **centrifugal butter factory**, you can start from the following elements, and you will not be deceived :

1° Reckon \$0.80 expenses for every 70 lbs. tub of hutter (regular creamery size), or for every 1500 to 1700 lbs. of milk received at the factory during the six months season. This will fully cover, a the actual cost at the factory of tubs, salt, cotton, color and sundries ; b sundry expenses during the season and small repairs ; c fuel and oil, &c., &c.

2. Add interest on investment or cost of factory.

3. Add men's wages (\$50 to \$75 dollars per month for butter maker and help).

## ADVANTAGES OF CENTRIFUGAL CREAM SEPARATORS.

Milk may be drawn to the creamery once a day only.  
Milk may be skimmed instantly bowever fresh it is.  
Skim milk is immediately returned sweet to patrons.  
Milk is cleaned and improved for use.  
Milk yields from 10 to 20 per cent more Butter.  
Milk gives far Better Butter.

Milk can be handled by Thousands of Pounds in a comparatively small space.

Milk can be handled with less labor and less cost.  
95 lbs Sweet skim-milk and Butter Milk returned at once for every 100 lbs delivered.  
See page 1 of this catalogue.

regional  
JOHN S. PEARCE & CO.

WE ALSO CARRY A FULL LINE OF

# DAIRY SUPPLIES AND APPARATUS

Annatto, Rennet Extracts,

Seamless Cotton,



Steel Gang Presses,



Curd Knives, Churns,

Vats, &c., &c.

PARCHMENT PAPER FOR BUTTER

SEND FOR CATALOGUE

## SEEDS

WE HAVE THE BEST AND MOST COMPLETE STOCK OF  
SEEDS AND SEED GRAIN AND GRASS SEED.

### OUR ENSILAGE AND SILO CORNS

ARE THE BEST IN THE WORLD.

WRITE FOR CATALOGUE

ADDRESS :

**JOHN S. PEARCE & CO.,**

LONDON, ONT.



