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THE CANADIAN

Cheese and Butter Maker.

Vol. 1. No. 3. KINGSTON, ONT., CAN., SEPTEMBER, 1898. 50c. Per Year.

The Students. . . . .

-:- OF THE -:-

DECEMBER, 1897 SESSION OF THE

Kingston Dairy School

Were given their choice of starting, which of the three different makes of Separators they chose, when but one had to be run.

THEY always started

The "Alpha de Laval" WHY?

General Canadian Agency :---

CANADIAN DAIRY SUPPLY CO.

327 COMMISSION ST., MONTREAL.

TO CHEESE MANUFACTURERS

BRANDING CHEESE.

Patented February 25, 1898

A means of permanently marking cheese without waste injury and at exceedingly small cost is provided by the "Bate" Brand The location of the factory is always clear and imitation impossible. A list of factories that are branded is in course of preparation for distribution amongst importers in England. Prompt application for brands will ensure this valuable privilege to your factory. When application is made for Brands the registration of your factory will be accomplished by the undersigned without charge or cost to you. References may be made to the President or other officers of Brockville Dairymen's Board of Trade in which section it is used by a majority of the best factories.

CHARLES BATE,

Brockville, Ont.

Prof. Jas. W. Robertson, Commissioner of Agriculture and Dairying, Ottawa, Ont., writes under date Nov. 26th, 1897 :—

"I am in receipt of your letter, 24th inst. I am of opinion that if the registered number and the district brand could be put on the cheese by having the letters indented or raised. in the rind of the cheese itself, that would prevent any possibility of the erasure of the marks or substitution for them."

And under date March 8th, 1898:—

"I received the sample brand. I am glad you have succeeded in getting that made. I would like to see every Canadian cheese with the word 'Canada' impressed into its ends."

Hon. John Dryden, Minister of Agriculture for Ontario, addressing a meeting in Brockville, on the 13th day of November, said in reply to a question for his opinion :—

"I have seen this brand to-day for the first time, and would like to say that in my opinion it will be a great blessing when it is found in every factory in this country. I know of no way in which a brand can be placed on cheese that will so thoroughly protect against deception as by the brand mentioned. It is there to stay and, unlike the stencil, cannot be rubbed off It is time there was greater discrimination in products, and the consumer must pay a higher price for the better article. Every cheese in Brockville district should be marked 'Brockville' as it is the best and should bring the highest price. I am very much pleased indeed with the brand invented by Mr. Bate."

THE

Real Estate Bargain - Counter.

DO YOU WANT A HOUSE? A FARM? OR A LOAN?

IF so, see or write me, and you will find my terms such as will enable you to effect a saving.

Farms in the different townships of **Lennox, Addington** and **Frontenac** Counties.

DAIRY Farms ranging in acreage from fifty to three hundred acres, with easy terms of payment.

D. A. GAYS,

20 Market Square

Kingston, Ont

Kingston Business - College.

THE LEADING COMMERCIAL AND SHORTHAND COLLEGE of Canada.

Both VERTICAL and SPENCERIAN Penmanship taught. Catalogue Free.

J. B. McKAY, Principal,

KINGSTON, ONT.

We Do *JOB PRINTING.*

You Will *Require - Some.*

First Class Work and Prices Right

The Canadian Cheese and Butter Maker.

20 MARKET SQUARE, Kingston, Ont.

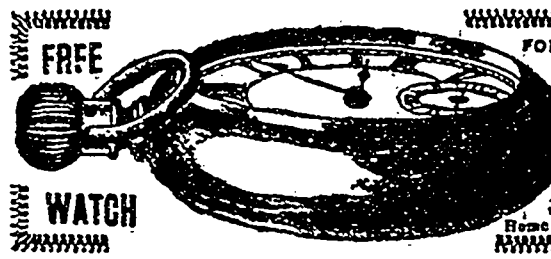
THE STANDARD HOG.

Up-To-Date Berkshires.

Thirty young pigs of different ages for sale. Can supply pairs not related, bred from aged sows, weighing from 400 to 600 lbs.

Have in herd pigs bred by such breeders as **Russell Swanwick** and **N. Benjafield England.** Write your wants.

W. J. SHIBLY, Harrowsmith, Ont.



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We give this fine Watch for selling two dozen packages of Exquisite Perfume at ten cents each. Send your address and we forward the perfume, postpaid, and our Premium List. No money required. Sell the perfume among your friends, return the money, and we send the watch, prepaid. This is a genuine American Watch, and guaranteed a good timepiece. In writing mention this paper.

Home Specialty Co., 60 Victoria St Toronto

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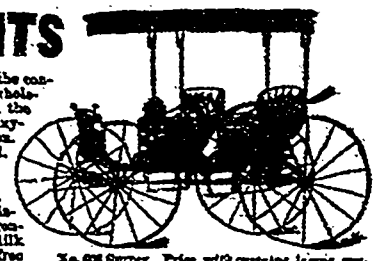
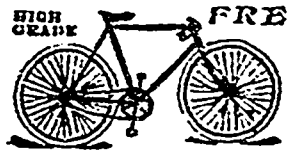
but have sold direct to the consumer for 25 years at wholesale prices, saving him the dealer's profits. Shipanywhere for examination. Everything warranted. 118 styles of Vehicles, 55 styles of Harness. Top Buggies, $35 to $70. Surreys, $50 to $125. Carriages, Phaetons, Traps, Wagonettes, Spring-Road and Milk Wagons. Send for large, free Catalogue of all our styles.



No. 77. Surrey Harness. Price, $38.00. As good as sells for $50.

No. 888 Surrey. Price, with curtains, lamps, sunshade, apron and fenders, $90. As good as sells for $90.

ELKHART CARRIAGE AND HARNESS MFG. CO. W. H. PRATT, Sec'y, ELKHART, IND.



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..BOYS and GIRLS..

You can earn a Stem-Wind Watch or Bicycle by selling a few of our Children's *Toques* and *Gauntlets*; they are all the rage. Write at once stating your father's occupation, and we will send the goods. No advance money required.

Address, **CO-OPERATIVE KNITTING CO., 15 LEADER LANE, TORONTO.**

Our premiums are the best money can buy.

MESSRS. CO-OPERATIVE KNITTING CO. HALIFAX, N.S., July 28, 1898.

GENTLEMEN,—I just received my Watch, and am highly pleased with it. Kindly send me some more Children's Toques and Gauntlets, and will try for a Bicycle.

Yours respectfully, CLARENCE LEE, and many more.

Northey Gasoline Engine.

The handiest and best power for all Dairy purposes. No smoke, dust, dirt, noise or smell. Safe and reliable. Easy to Operate.

Our Booklet tells all about it. Write for it.

NORTHEY MFG. Co., LIMITED,

KING ST., SUBWAY,

TORONTO CANADA.

SILO AND SILAGE.

A Few Remarks From Our Own and the Ripe Experience of Others.

By "J.O.L." Williamstown, Ont.

There is no longer any doubt as to the advantage of cutting feed; thousands of dollars are wasted annually by a failure to adopt this economical method of preparing stock food. The multiplied thousands of acres of bleaching corn stalks all over the country stand as a mute protest against the wastefulness of our agriculture.

The advantages of silage are now so well known that we need hardly refer to the matter here.

The intelligent use of silage will enable the man who happens to live without the great corn belt to compete with his most fortunate brother in the feeding and fatting of stock. The man who lives in the corn belt can illy afford to practice the great waste incident to the present system of agriculture.

The cost of silage, as compared with the feeding of dry feed, is cheapened by the actual money outlay in husking, or threshing, shelling and grinding the grain. This will differ in different localities, and is somewhat difficult of estimate, but every thinking man will be able to arrive at figures satisfactory to himself. Any crop which may be secured as dry feed, can be successfully siloed.

The gain to dairymen and stock feeders, in the use of silage over the ordinary system, is of three kinds, and may be enumerated as follows: 1st, Saving of time and money in the preparation of the crop for food. 2nd. The saving of all the food elements in the plant without the loss incident to drying or bleaching. 3d. The increased digestibility and succulence of silage over dry food.

A silo should be air tight, and have smooth perpendicular walls. About 40 pounds to each cow per day should be fed.

Round silos are superior to all others.

Two or three small ones is preferable to one immense structure. Thirty feet high by twenty in diameter is a good size, cutting at a late period of growth is preferable; as the quality is much better than that obtained from green immature food.

Where very large silos are to be filled in very hot weather, when the corn is fast drying out, it is well to begin filling a little earlier (or, when there is any expectancy of early frosts as in Canada.)

Corn ensilage weighs from 40 to 50 pounds per cubic foot, depending mainly on the weight of the ensilage above it and the compression to which it is subjected. Probably 40 to 45 cubic feet will be the usual bulk of a ton of ensilage.

On account of our modern deep silos, and because we have found out that water applied directly to the fodder in the silo, acts in the same way as water in the fodder. We get a result which keeps the fermentation in the silo in the right track.

Husking, shelling and grinding corn costs more than one-fourth the value of the meal feed, and is more than wasted, as the cows do that much better on "ears and all" silage.

TO FILL THE SILO.

The general practice is to cut in about 1-2 to 3-4 inch lengths; the finer it is cut the better it will pack.

The cut corn should be delivered as near the centre of the silo as possible.

Keep a good man in the silo to level it off, and tramp down the sides and corners.

The original method of putting boards on top of the fodder, and covering with clay and weighted, has been discontinued.

There is no special advantage derived from using building tar paper.

Lighter material, say straw, or marsh hay, run through the cutter, and used as a six-inch covering, will do the work fully as well.

Wet or green materials are best to cover. Since they prevent evaporation of water from the top layer; when this is dry, air will be permitted to the fodder below, thus making it possible for putrefactive bacteria and molds to continue the destructive work begun by the fermentation bacteria.

It is not a bad plan to apply water to the top of the fodder in the silo which causes a sticky, mouldy substance about two inches thick to form on the top, thus preventing evaporation of the water below, especially in dry weather. You lose say two inches, and save the rest.

There is but one way to save all the silage, and that is to begin feeding at once. Never feed a particle of rotten or decayed silage. If you do, beware the result to your pocketbook.

If I had 50 cows, and 150 acres of land, I would put 1-4 the land in corn for silage, and trust to Providence for results.

A Practical Experiment in Removing Barn Yard Flavour.

I proposed trying the removal of a bad barnyard flavor, by a quick process, and I obtained excellent results.

In taking in the milk, I discerned an old barnyard flavor.

The milk was set at 17 seconds.

It lay in the whey, one hour and fifty-two minutes.

It was dipped at 1-4 inch acid, hot iron test, and was stirred to attain a medium moisture.

Matted firm, then cut, when milled, it showed two inches of acid. With very bad flavor of old barnyard, mixed with a dash of peppermint.

I heated some pure water 200. degrees Faherenheit, then dashed this gradually heated the curd up to 100 water under the curd in the sink, then degrees, with continual stirring, by lifting the curd and dropping down, which naturally caused aeration.

At the end of two hours the bad flavor had totally disappeared, the curd well mellowed down, strong in body, and of excellent feeling.

This treatment having proved satisfactory, it was salted at the rate of 3 1-4 lbs, drained well, pressed gently, the day's work was over at 7 o'clock p.m.

Curds, with this same flavor, have detained makers up to 10 and 12 o'clock at night by what is known as washing, and covering with hot cloths. Yours,

"CHEESEMAKER."

ONE GOOD IDEA.

In the poorest dairy paper published, at least one good new idea can be found in a whole year, and one good idea is certainly worth the yearly subscription price.—Prof. Ruddick.

We think that every column in each of our 48 columns will give you an idea worth the yearly price of the paper.

PRIZES FOR BACON HOGS.

The action of the Dominion Swine Breeders' Association in granting some $400 to be offered as prizes for bacon hogs at the next Ontario Provincial Fat Stock Show, at Brantford, as indicated in our report of their recent meeting in another column, is of interest to breeders and feeders of swine. The classification of the prize list provides for competition by each breed separately. The prizes are liberal, and it is expected that they will be supplemented by donations from several of the leading pork-packing establishments in Ontario. Provision has also been made for a block test, and liberal prizes are offered for the two best dressed hogs, to be killed on the second day of the show, and arrangements have been made whereby the animals competing in this contest can be sold in Brantford for the highest market price for dressed pork. The object of these prizes is to encourage the feeding and breeding of the type of hog required by the market for the production of the best quality of bacon. The prizes will be awarded by porkpackers of their buyers, and no animal deemed unsuitable for bacon purposes by the judges shall be awarded a premium. We have long contended that hogs of any of the breeds may, by judicious breeding and feeding, be brought nearer to the desired type for bacon purposes, and we heartily commend the action of the Breeders' Association in this movement to secure uniformity of product, which we confidently believe can be accomplished in the near future by the exercise of intelligent methods. Let the work of preparation be commenced at an early date by the selection of those which come nearest to the desired type, giving them a free run on clover pastures supplemented by moderate rations of nitrogenous foods, such as bran, shorts, ground oats and barley, with plenty of skim milk — remembering that the ideal weights range from 160 to 220 lbs. —and we shall doubtless see that progress can be made in the direction desired even in the few months intervening between the present and the date of the show, a progress which will be accentuated as the years go by.—Farming.

FALL CHEESE.

By T. B. Miller, O. A. C., Guelph.

In making fall cheese, the system is similar to that used in making summer cheese, excepting the following points of difference:

If the milk is working slowly, use some clean flavored starter.

Use enough rennet to have coagulation take place in from forty to forty-five minutes.

Set the milk so that it will be ready to dip, with one-quarter inch acid, in from two and three-quarters to three hours time after setting.

Keep the curd warm, about ninety degrees, until ready for milling. Mill when the curd becomes flaky, showing one and one-quarter to one and one-half inch acid.

Salt at the rate of two and three-quarters to three pounds salt per 1,000 pounds of milk, and put to press at a temperature of from eighty to eighty-five degrees.

Leave the cheese in the press one hour before bandaging.

In the case of gassy milk, note the following points:

The milk should be matured more than usual before setting (some two or three seconds more.)

When cutting the curd, be careful to leave the cubes larger, so as to retain more moisture, then stir for fifteen minutes before turning on the steam.

When cooking, heat slowly to ninety-six degrees, raising it to ninety-eight degrees just before dipping.

Dip the curd with one-quarter inch acid, and do not stir much in the sink after dipping.

Turn frequently, at the same time piling the curd three or four deep in the sink; then mill when the curd becomes flaky, showing one and one-quarter inch acid. Air and mature well before salting.

In handling overripe milk, set the milk as soon as possible at a lower temperature than usual, at from eighty to eighty-four degrees, then, as always, make a rennet test. In a case of this kind, more rennet should be used, from one half to one ounces extra per 1,000 pounds of milk.

Commence to cut the curd early, cutting finer than usual, thus enabling you to cook the curd more quickly.

A portion of the whey should be drawn off as soon as possible; and when it can be managed, the curd should be dipped with less acid than usual and then well stirred before allowing it to mat in the sink.

Mill early, or when the curd shows three-quarters of an inch of acid, and try to have the curd in a flaky condition at this stage.

Do not be in a hurry to salt a curd of this description, for if it has been milled at the proper time and well stirred, there is no danger of its getting too much acid in the sink.

With tainted milk, heat to eighty-eight degrees and air frequently by dipping or pouring, until the milk is ready for setting. If you have a sharp, clean flavored starter, it will be an advantage to use a little extra with milk of this kind.

When the curd is heated to ninety-eight degrees, draw off a portion of the whey, and just before the curd is ready for dipping raise the temperature two degrees and stir well.

Dip the curd with a small amount of acid, about one-eighth inch, endeavoring to have it in such a condition that it will not require much stirring in the sink, and keep up the temperature to ninety-two or ninety-four degrees until the curd is ready for milling. Mill when the curd is in a flaky condition and shows one inch acid. Air by frequent stirring and mature well before salting.

When making colored cheese, pour the coloring into a large dipper of milk, taken from the vat, then draw the dipper quickly along under the surface of the milk from one end of the vat to the other, and make sure that it is thoroughly mixed before the rennet is added.

The rennet should be diluted with one gallon of pure water to each vat, and the milk should be well stirred for from three to five minutes according to the condition of the milk, after the rennet has been added. In the case of overripe milk, two minutes will be ample time to stir after adding the rennet.

Everything in and about the factory should be kept scrupulously clean.

THE

"ACME" MILK TESTER

Hicks's Patent, London, Eng.

This Instrument has been expressly designed to provide any person with a simple but reliable test of the purity of the Milk supplied to them. The Ordinary Milk Tester (Lactometer) has an attached scale, and mistakes often occur in reading off the divisions upon it; the "Acme" Milk Tester has neither scale nor divisions, consequently no error can be made in using it.

Nothing can be simpler than the "Acme" Milk Tester, as you have only to watch the bead rising and falling. It is guaranteed as accurate and effective as the more expensive Instruments.

It cannot fail to prove a boon where Pure Milk is essential, whether for sickness, culinary or other purposes, as it provides a thoroughly reliable test, so easy to use that a child could apply it. No calculations or tables required

PRICE 50c., or presented to any person sending us 5 new subscribers.

Canadian Cheese and Butter MakerTheilliamstown, Ont.

OUR PATRON'S BULLETINS.

Knowing, that to make good cheese or butter, the maker must have good milk to start with, and that to get good milk that the maker should assist the producer, we have, at quite a cost of time and money, prepared a series of "Patrons Bulletins." Number one appears in another page of this issue, it is on the care of milk. Nos. 2 and 3 will be on that all absorbing subject and necessary adjuct to the dairy farmer. The Hog, and how every man who keeps cows to sell milk from can add from ten to five hundred dollars to his profits each year, it tells it all, boiled down in plain language, the latest information in regard to bacon, pork, and the best plan to produce it cheap, and at a big profit.

Number 4 will tell all about "Ensilage and the Silo."

Number 5 all about the "Calf, and How to Make the Good Milk Cow." Each number will occupy one page, in one paper and will be followed by other subjects in the following issues.

If our friends the cheese and butter-makers, will call the especial attention of their patrons, to the benefit and money profit, that can be made from following the advice, which will be given in bulletins, Nos. 2 and 3 on the Hog, and raising bacon, pork, they can get up a club of nearly all their patrons by the mere asking. It was done by a cheese maker in Glengarry county, only last week. Numbers 2 and 3 will be actually worth the price of our subscription for fifty years to every farmer who reads it, and profits by the advice.

The Canadian Cheese and Butter Maker.

A Monthly Journal for Dairymen, Cheesemakers, Buttermakers and the trade.

Take care of your Hogs and your Hogs will take care of you.

Devoted to milk, and its manufactured product.

PUBLISHED MONTHLY BY

J. O. LINGENFELTER,

20 Market Sq., Kingston, Ont., Can

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Remittances of small sums may be made with comparatively safety in ordinary letters. Sums of one dollar or more it would be well to send by registered letter, P. O. Money Order, or Express Money Order.

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When sending postage stamps please send only 1c. or 3c. Canadian Stamps.

Most important of All - In every letter that you write us never fail to give your full address plainly written, name, postoffice, county and state or Province.

All Letters from subscribers or on business should be addressed to

J. O. LINGENFELTER,

No. 20 Market Square, Kingston, Ont., Can.

Advertising rates made known on application.

SEPTEMBER.

Six New York dealers were recently convicted of handling oleomargarine, and fined amounts varying from $25 to $50 each.

The creameryman who sends out waggons to haul in the milk can make himself very popular with his patrons, by having the milk haulers make a daily mail delivery.

Only 69 creameries in 1897 availed themselves of the bonus offered by the Dominion Government to assist in providing cold storage equipment. The bonus offer, however, will be continued during the present year.

Buttermakers should not forget the trouble that was had last year with moldy tubs, and be sure to steam every tub thoroughly. If that is done there is very little danger of mold making its appearance on the tubs.

The buttermaker is not, or should not, be paid according to the amount of work he can do, but according to how well he can do it. It is the how that makes him a valuable man in the creamery. We regard it as a mistake to hire a buttermaker on a contract that he must handle so many pounds of milk per day. The buttermaker who is worthy of his position will handle all the milk he can and do justice to his work, when he reaches a point where he can not do his work well or without help he should have it. Hire the buttermaker to conduct the inside operations of the creamery according to his best judgment, and then give him all the help he thinks he ought to have. If he abuses the confidence placed in him turn him off and get a man who can be trusted.

During 1897 Denmark's export of butter amounted to 115,290,000 lbs., which shows an increase of 12,140,000 pounds over 1896. In taking the whole export, 116,670,000 pounds were Danish and 28,620,000 Swedish and Finnish produce. The export of purely Danish butter has increased by 5,132,000 pounds, which shows how enormously it is increasing, and to what an extent the demand for it holds on outside markets. The experience of Denmark should be particularly interesting to those concerned with Canada's dairy trade.

Very often in going from one factory to another in the country, you will see an unsightly pile of old rubbish that has been discarded from the creamery; it may be an old churn, that is past its usefulness or an old hand butterworker that has been replaced by a newer, and better one; or if it is a gathered cream plant, a lot of old gathering cans that are of no use, and generally you will find a number of oil cans and a number of buttercolor cans piled up at the back of the creamery, and in such places in summer the rank weeds will grow up and cover them. All that old trash that is of no use should be disposed of. Keep all the weeds down and the outside cleaned up and the creamery will then have a more attractive appearance and you will be better satisfied with your surroundings.

With wild animals or animals like the horse, sheep, or pig, that have not been bred or handled for dairy purposes, females secrete only milk enough to nourish the young. At maternity the blood, that went to nourish the fetus is turned to the arteries of the udder. The pressure of this blood is what stimulates the secreting cells to great activity. They first produce "colostrum," and afterwards normal milk. In the virgin or "dry" animal, the udder contains no true milk, but a watery and salty fluid. In many cases, a systematic "milking out" of this fluid or rubbing the udder, will induce the secretion of milk, even in a virgin animal. The old time wild cow gave only milk enough to nourish her calf. Her modern descendant gives 8,000 pounds per year, with a milk flow lasting through 10 months. This increase is due to domestication, which has resulted in a better development of the digestive organs and udder.

Quite a number of buttermakers object to taking a sample of the patron's milk to test every day, as they claim that it takes too much time; they would rather test the milk two or three times a month and test the new milk, and pay for the milk every day. When you do not take a sample of the milk every day, it gives the patron, (who is inclined that way) a better chance to skim the night's milk without being detected, and there are some patrons who will do so, as we all know. After the buttermaker has once fixed up the sample bottles for holding the composite sample of milk, it don't take much time to take a sample of the milk. You can take the sample of the milk when you are waiting for the weigh can to empty, and it really doesn't take any extra time. When your testing day comes you have your samples of milk all ready for testing, and you will get as clear a test from the composite samples as you will of the new milk, if the testing is properly done.

Now, loss in dairying is very easy, and I am, but a pioneer at it, but perhaps a few ways in which I have lost, may be of use to some, may set them to thinking, and that is the main thing, says a writer in National Stockham. I struck a heifer with the flat of my hand, result, she held up her milk for a week; had to be very gentle, and gave her something to eat, to get her to give down again. It was very dry one season, and cows did not have enough good water, which shortened the milk and butter record. Tried to get along and be saving of ice, which resulted in feeding butter fat to the hogs, also the same by churning cream when it had stood only twelve hours, and had not become sour enough. One more mistake. I sent some butter to a commission merchant, which proved to be not just right, and I came out $8 behind. Guess he was satisfied, as he keeps writing for more butter. To sum it all up, read good dairy books and papers. Don't be guided entirely by them, but investigate and observe for yourself, and find out what is best.

POINTERS FOR CHEESEMAKERS.

According to the report of some shippers who have recently returned from England, many Old Country dealers are loud in their complaints of the quality of last season's Canadian cheese. In too many instances the goods were too stiff, and hard textured and did not show sufficient meat and were not up to the usual quality of Canadian cheese. Some of the English dealers stated that they were compelled in some instances to take United States cheese in order to get the quality required.

Whether this last statement can be fully relied upon or not is hard to say, but it is nevertheless too true, that there have been good grounds for complaint as to the character of some of last season's goods, because of this stiff and hard textured quality. It is of the utmost importance that cheese makers should guard against this the present season. The fault may lie with the maker and then again it may not. If it does, he has it within his power to remedy the difficulty, and so turn out the kind of goods the British market demands, viz., a well cured, fine flavored, meaty and close cutting cheese. To get this the maker must have a good quality of milk, and if the milk is all right, and other conditions are favorable, there is no reason whatever why he should not turn out the kind of goods the British market requires.

One of the drawbacks to the making of really fancy cheese is the lack of proper curing rooms in connection with many of our cheese factories. In many of them it is almost impossible to cure the cheese properly after it is made. There is something that to a large extent is beyond the maker's control: though, if he exerted his influence a little, and refused to be responsible for the cheese unless proper curing facilities were provided, there would soon be an improvement in this regard. A great many owners of factories and patrons who are largely the owners, do not fully realize the importance of good curing rooms, and with the tendency of late to keep expenses down to the lowest possible notch, it is difficult to get them to improve matters even where they see the necessity of it. It is a "penny wise and pound foolish" policy to go on year after year making a fine quality of cheese, only to have it injured when placed in the curing room. A day of reckoning is near at hand, however, and factories which have not the proper facilities for curing cheese will have to be content with a lower price for their cheese.

Another evil that is complained of and which is claimed to be the chief cause of the hard, dry cheese referred to above is the practice that too many factorymen have of shipping their cheese too green. This is, indeed, a serious mistake, and often results in otherwise good cheese being permanently injured by being taken out of the curing room before it is sufficiently cured. A firm, close cutting cheese, unless sufficiently cured before leaving the factory, will take on that stiff and hard textured quality complained of. The buyers, factorymen and makers should co-operate in this matter and refuse to buy or allow cheese to leave the curing room till it is properly cured. The factorymen and makers, by shipping early, may save a little in weight, but such a practice will eventually bring its reward and injure the factory's reputation far more than can be compensated for by the extra gain in weight.

The Ontario Agricultural College, Guelph, is preparing for more students than ever before.

Prof. James W. Robertson has been doing some good missionary work this summer in the Old Country, in advertising Canada products.

WILL MEET IN KINGSTON.

The request of the Frontenac Cheese Board has been acceded to by the directors of the butter and Cheese Association, and the annual convention will be held in Kingston on Jan. 10th, 11th, and 12th.

HOW TO FIGURE DIVIDENDS.

(Continued from our last.)

The amount of money left, after paying cost of manufacture, is then divided by the total lbs. of fat obtained for the month to get the prices per pound of fat. Then, the number of pounds of fat delivered by each patron is multiplied by the price per pound, which gives the amount due him.

HOLSTEIN BUTTER.

Secretary Hoxie, of the Holstein Breeders, says that the standard of aristocratic butter in England used to be Holland butter before the Dutch ruined their reputation by making "oleo." He says: "The aristocratic consumers in England object to American butter as too heavy flavored. The flavor depends on the milk, and not on the manufacture. Cows producing butter at a low rate of milk produce heavy flavored butter, while the Holland cows, the Danish and our American Holsteins produce butter of a more delicate flavor. Allow me to suggest in a tentative way that it would be good policy for Secretary Wilson in his next shipment of butter to open the aristocratic English markets, to include a quantity of well made Holstein butter."

An exchange asks, "Do cows think?" We don't know. We wonder, however, provided they do think, what are the thoughts of the cows whose owners turn them out to wade through snow, and slush to some distant pond, creek, or spring for all the water they get; or whose only protection from the winter's storm is the lee side of a straw stack or barn, or which stand in stables through whose cracks the breezes have free circulation. A few thoughts from such cows, if put in print, would make mighty interesting reading.

HE WAS A VILLIAN.

On a Hot Day He Asked an Editor the Following Question.

'T was just afternoon on that hot Friday when the thermometer registered 96 in the shade, and in short sleeves and perspiration we were busy reading a bad proof when a friend of ours came in.

I have a question I would like you to answer." "Out with it" we replied, mopping the editorial forehead with a damp handkerchief. "Hope it is an easy one." "Well, a tall girl named Short long loved a certain girl Mr. Little, while Little, little thinking of Short, loved a little lass named long. To make a long story short, Little proposed to Long, and Short longed to be even with Little's shortcomings. So Short meeting Long, threatened to marry Little before long, which caused Little in a short time to marry Long."

"What's the question?" we roared.

"Just this," he replied coolly. "Did tall Short love big Little less because Little loved Long."

He had remained standing and was out the door before we could reach the ink bottle.—Exchange.

STARTER.

The object of pasteurizing the milk which is intended for the preparation of a fermentation starter for cream is to render it practically "neutral," bacteriologically speaking, and, as such, a medium for the development of certain desirable flavors by introducing into it a small quantity of a flavor-producing substance, generally known as a "culture," either in dry or liquid form. If conditions, temperature, etc., be right, we may be pretty sure of having in this starter, when properly prepared, an exact reproduction of the original flavor of the culture."

Without using this "culture" we have no assurance of obtaining the right quality of a starter made from pasteurized milk; it having, as before said, been neutralized. We must for our "culture" depend largely on the micro-organism floating in the surrounding atmosphere. "Hence the quality of a starter made from pasteurized milk, without the use of a 'culture of some kind, will depend largely on the condition of the atmosphere to which it may be exposed."

If we have to make a fermentation starter without a "culture" we should select a sample of pure flavored, clean milk from healthy cows not more than two or three months in milk; aerate it thoroughly and put into a pail or vessel thoroughly cleansed and scalded, cover the vessel with three or four thicknesses of cheese cloth previously scalded in boiling water. The milk should be kept at a temperature of 75 degrees to 80 degrees until it becomes sour and thick; then one inch of the surface should be skimmed off and thrown away, i.e., not mixed with the rest of the milk.

When the starter is thus prepared it should be cooled to about 45 degrees Fahr., so as to check any further development of acid.

— MARKER, Supt.
Government Creameries, Alberta.

HOME SEPARATION.

A correspondent of the New Zealand Dairyman on the subject of home separation versus the creamery says: "For five years I supplied a creamery with milk and fed skimmilk to my calves that many a self-respecting hog would have turned his nose up at. I started with a herd of pure cows and ended with having to destroy twenty-five per cent. of them. I lost heart, and was on the point of giving up the business when a neighbor advised me to try the home separation plan. I did, and consequently the article in your last issue in favor of the former has raised my ire. I will tell you what home separation has done for me. My enthusiasm in dairying has been revived, my expenses have decreased while my income has increased, my work is interesting instead of being, as before, a drudgery, and my herd is being saved from the continual process of contamination. It was previously undergoing. As one who has proved its value by experience my advice to all dairymen is—buy your own little separator and so succeed where you have failed."

TAINTED AND GASSY MILK.

Set at 80 degrees; use less rennet; heat only to 97 or 98 degrees; cut a little coarser; drain off whey at 1-4 inch acid; do not hand stir the curd only sufficient to firm it; the more tainted the milk the less hand stirring the curd needs when whey is all taken off. Keep curd warm for 3 1-4 to 4 hours, and in very bad cases longer. The gas must be burnt out by keeping warm and giving lots of time to kill the gas. When the holes flatten down, then grind the curd and give one to two hours to salting and putting to press. The great secret of killing gas in curd is to give a little more moisture in curd, more acid in whey and longer time to grinding and keep warm (the whole time) to not below 96 degrees.

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WHY ARE YOU NOT MAKING MONEY.

Again we repeat that, until every dairyman has a Babcock tester and thus knows exactly what each of his cows is doing—he will never be able to make dairying pay.—He may by chance have a class of cows giving a uniform richness of milk, but more often he is feeding in a haphazard manner a nondescript lot which may or may not be eating their heads off. Providence may be in the know, but he certainly is not. He is working blindly, and along the crudest and most antiquated lines. Even if he has been wise enough to improve his herd by culling and the infusion of better blood, yet experience has proved that dairy form is very deceptive. How many dairymen there are who have been astounded at the result of a butter fat test; the very animals they considered the pick of their herd showing a ridiculously low percentage, and have had to be passed on to the butcher to make way for more profitable milkers. And this is no rare exception; it is in fact surprisingly common.

WINTER DAIRYING MOVEMENT.

Prof. Robertson, Agricultural Commissioner.

To make his business profitable the dairyman must carry it on during the whole year. Milk and its products have been as a rule dearer in winter than in summer. A large amount of capital is invested in cows, barns and cheese factory and creamery buildings. It is wasteful policy to permit so much capital, not only to be unproductive during five or six months, but a source of expense. Considerable labor on farms during the winter is absorbed into the unremunerative chores of the farm buildings, unless animals are kept yielding a product, or increasing in value. Cows must be fed during the winter. If a direct revenue can be obtained, the work can be done with more enjoyment, more of it will be undertaken, and more profitable methods will be applied. Other branches of farm management, such as the raising of young stock, the fattening of swine, and the keeping of laying hens, will grow out of it. There are few more discouraging and joyless occupations than attending on cows all winter, without any revenue from the work.

Hundreds of men are employed as cheesemakers during the summer who unwillingly are comparatively idle during the winter. If their capacity and ability can be applied to making butter during the winter much will be gained. When dairymen obtain a satisfactory revenue from cheese factories during summer, and get hardly any income during winter, they can make slow progress in bettering their circumstances. The patrons who send most milk to the cheese factories in the summer might also send relatively the largest quantity in winter. As a result of the immediate revenue from butter making in winter cows get better care and better feeding and give more milk the following summer. After winter dairying was begun at the first government dairy stations, the president of the Mount Elgin dairy company, who had thirty cows and had milked them during the winter, stated that during May of the following year he obtained twenty-five per cent. more milk from his herd of cows than he had ever obtained in that month in any previous year. Doubtless that was mainly owing to the cows being kept in a fairly warm stable during the winter and fed on succulent feed. Unless cows on the average are made to milk during ten months, they are likely to become unprofitable as milkers.

The by-products of dairying, skimmilk and butter-milk, are more valuable for raising of stock, feeding of swine and growing of chickens, during winter and early spring months than during summer. The dairymen cannot be fully prosperous until a revenue comes in regularly during the whole year.

Our Yankee and Canadian butter friends are waking up to the fact that it is in flavor point where all the improvement is to be made. Of course, —and it is just here where all the trouble is founded—the flavor; flavor of milk, of feed, of cans, of sheds and of the whole surroundings. And they suggest all manner of ways and means to bring about the desired improvement. Let me give them a hint—give the factory manager a rest for a while and go for the supplier; educate him, somehow, anyhow, but educate him. It may at first blush seem rather impossible, but it is not impossible, and when you have done it the reward will be great.—New Zealand Dairyman and Dairy Messenger.

SALT FOR CATTLE.

Why do cattle need salt? The fact is every part of an animal contains salt, and every secretion, the perspiration even, causes a loss of salt, which is to be made up by the food. But the principal digestive agent of the stomach, the gastric fluid, contains the acid of salt (hydrochloric), and thus salt is an indispensable agent of digestion. The blood is salt, the tears are salt, and on the whole, an animal of 1,000 lbs. needs two ounces of salt daily to supply this needed nutriment for its various functions.

Animals need the most salt when they are feeding on watery food, as pasture, ensilage, roots, etc. This is because the large quantity of water in the food greatly increases the escape of fluids in various ways from an animal, all of which carry off salt. When dry food only is eaten, there is not so much waste in this way, and less salt is needed then. The fact is, that this indispensable necessity for salt is not at all sufficiently considered as it should be, and cattle suffer in consequence.

Milk contains salt, and if the cows are not daily supplied, the milk will suffer. At this time of the year a full sized cow should have two ounces of salt a day, while, in fact, the majority of them don't get as much in a month. Then they eat the horse manure, chew rotten stuff, and have what we call a depraved or diseased appetite, and of course do not thrive as they should. An excellent plan is to keep a barrel of rock salt, and leave lumps of it wherever cattle can get at it.

THE TRAVELLING DAIRIES.

Commissioner Robertson, Ottawa, says in his annual report: The mass of the people do not go to colleges, and if the women on the farms are to be helped you must carry the instruction to them. We have travelling dairies. A simple outfit for the making of butter consists of a hand-power centrifugal cream separator, a Babcock milk tester, a revolving barrel-churn, a butter worker, a pair of weighing scales, two thermometers, pails, strainers, dippers and a few other utensils. The whole can be packed in boxes and loaded on a horse waggon or sent by train; the whole does not exceed five hundred pounds. Usually one travelling dairy instructor, an expert butter-maker, and an assistant go together, spending one or two—usually two—days at a place. A local committee arranges for a lecture room, frequently the town hall, and also for a supply of milk and cream. Two meetings a day are held, at which practical demonstrations of the testing of the milk and the making of butter are given. Two visits of a travelling dairy to a place bring about a marked improvement in the quality of dairy butter. The women see the use of the apparatus, watch the methods of handling everything and learn something of the principles. The neighbors who may not attend the meetings learn from those who did. Of course, in many districts farmers' wives and daughters by the hundred do not need instruction, but many of these are the keenest students.

WHITEWASH THAT WILL NOT RUB OFF.

Mix up half a pail full of lime and water ready to put on the wall; then take one-quarter pint flour; mix it up with water; then pour on it boiling water (a sufficient quantity to thicken it); then pour it while hot into the whitewash. Stir it all together and it is ready for use.

DISCOLORATION OF CHEESE.

This is a most absorbing and interesting question, and one which more definite information is urgently required, as cheesemakers have enough to contend against, and when a curing room of discolored cheese strikes a maker it is disastrous to his hard acquired reputation, and from a pecuniary point, is certainly not conducive to his revenue.

The main question to be considered is if this defect arises from a bacteriological origin, then most certainly no maker no matter what his accomplishments, he is certainly not exempt from falling a victim to this concatination of circumstances, as no cheesemaker can guard against the encroachments of this class of undesirable germ which is said to cause discoloration in cheese.

For if this imperfection arises from a lack of perfect drainage, then the cheesemaker is safe because all factories are more or less slimy and no maker can keep his factory absolutely clean in the strict meaning of the word, it is impossible to guard against the accumulation of small particles of filth, nothing is distinctly perfect.,

And as definitely stated before despite the most vigorous precautions there must be a small proportion of dirt in the regions of factories this is indisputable and is not necessary to dwell on minute cleanliness.

If this discoloration of cheese is due to bacteriological life. It will be found necessary to have on the spot a bacteriological expert and an agricultural laborer as a cheesemaker has not time to attend to other work outside of his special department.

And if discoloration is strictly, to be accounted for by germ life why is discoloration not more widely distributed over the Dominion, and more cheese suffer from the blemish.

The probable solution to this exhaustive question is that germ life is not responsible for this damaging imperfection.

In the materials which comprise the manufacture of cheese the solution of the question of discoloration might be found.

But of one thing. I feel assured is this if slime is the sole cause of discoloration, then bacteriological researches must probe deeper before the average cheesemaker will be positive that discoloration is due simply to slimy and dirty quarters.

Cheese and butter makers recognize the good work accomplished by instructors and experts.

But the present problem will be to reduce the danger of inferior manufacture to a minimum.

As cheesemakers value their reputation, it is simply justice to them that precautions should be taken, so as to guard their interests not only in minor details, but in all generalities pertaining to their profession. The writer of this article values the services of all men who devote their ability and time for the maker's benefit.

C

WM. BUTLER & SONS,

Breeding Herds at Dereham Centre, Ont.

The manager of this concern, Mr. W. E. Butler, is a graduate of the O. A. C. In 1897 his herds won $1,500 in prizes, the largest won by any firm in Canada. This firm have lately added a fine importation of cattle to their herd which has won sweepstakes in Toronto for the past two years. They lately imported the best bred Chester boar in U. S., for which was paid $125, and have lately purchased the noted show herds of Daniel DeCourcey and H. George & Sons, and for this reason they have to sell the Duroc Jersey herd to make room. The Duroc herd should be a bargain at that price, as they have one sow that they would not sell for less than $75. The most of the sows are bred to farrow this fall to an imported boar, which won first in Toronto, 1897. The herd of Durocs includes aged boar winner of sweepstakes in Toronto, 1896, an imported yearling boar winner of first in Toronto, 1897, one yearling boar and 2 first-class

(Continued on Page 32)

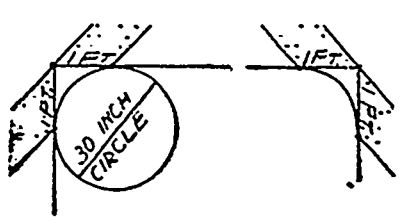
DAIRY & CREAMERY.

VALUE OF THE SILO.

A Scientific Explanation of Why Ensilage Is Digestible.

"Science," says The Rural New Yorker, "is just beginning to throw light on the reasons why ensilage gives better results in feeding than the same kind of fodder when dried. A German scientist has shown that the nutritive effect of fodder is modified by the 'ease of digestion.' If a large amount of dry, tough, woody material is present in the food, the labor of digestion is increased. The energy used in working over this ballast while in the digestive tract is just so much taken from the 'productive' energies of the animal. The ensilage is easily reduced to a fine condition with little labor, while much hard work is needed to bring the same amount of dry food material into an available form."

A correspondent of The National *Stockman gives the following interesting* suggestions: "Since the silo first came into use I have heard the inquiry, How can we best fix or make the corners of our silos? I had one made two years ago and found trouble with it. One year ago I made another and am so well pleased with it that I send you the plan. I ceil inside of silo with narrow matched pine one thickness, and to make a good corner I made several experiments and found that by measuring in on inside of silo one foot from each corner and then striking a 30 inch circle on the crosspiece in the corner I could ceil around the silo by using 8 inch matched lumber. The corner proved to be a success, and many who look at it say the question so often asked is now answered. The crosspiece should be sawed out of lumber 2 by 10 inches. I use 2 by 8 by 16 feet long and make my silo 16 feet and 8 inches square and thus save all waste in cutting the 2 by 8 inch lumber. I board the outside of silo with surfaced hemlock and then put on building paper and side on this with novelty siding. I much prefer this plan to my other silo, which was double boarded and battened with paper between. *The wide boards are quite apt* to shrink and split. I think with the directions given any carpenter can draw a draft, make pattern for crosspieces in the corners and have them sawed out carefully by hand saw, and with due care can make a fine silo."



CORNERS OF THE SILO.

Views on Calf Raising.

I have raised, or, rather, tried to raise, calves since 1893, and have had varied results. I never failed to raise a good calf if the cows came in in the fall of the year any time before the stabling season began. I do not have to be so careful as to quantity or quality of milk fed. I feed them separator skimmilk through the winter and then turn them out to grass with the rest of the cattle. They do well without any extra care after grass season begins.

Now as to the calves that I do not raise. I cannot raise a calf and make it come out thrifty that is dropped from a cow fed through the winter months in stable, nor is it for want of exercise, as our cows are turned out every day after 9 a. m., stormy days excepted. I have tried various ways to raise these calves. I let them run with the cows, gave them fresh milk by hand so as to regulate the quantity, I have diluted it with water. I have tried skimmilk warmed, etc.

As a cure I tried scorched flour, strong coffee, raw eggs, soda and saleratus. At times one or the other of the remedies seemed to give relief, but they always came out stunted for life. About one-half would die—some at a few days of age, while others would linger for a month. I have come to the conclusion that it is caused by heavy feeding of a so called "balanced ration" for milk production, milking cows up to time of dropping next calf, etc.—F. L. Mielke in Breeder's Gazette.

Clean Water For Cows.

It is a mistaken idea that because cows will drink out of a dirty puddle, and at the same time refuse fresh, clean water from the well, the muddy and warm water is not a source of danger. The cow likes it best not because it is dirty, but because it is warm, and what she drinks does not chill her stomach and retard digestion as the cold well water might do. Man is the only animal that likes water as near ice cold temperature as he can get it. Because of this and other sins of the appetite the human digestive apparatus is more apt to get out of order than that of any part of the brute creation. Sometimes, however, cows dislike the well water because it is charged with minerals that are offensive, if not unhealthy. In limestone regions well water is always hard. That washed over the surface of the ground, which is mainly composed of leaf mold, is rainwater with a much less proportion of lime. But if the cow is to drink out of a pond it should be fenced around so that she cannot go into the water and there dung and urinate. The queer taste that is sometimes in August found in fresh milk is as likely to result from this practice as anything. Where cows can get to a running stream, it is allowable to let them run in it during August, but even then a good deal of valuable fertilizer in the cow's excrement will be tasted.—American Cultivator.

Water For Cows.

A plentiful supply of water is necessary for the proper production of milk. American experimenters state that the amount of water absorbed by a cow does not influence materially the quantity or quality of the milk. I am bound to disagree with this, although I have carried out no experiments on the subject, for the reason that watery and sloppy foods, such as grass, brewers' grains and roots, certainly do tend to the production of a larger quantity of milk with a corresponding decline in the total solids, more particularly in the butter fats. At least I consider that this is the most feasible explanation of why the total solids go down when watery foods are given and also why the excess of water drunk in a hot summer has a like effect.

Period of Lactation.

Irrespective of everything else, a cow yields the largest quantity of milk of the poorest quality some six or seven weeks after calving, and as the quantity goes down from advancing lactation the quality or richness of the same goes up, the increase being more particularly in the butter fat alone

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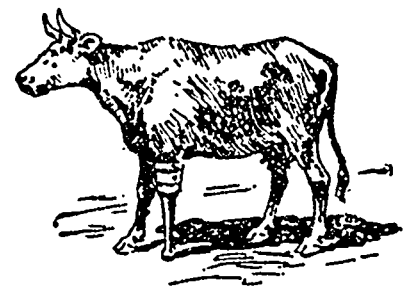
CARE OF COWS.

Gentle Treatment Has Much to Do With Dairy Profits.

The dairyman who treats his cows with the most consideration is the dairyman who makes the most money. When well fed and not disturbed about her calf, the average cow will lie and chew the cud of contentment for hours, and while thus undisturbed will secrete all the milk possible from the food she has eaten. Yet the domestic cow, if she be a good milker, has a capacity for becoming nervous and excitable such as the ox or spayed cow cannot rival. At all times the first class milk cow must be a hearty feeder. So long as she is given all she wants she may be quiet



COW WITH A WOODEN LEG.

enough, but if placed in a pasture where the food is insufficient or too poor in quality the quiet cow will soon develop roving instincts and will break through fences in order to get at what she likes.

A. H. Hartwig, a veterinary surgeon of Watertown, Wis., has just removed the injured leg of a valuable cow belonging to a farmer of Ixionia and has fitted the stump with a serviceable wooden leg. The farmer did not want to lose his cow by shooting, the usual American manner of curing such injuries, so the surgeon was called. The medical man decided he could remove the leg, and when it was sufficiently healed he could adjust an artificial limb, which would answer all practical purposes.

Much of the abuse of cows is due to hired help on the farm. George E. Newell, writing in the Boston Cultivator, says that the average hired man does not study into the whys and wherefores of things. He simply performs the labor mapped out for him to do either in a good, bad or indifferent manner. It is to him so much manual or mechanical labor, nothing more.

The dairyman tells his man to go and get the cows and milk them, but he fails to tell him what to do and what not to do in carrying out this procedure.

To expedite matters the hired man may as a beginning take along a shepherd dog to the pasture and bring the cows in on the run. In milking he follows out his own way rather than any plan directed by his employer.

He brushes or does not brush the cows' udders, according as he sees fit, dips his fingers in the milking pail to moisten their teats at his own pleasure, strips them hastily or treats the animals roughly, as inclination moves him. His instructions go no further than to say, "Milk the cows," with no orders as to how to milk them.

Subordinates engaged in dairy work should be as well trained in what they are to do and how they are to do it as are soldiers. The mind that directs the dairy and sees that his directions are minutely followed is the one that will make the dairy pay.

Cows and Skimmilk.

A seemingly unnatural use for skimmilk, but one which has been reported as satisfactorily practiced in a number of places, is as food for milk cows. Some German accounts are given of mixing skimmilk with water, a very little at first and gradually increased until the cows are taught to drink the milk alone. Others describe using milk and meal or bran of some kind to make a paste, and claims are made that in this form ten pounds of skimmilk replace one pound of wheat or rye bran, having the same food value with cows. The method of feeding the skimmilk back to the cows producing it, which has been most practiced and advocated in Europe, originated in Sweden. The milk is heated to 155 degrees or 160 degrees F. *for half an hour*, then cooled to 100 degrees F., and rennet is added. While the milk is thickening an equal weight of chaff or finely cut straw is mixed in, and after being well stirred it is allowed to stand two or three hours in a large tub or tank. The separated whey is then drawn off and poured over the mixture, that as much as possible may be absorbed. The whole mass is then left to ferment from 40 to 48 hours, according to the weather, when it is regarded as prepared for feeding. Cows are given as much of this "skimmilk feed" as will equal a gallon of milk per day. It is claimed that as thus prepared a gallon of skimmilk amply replaces four pounds of concentrated grain food. Reports from Sweden, Norway and Denmark are favorable to this method of utilizing creamery skimmilk, and some who have tried it in this country make like reports, while others give a contrary opinion.—Western Ploughman.

Protein In Milk.

In the agricultural states of the corn belt protein is altogether the most expensive and most deficient nutrient in farm feeding stuffs. For want of protein many rations are unbalanced and fail to give economical results. Skimmilk at 25 cents per hundred furnishes protein more economically than oats at 25 cents per bushel, and besides the feature of economy no feed furnishes nutrients in a more available, palatable and digestible form than skimmilk when properly handled. Modern agricultural conditions will not long permit the extravagant waste of a product worth $100,000,000 a year.

Driving Cows.

Speaking of driving the cows up from pasture with a dog reminds me that this is a common practice with some. They brag about having a dog that can be sent after the cows, but you never see one that will bring them up at a walk—at least I never saw such a dog. It is bark and nip and run at full speed, chasing and worrying them every foot of the way to the barnyard. How any one possessed with the least grain of common sense can permit such a performance passes understanding. Cows should never be driven faster than a walk, most certainly not when the udders are distended with milk. There may be dogs that can be trusted to drive the cows up from pasture, but they are as rare as Kohinoors, and the average small boy is not much better The boy and the dog together—well, they make a combination that is a terror to cows, to say the least.—Cor. Hoard's Dairyman.

Yielding Capacity.

There is a great difference between the yielding capacity of the different breeds both as regards the quantity of the milk produced by an average cow of each kind and the average chemical composition of a sample of the same, and, to put it shortly, no one would expect by feeding to convert the milk of a Dutch cow into a quality as good as that yielded by a Jersey—to take the two extreme cases—and my contention is that no alteration in the feeding *would even approximately produce this* result or enable a cow to yield more butter fat in the milk than her natural constitutional standard.

DAIRY AND CREAMERY.

AERATION AND COOLING.

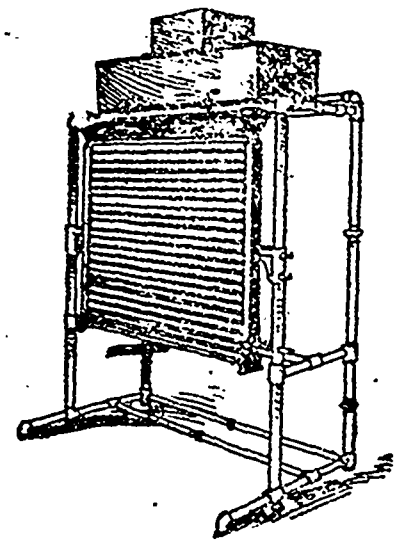
A Matter of a Million Dollars to American Dairymen.

Scientists tell us that the milk coming from a healthy cow, fed pure food, is virtually free from germs and pure, but practice teaches us that it is impossible to secure the milk in that condition.

Even if the milk comes from a perfectly clean stable, where the cows and all surroundings are kept clean, the immediate aeration and cooling of the milk are of incalculable value, providing always that the work is done in a room where the air is pure.

Though no scientific explanation can be given us as to the reason why aeration improves the milk, yet it seems to me possible that it may be caused by the fact that many of the bacteria causing taint are anaerobic and develop best where the air is excluded and that even if the lactic acid bacteria should develop a little these are, if limited, really of benefit, giving flavor as shown in cream ripening. That aeration eliminates many odors caused by gases is acknowledged by all.

That cooling the milk at once after milking is an enormous help in preserving it is easily understood when we know that the development of all spores and bacteria is retarded exactly in proportion to the reduction of the temperature. This is best understood by the bacteriological experiments, which showed that milk containing originally 975 bacteria, kept at 59 degrees, multi-



SIMPLE MILK COOLER.

plied in three hours 1.06 times, in six hours 2.5 times, and in nine hours 5 times, whereas at 77 degrees it multiplied in three hours twice, in six hours 18.5 times and nine hours 107.5 times, and at 95 degrees they multiplied in three hours 4 times, in six hours 1,290 times and in nine hours 3,794 times. On the other hand, if kept at 45 degrees, having been cooled to that temperature at once after milking, there is hardly any increase at all. It is thus evident that, combining aeration with cooling as soon as possible after milking, we gain a double effect, and this is best obtained by letting the milk flow over a surface of tin or tinned copper, which is cooled by cold water or ice.

It is also evident that the easier such an apparatus is kept clean the better it is. If for unavoidable reasons (?) the milk cannot be treated at once, I feel inclined to advise reheating it to 98 or 110 degrees before aerating and cooling.

In view of some practical experiments made by me, I cannot urge the aerating and cooling of all milk too strongly, not only for direct consumption, but for creameries and cheese factories.

I do not fear being accused of exaggeration if I claim that if all milk brought to our factories were thus treated, it would improve the quality of our butter with at least one-fourth cent, and our cheese with one-half cent per pound, and this would virtually be an increased annual value of these products aggregating over $1,000,000.—Prize Article by J. H. Monrad.

Cold Barns.

Those whose cattle barns are not warm enough to work in comfortably without an overcoat and mittens in the winter or even without any coat in ordinary winter weather may be sure they are not warm enough for the cows to do their best in, or for calves and young stock to grow rapidly without extra allowance of heating food. Covering up cracks and seeing that windows and doors shut snugly will help some, but we remember when a boy and when cows were kept in a barn with unshingled sides and ends having to help line the walls back of stock with old boards and slabs nailed on the inside of the posts and stuffing the space between this lining and the outer boards with bog hay, so that no wind could come through. Taking out the old board slide window where the manure was thrown out into the yard and putting in a larger half window from an old building so that we had light enough to take care of the cows without leaving door or window open was another improvement, and all was done at small expense and but little labor, which were important considerations in those days to poor farmers, trying to do the best they could with what they had.—Boston Cultivator.

Milk In Different Seasons.

The flush of young grass in the springtime stimulates the production of a large quantity of comparatively poor milk. The dried, brown pasture in the hot weather of autumn causes a shrinking of the same, with a corresponding increase in the total solids—that is, more particularly in the butter-fat—and no alteration in the feeding to counteract these effects has a permanent marcial influence on the composition of the milk.

CREAMERY BYPRODUCTS.

How an Enormous Amount of Wealth Is Going to Waste.

There are four essentials to success in each competitive industry, says The Creamery Journal—abundance of raw material, economy of manufacture, excellence of product, finding a market and utilizing the byproducts.

An intelligent dairy community can be depended upon to furnish the raw material in abundance if the other phases of the industry are in good shape. The dairyman always has rich land as a result of dairying, and he can raise feed cheaper than the grain farmer possibly can. Economy of manufacture is crowding close to perfection after the material is in the butter maker's hands, thanks to the excellence of modern creamery machinery and appliances. Excellence of product is assured with a suitable butter maker and the conditions previously named as they should be and can be. Finding a market for butter is now, owing to the brisk competition of solicitors, changed to the market seeking the butter and bidding for it with all imaginary inducements.

We find creameries well managed in the first three particulars, and yet some of them are in trouble. It is because the byproducts are not given due consideration. No flour mill can exist now unless the byproducts are marketed well.

Iowa alone is now making 1,000,000 pounds of creamery butter a day. This means in round numbers 20,000,000 pounds of skimmilk. The waste of this milk at the low value of 10 cents per 100 is a waste of $20,000 for each and every passing day.

How can this waste be saved? It can be made into artificial ivory, bone and celluloid, and there is a factory in the United States converting it into these substitutes, and we have billiard balls, combs, checks, buttons, etc., made from the casein of skimmilk, but this one factory is about enough of its kind. Skimmilk can be made into sizing for paper, and in the eastern part of the country there are several factories taking the entire skimmilk of the adjacent creameries and making this sizing, or artificial glue. But skimmilk is too bulky to permit of shipping any considerable distance for this or for any other purpose.

It can be made into meat by feeding it to young animals, and this is the only practical way to save it in the great dairy localities of the Mississippi valley, but to save it for this purpose it must be saved, not spoiled. The skimmilk as returned this time of year from the average creamery is rotten stuff, not fit for food to any animal. By a unanimous verdict it is agreed that it has lost at least half its value. If half the creameries of Iowa return this kind of milk, it follows that the loss is $10,000 a day for Iowa alone, and from this one cause. There are creameries that do not spoil the skimmilk. Some of them pasteurize the skimmilk and return it sweet. It costs a little to do this, but the looks of young calves are testimony to its merits.

Rest For Milking Cows.

It is, we think, a fault of some of the best breeds of milkers that they cannot be easily dried off, even when they approach the time for dropping their calves. An interval of at least a month, and six weeks is still better, should be left to the cow, in which she should have an entire rest. Milk is not good for food for varying periods before parturition, depending much on the age and condition of the cow and the kind of food she receives and digests. A cow thin in flesh may require eight or even ten weeks' rest before beginning milking again. While we believe that young heifers after their first calf should be kept in milk until within a month or six weeks before the next calf is due, it is rather to get them into the habit of long milking than because the small amount they give will be worth the extra feed and labor required to secure it. Unless to supply milk for household use in winter, there is little advantage in milking the cows that calved in the spring longer than January of the following year. From eight to 12 weeks with comparatively little grain feed will leave the cow in better condition for next year than will crowding her stomach with grain, so as to force milk production until near the time her next calf is due to be dropped. This last will possibly increase the milk flow when the cow springs her bag for the coming calf, and thus cause garget, which is an evil that the best milkers are always most likely to suffer from. Until near the time of parturition the cow should be fed enough grain to make her gain in flesh. But for two weeks before she calves this grain feed should be withheld, lest it stimulate the milk flow too much. After the calf is a week old and the danger of inflammation has passed the grain feeding may be resumed, taking care not to give grain feed in such quantities as to fatten the cow rather than increase her milk flow.—American Cultivator.

GRADE COWS.

An Interesting Experiment at the Kansas Agricultural College.

The Kansas Agricultural college has taken up a new line of experiment, says the Boston Cultivator, and we shall watch with much interest for the results. They have purchased a herd of good average Kansas cows, weighing from 1,000 to 1,100 pounds, and not particularly of the dairy type as it is understood, but such as many good farmers in that state and others must rely upon for their principal stock.

They will try to see if good food and good care will enable them to produce the dairy products at a profit from such cows, and, if there is a profit, to see how it compares with the profit from cows of the true dairy type, animals from stock bred for generations for dairy purpose. This will constitute a valuable object lesson for the students and for those who read the bulletins of their experimental work or the papers which republish them. But to make the experiment complete they should take the best of these cows and mate them with good bulls of dairy families, raise the heifer calves with care and ascertain how much better such grade stock may be than the cows it is bred from.

Not every farmer can restock his farm by buying a new herd of dairy cows, even if he is convinced that they will pay a larger profit, but almost any one can buy grade cows, heifers or calves of dairy type and blood or can procure the services of a good bull to mate with his best cows and can raise a few calves. The change can be made gradually easier than it could be made all in one year.

And yet farther investigation may be needed. The best grade calves will not always come from the best dairy cows. The contest for supremacy or hereditary influence between different bloods or between the dairy type and the beef type may be so great as to make the product of a mating of a very uncertain character. A good bull may succeed in implanting the character of the family he is bred from upon the offspring of a very inferior cow of no particular breeding and utterly fail to do the same upon the calf of another and better cow that is strongly marked with the character of some other blood or type of animal.

The Scrub Cow.

The dairy business is far more overdone by the "average" cow than from any other cause. The trouble is she eats and exists upon a man's farm to do just half what is required of her, and eats as much good food in the year as her betters. The amount of milk this average cow gives is 8,100 pounds yearly, and it should be as many quarts of better milk. If one looks at this average cow critically, the signs are too often reversed from what they should be—viz, her head is too large to correspond with her udder, her shoulders wider than her hips and her tendency is to put tallow upon her caul and not in her milk and has ample storage capacity for everything except milk. She is a parasite that eateth by noonday and wasteth a man's substance by night, and in the way of "fleecing the innocents" she beats all the trusts and rings combined.—San Francisco Chronicle.

"All buttermakers should line their tubs with parchment paper," said a prominent dealer Saturday. "Just now it is extremely difficult to strip tubs not lined and get a good test. Besides all buyers want the tubs lined, and it is very difficult for us to sell butter unless this is done. Buyers have had so much satisfaction from the sale and use of paper lined tubs that they are now desirous of having them in all cases."

DAIRY & CREAMERY.

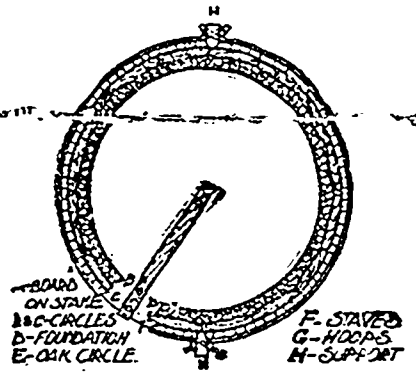
PURDUE UNIVERSITY SILO.

A Simple Plan Involving an Expense of One Hundred Dollars.

H. E. Van Norman, superintendent of the experiment farm of Purdue university, furnishes a plan of a silo recently built at an expense and rental within $100.

Laying Out.—In the center of the silo a stake was driven and sawed off at the height the foundation was wanted—in this instance, three inches above the ground. On top of the stake one end of a board was held by a nail. Five feet, ten inches from the nail a hole was bored and 14 inches farther a second one. With a sharp stick two circles B and C were marked on the ground. The space between was dug out two feet deep for the foundation.

Foundation.—Small stones were used for the grouting underground. A layer of them was placed in the bottom of the ditch, then mortar made of one part lime, two parts Louisville cement and nine parts fine gravel was poured in and distributed with a hoe. After that a second layer of stones put in place, care being taken to have them rest firmly in place. This alternating process continued till level with the ground. For the top few inches below the ground Portland cement and no lime was used. Above ground, which was sloping, the wall was three inches high on one side



PURDUE UNIVERSITY SILO—GROUND PLAN.

and 18 inches on the lower side. Large stones laid (in Portland cement and sand one to three) by a mason completed the foundation (D). On it an oak circle (E) (of 2 inches by 6 inches) was bedded in cement. It was made of one inch stuff cut in segments of a circle. These sections, breaking joints, were nailed together, giving the desired thickness.

Staves.—(F) White pine, dressed on two sides, and edges beveled one-sixteenth of an inch, leaving the finished stave a scant 1¾ inches by 5 inches. Twelve and 16 foot pieces make the desired height of 28 feet, breaking joints when put up. In the end of the staves at joint is a galvanized iron strip 2 by 5 inches. Notches for these sawed at the mill.

Hoops.—(G) Ten in number, of five-eighth round iron, with three-quarter inch ends threaded eight inches. The threaded three-quarter inch lugs welded on to the five-eighth rods. Cost $1 per hoop. Each hoop in two pieces to facilitate tightening. As a support for the hoops, (H) when not tight, a 4 by 6 was substituted for a stave on opposite sides of the silo. Through the projecting portion holes are bored for the ends of the hoops, making both a support and tightener.

Erection.—The 12 foot 4 by 6 first put in place, plumbed and braced securely by board nailed to a stake, the braces so placed as to leave one side clear to work on, the top and bottom hoops put in place and the center supported temporarily by a stave. After tarring the ends and edges of the staves they were placed in position and held by a nail driven just under or over the hoop and bent around it. This hoop was firm enough to lean a ladder against; 12s and 16s were put up alternately till the space was full, then that side drawn up. Similarly the other half was put up.

Pieces resting on the 12s and between the 16s made a scaffolding on which to work. The 16 feet 4 by 6 was stood against the silo with the upper end resting between the same staves as the 12 feet. A hoop was put in next the top hole, then two men at each timber raised them, hoop and all, up to their place. A brace to the barn, with one large nail at each end, allowed the pieces to be raised without tipping over. The bottom hoop for the top timber was now put in but not drawn tight. The staves were now put up, a 12 foot on a 16 and a 16 on a 12, and fastened to the upper hoop same as the lower ends, using a ladder leaned against the hoop and standing on the scaffold. It was found more convenient to put the strip of iron in the bottom of the top stave and then guide it to the place in the top of the bottom stave. It would be less trouble to build a scaffolding inside the silo, which would not have to be moved to make room for the upper staves.

Four doors are cut by sawing four staves at an angle of 45 degrees, alongside of stave inside. For the present no roof will be put on.

Temperature of Milk.

A temperature of about ordinary summer heat is found to be the best for the production of milk both as regards quantity and quality. A sudden frost in winter time will not only reduce the quantity of the yield, but will also reduce the amount of butter fat in the milk, the greater demand on the material in the food being represented by a lesser production of fat in the milk, and so on.

Nervous Cows.

The animal with a highly nervous organization will give the most milk of the best quality if she is properly treated. Conversely an animal of this nature is most likely to be influenced in her milk yield by rough treatment both in quantity and quality.

MILK IN HOT WEATHER.

How the Kansas Station Keeps It Sweet With Care Possible on Any Farm.

Many patrons of creameries and cheese factories cannot keep their milk sweet for the daily delivery, and more lose Saturday night's and Sunday morning's milk—one-seventh of their entire product. This loss, the Kansas experiment station asserts, is unnecessary and can be prevented by care that can be given on any farm, which is as follows:

The souring of milk is caused by bacteria which are in the dirt on the cow's udder, milker's hands, pails, strainer and cans and in the dust in the air. Under favorable conditions these bacteria double every 20 minutes, and a single germ in a pail of warm milk increases to 8 germs in an hour, 64 in 2 hours, 4,096 in 4 hours, and at the end of 12 hours if the growth was unchecked it would require 11 figures to write the number of bacteria springing from a single germ. With careless milking 500,000 germs have been found in a cubic inch of fresh milk.

The first step in keeping milk sweet is to get it clean—i. e., free from bacteria. Clean dairy utensils by rinsing in lukewarm water, then thoroughly scrub in hot water and scald with boiling water or steam and expose to the sunlight. Boiling water and sunlight kill the germs found in dirt in pails and cans. Just before milking the milker should wash his hands in hot water, as the dirt on the hands is full of germs.

We milk in a pail that has a top soldered to the sides. In the top a six inch hole is cut, into which fits a strainer. The strainer is taken out to be washed, and the opening gives room for washing the pail. This pail keeps bacteria in the fine dust from the cow's body from getting in the milk. Brush the cow's udder with a damp cloth just before milking and milk in a place free from dust. Strain the milk through the ordinary wire screen and through one thickness of canton flannel or four thicknesses of cheesecloth, treating the cloth with boiling water just before using. This method will give milk with few germs.

Cool milk as soon as drawn, for if kept 20 or 30 minutes before cooling the souring germs in it may double. The colder milk is kept the longer it will keep sweet. Milk held at 40 degrees has been kept sweet a week in August. The germs which sour milk grow best at blood heat, at 60 degrees growth is slow, at 50 very slow and at 39 it stops. Water in Kansas wells stands at about 57 degrees. With it clean milk can be cooled and held at 60 degrees and kept sweet easily 36 to 48 hours in our hottest weather. The best method of cooling is to use a cooler in which the milk flows over a chilled surface in drops, cooling each drop thoroughly and quickly.

After the milk is cooled put the cans containing it in a tank of cold water and keep at 60 degrees or less. If the dairyman has a windmill, this is easily done by letting a small stream of fresh water flow through the tank. At the Agricultural college milk is kept good 48 hours without either ice or windmill. The milk is cooled to 60 degrees on a cooler with well water, put in 40 quart cans and the cans set in half barrels filled with well water. The barrels are packed with chaff and the water changed night and morning. Dairymen living a long distance from the creamery or having little milk can follow the college methods and deliver their milk in good condition every other day, saving a heavy expense for hauling.

In delivering to the creamery have a cover on the wagon, cover the cans with a wet blanket, over which put a dry cover. This will hold the temperature down until the milk arrives at the creamery. July 26 we made an examination of the milk delivered at a creamery and found the lowest temperature to be 71 degrees, while three-fourths of the patrons delivered milk at 80 degrees or higher, one patron's milk standing at 97 degrees. At such temperatures milk might leave the farm sweet and arrive at the creamery sour. Milk carried in a covered wagon, but without blankets over the cans, raised 10 degrees in hauling 1½ miles.

How Wheat Should Go Into the Winter.

Winter should find the wheat plant strong, well and deeply rooted and with sufficient leaves to fill the drill furrows full. When it goes into the winter in this condition, the chances are good that harvest time will find a full crop of well filled heads of plump grain. For fitting land for sowing I know of no better tools than the disk and harrow. After the land is plowed—which must be done early to be done well—repeated disking and harrowing will reduce the surface to the proper degree of fineness and at the same time pack the soil just right to insure quick germination and a strong growth. Most farmers stop working the soil just as soon as they get it fairly level—just when it is in the best condition for working. It should be harrowed and disked and planked (not rolled) until it is as fine as a garden.—F. Grundy in Farm and Fireside.

(Continued from Page 29)

boars under 1 year bred by themselves, 1 boar under 6 months; one aged sow, winner of sweepstakes in Toronto, 1895,; one yearling sow, winner of first in Toronto, 1897; 7 nice pigs by her side; one sow under one year and 3 sows under six months. All of this stock is fitted and were exhibited at the large shows this fall. This lot alone should be worth the price they are asking for the whole herd at the price pork is at the present time. The balance of the herd is No. 1 breeding stock, some of the sows will farrow this month.

HOW TO HANDLE SLIGHTLY SOUR MILK IN MAKING CHEDDAR CHEESE.

Keep temperature of milk as low as possible until rennet is added; set at 80; use stronger rennet; cut finer; stir up curd quicker; heat faster; heat to 99 to 100 degrees; drain off whey as quick as possible. Keep hand stirring the curd until firm and have the curd quite firm at 1-8 inch of acid, then treat the curd as usual and above described.

Fodder Corn.

If fodder corn is drilled some time in May, as it should be, the early days of September will see it at its best either for soiling or for cured corn or for the silo, says American Cultivator. But a great deal of fodder corn is put in the ground so late that it needs every day of hot sun to make it ready to cut before frost cuts it. Many people seem to think that because grain is not expected from fodder corn all that is needed is to get the greatest bulk. But it is quality, not quantity, that counts in everything. The smaller yields of our Northern Flint cornstalks cost less labor and give about as much nutriment as the larger but less mature Dent corn when both are planted or drilled at the same time.

Hints for Dairymen.

The calf ought to be fed three times a day.

Unless the dam was a good one, don't try to raise a heifer calf.

The separator saves labor in setting milk, saves room and waste.

Rapid change from new to skim milk may injure the delicate stomach of the calf.

Barley is highly recommended as food for cattle, ranking nearly as high as wheat.

Unless the person and his clothes are clean it will taint the milk if he milks the cows.

It would seem timely to suggest again that the playful dog ought to be kept away from the cows.

If a heifer is fed upon fat-forming food constantly you will spoil her as a milker. She will learn to take on fat.

Tin Foil *Cheese Wrappers.*

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CHEESEMAKING.

How to Build a Factory For Twelve Hundred Dollars.

People have asked me how I would build a factory and how much it would cost, writes Professor John W. Decker in Field and Home. A good one can be put up for about $1,200. If possible, I would build it into the side of a hill, for two reasons: First, to get a cellar curing room in which an even temperature can be held, and, second, to secure an elevated whey tank without it being necessary to elevate the whey. I would build a basement with two rooms for curing cheese. One room can be kept fairly dry for the new cheese. New cheese ought to dry on the outside for a few days, until a good rind is formed, and then they may go into a room containing a more humid atmosphere, where they will dry out less—in fact, they will cure better. One reason why our people complain that the cheese is too dry is that the makers have to make the cheese firmer to stand the hot curing rooms, and the cheese is dried still more in such rooms.

The building above the ground can be built 15 feet longer to accommodate a boiler room at the end right on the ground, as it will be necessary to get a foundation in the ground for the boiler. The rest of the building above ground can be divided into a making room and a storeroom for supplies. The floor of the making room should be well supported from below to stand the heavy weight upon it. It should also be double thickness with tar or something similar between to prevent water running through. It must also be remembered that the insulation from the warmer rooms above must be secured for the curing rooms. The inside of the building should be properly ceiled and painted.

For ventilation of the curing rooms run two galvanized iron pipes, one foot in diameter, through the roof, one for an inlet of air and the other for an outlet. On top of the inlet have a funnel with a vane to it, so that it will always swing on a pivot toward the wind. The air would then flow down the funnel into the room below, and the air in the room would be forced out of the other tube. For times when there is little air moving a steam jet may be inserted into the outlet. A small jet of steam escaping will cause a surprisingly strong current of air that will make a partial vacuum in the curing room, and of course air will rush in through the inlet.

For buildings that cannot be built on a side hill I would recommend a subearth duct for ventilation.

How to Make Neufchatel Cheese.

A French expert at a recent dairy show explains this process as follows: These cheeses are made with equal parts of milk and cream. A gallon of the mixture at the temperature of the air is set with only one drop of Hansen's rennet diluted with three drops of water. The object is to obtain a rich and smooth curd, therefore use no more rennet than is absolutely necessary to convert the milk and cream very slowly into curd. The quantity of the rennet required will vary with its strength, with the season and temperature and with the age and condition of the milk. Warm, poor or stale milk will require less rennet; cold milk or milk enriched with cream requires more; the exact quantity required under varying circumstances can only be ascertained by experience. The curd is formed in 24 hours. It is then put into a cloth in a light wooden square frame to drain for 12 hours and gently strained two or three times, when the cloth is then changed and the curd pressed. When the whey has been pressed out, the curd is worked smooth in the cloth with a flat trowel and put into molds lined with paper, when it can be turned out at once and disposed of as soon as the cheese is sufficiently firm to bear packing. It will be observed that the principles of manufacture of these and other soft cheeses is directly opposed to that which regulates the making of hard cheeses, as follows: First, the quantity of rennet applied is very small; second, the temperature is not raised; third, the curd is therefore a long time in coagulating; fourth, the curd is neither cooked nor cut; fifth, the curd is carefully and gently lifted from one draining cloth to another.

DAIRY SCHOOLS

Their Value In Developing the Great Dairy Interests of Canada — To These Schools Can Be Laid the Glory.

By "R. C. B.," a Former Dairy Student.

The purpose of our Dairy Schools is to impart practical and theoretical knowledge on all subjects pertaining to dairy work.

Our colleges from time to time have introduced important methods, thus gradually supplanting imperfect and obsolete practices.

The abolishing of antiquated ideas added an impetus and marked improvement in our Canadian cheese and butter, in the teeth of keen and rapidly increasing competition through the medium of our dairy schools. Much of this progress was undoubtedly due, though some older makers deny this.

But we cannot afford to pay much attention to a few dissenting voices, while the great majority of makers have seen and recognized the valuable work done by these important and magnificently equipped institutions.

It is interesting to note how year after year numerous factories have successfully imitated these schools in many respects, more particularly in cleanliness and more thorough and complete equipment.

This will be more generally appreciated when we recall to our remembrances the inadequate condition of some factories in former years.

Even apart from the scheduled routine of dairy work, there are advantages to be gained; for instance, the meeting of students and exchange of ideas is productive of much good.

When we consider the comparative isolation of makers during the summer, we will more ready understand the facilities the schools offer.

The maker has not much opportunity when engaged at work for intercourse with his fellow workers. So the schools unite, and, without question, in this way are beneficial to the student.

The different courses are so highly instructive, and are based on such eminently essential facts that cannot fail to interest and elevate the butter or cheese maker, who comes with the intention of learning and and paying strict attention to lectures and general work.

From personal observation at the various schools devoted to this class of work, I candidly believe the maker who wishes to be successful and stand prominent in his work cannot afford without irreparable loss to absent himself from these dairy schools.

As the lectures and general instruction attains to a high efficiency, which would be difficult to eclipse, the fees are strictly nominal, in fact there is no legitimate reason why these Colleges are not more largely attended, when we pause and consider the great benefits which are derived from them. But as makers become more conversant with these methods. No doubt makers will avail themselves of this excellent opportunity for advancement.

The short sojourn in the city during courses will prove profitable, from an intellectual point of view, as the makers will have every opportunity for improvement in all the important topics of the day, political, religious and financial questions, interesting to all.

But all have not the facility for this thought and cultivation, unfortunately. The butter and cheese maker should grasp the opportunity and profit accordingly.

The general status and social surroundings of our schools are in a thoroughly satisfactory condition.

In speaking of the ability and general proficiency of the staff, they are masters of their professions, and will be found eminently practical and thoroughly versed in all branches of dairy work.

From my own experience and experience of fellow students, I can bear testimony to the unflagging zeal and continual courtesy and desire at all times to assist the makers in all points. In fact there is nothing to criticise in the staff or appointment of these schools.

I would like to draw attention to an admirable dairy paper just issued. This is an excellent production, and will be a valuable acquisition to all butter and cheesemakers. This paper is entitled, "The Canadian Cheese and Buttermaker." This journal can be confidently recommended. Papers of this kind will accelerate the industry.

R. C. B.

HOW TO MAKE POOR BUTTER.

Mrs. E. R. Wood tells, in the Jersey Bulletin, what she would do to make poor butter. What she would do, agrees so well with what some people are doing, that we give it place in our columns. The lady says:

I am not aware that I ever made any poor butter, and for nearly a score of years, butter, from my hands, has brought 25 cents, or more, a pound, the year around, which is, I think, evidence of its merit, however, were I to set out to make poor butter, the first thing I should do would be to let the milk (if set in pans) stand until it was covered wih white spots, and the next would be to allow the cream to remain until it was fermented before churning. Then, if the thermometer showed about 70 degrees, when inserted in the cream, and the churn smelled decidedly cheesy, I should know I was on the right track. When the butter had "come" in a soft, "squashy" mass, I would take it out of the churn, and make a feint at washing it with cold water, salt it, and after only half getting out the buttermilk, pack it away. There would be streaks and mottles caused by insufficiently incorporating the salt, the remaining buttermilk would soon become rancid (for what more quickly gets to smell "old" than buttermilk?) the mold spores in the cream (in other words the bacteria) would begin to get in their work, and I would have poor butter in a very short time.

CANADIAN BACON HAS THE QUALITY.

The Canadian Grocer is compelled to declare that Canadian bacon has attained a unique position in the British market. In addition to statistics showing that the trade has increased from $1,800,000 in 1898 to $5,000,000, it cites the Grocer's Journal of London as stating that "while the fall in price on continental and Irish bacon has been very heavy, Canadian has dropped only a shilling or so, and last week remained unmoved amid a scene of tumbling quotations everywhere. This is because buyers are turning to it at all centres, knowing that the quality is all that they require."

L. S. Hardin, in the Jersey Bulletin, says: "Let us follow a mouthful of grass through the cow, and see whether we can locate the end of the cow that does the most work. The jaws tear it off and chew it; the stomach and intestines digest it; the ducts then carry it to the heart; that sends it to the lungs and back again to the heart, whence it is driven to the udder, where it is turned into milk. If that is the true history of a bite of grass, it looks as though nine-tenths of the work was done 'for'ard of 'midships,' as they say at sea. What the pelvic arch has to do with all this may be plain enough to the faithful, but it is beyond my precomprehension." The fat is put into the milk in the udder—not in the lungs or heart!

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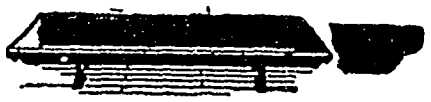

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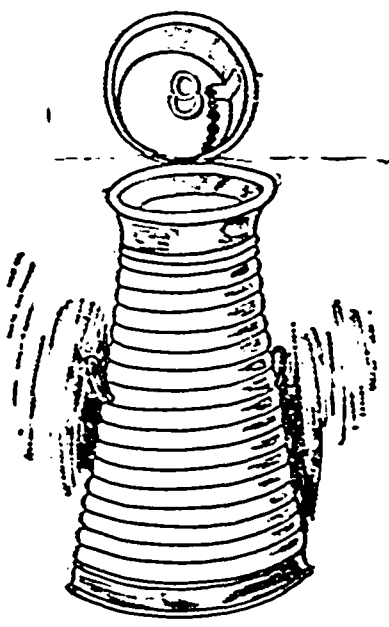
DAIRY AND CREAMERY

CLEAN MILK.

Plain Talk on a Topic Involving Both Health and Money.

In a recent address to dairyman and milk dealers Professor Clinton D Smith of the Michigan agricultural college spoke in plain terms on the subject of cleanliness. One thing, said he, that our lady customer notes in the milk we furnish is freedom from dirt. She does not like to find in the bottom of the bowl, as she empties out her morning's purchase, a teaspoonful of black sediment. I know it is the custom of milkmen to call that stuff metal rubbed from the tin can, but it is, in truth, filth that ought to be in the barnyard. I have sold milk in an eastern town for a good many months and know whereof I speak when I say that this filth in milk can be almost if not entirely prevented.

To furnish milk free from dirt the cows must be kept entirely clean as to their sides and udders. Years ago, before the invention of the modern styles of cow stalls, this was practically impossible, but in modern times it is not. The point I make is that you cannot produce clean milk without keeping the cows clean. The importance of this phase of the subject would warrant me in spending a whole hour on it. Clean-



SHIPPER'S MILK CAN.

liness in this line is not next to godliness—it is godliness. Filthy milk is unhealthy. It ought to be unsalable. It comes from dairies where the sides and udders of the cows are filthy. Keep them clean, and the milk may be expected to be so.

To procure pure milk it is essential that the stables be cleaned out regularly and thoroughly, leaving no excrement on the floor to rot and spoil the air. It is also essential that something like plaster be used after the stables are cleaned to dry the floor and check the rise of obnoxious odors. The floors should be level, and indeed must be so smooth as to hold no little puddles of disgusting liquids. As to the material of which the floor should be made, I have no final advice to give. I believe that cement properly laid and not troweled smooth will be found excellent.

So much for the floor on which the cow lies. It is of equal importance that the walls and ceilings be not covered with cobwebs or coated with dust. It is not necessary to have an expensive cow stable to have a good one. The ceiling need not be planed even, but an annually it should be washed down with a disinfectant solution, say, one part of mercuric chloride to a thousand of water and immediately whitewashed. I say this should be done annually, every spring.

Finally every milkman should feel it due himself to keep his milk cans bright and shining, his milk wagon presentable, and all of the equipment clean and in good order.

A milk can for shippers that will always hold a given quantity of milk is shown in the accompanying illustration. The method of securing this result is by having an exterior corrugated skin or covering and within it the regulation can. Then, no matter if the can should be dented in transit, the interior receptacle will still hold its original shape.

Creameries That Pay.

A creamery built with a great splurge and at a great expense and declining rapidly into bankruptcy is one of the things which gives agricultural in general and the dairy business in particular a backset. Do not build a creamery on a grand scale, but rather follow the more practical lines laid down by your neighboring localities where the dairy cow is a continual source of profit to the patrons of the creamery. If the plant is built at the right time and upon the proper basis, it makes a cash market for the dairy products, relieves the farmer of the labor butter making and very often is a great educator in the way of showing the best methods of feeding and of handling the cream and milk.—Creamery Journal.

Don't Let Cows Get Tired

Remember if a cow is compelled to travel back and forth over a 30 acre field from morning till night in order to hunt a ration for herself she will not give you big pay in the pail. If she has to use the energy to secure a living that she should have expended in elaborating milk, she cannot be profitable. To do her best the cow should be enabled to fill up well in a few hours and rest the balance of the time, as it is during these rest spells that she is grinding out your profit. There is some profit in summer dairying, but we must give very careful attention to all the details if we would realize it.—L. W. Lighty in National Stockman.

BOYS IN DAIRYING.

How to Make Both Your Boys and Yourself Successful.

A Tennessee correspondent of Hoard's Dairyman says: In our discussions on dairy subjects we, as a rule, ignore the fact that our success is owing to a great extent to the boys on the farm. They, if properly reared, will not only relieve us of a great many cares, but also will make the farm and herd more successful than hired men will do. In my wide range of observation I have found that the dairyman or any farmer who took an interest in having his boys with him on the farm was the one who was not only making his business a success, but at the same time was giving his boys the education and habits to make them successful in his line after him.

In my case while my boys were small I worked on a salary, feeling that I could not successfully carry on a dairy farm with hired help. Our first venture in working for ourselves developed a new problem I was not counting on—that is, in a family of four boys no two are alike in their tastes regarding farm and dairy work. Our present lease is on a farm that is only adapted to dairy work alone. The crops of grain are light owing to long years of poor farming. And stock farming does not pay owing to relative high prices of the grains necessary to finish stock for the market. I find that to keep my sons interested they should be in a locality where stock, grain and dairy work can be carried on together, thus giving each boy a line of work that best suits his inclinations. My oldest son is better pleased to work with teams in the field. The next in age is the most successful calf raiser I ever saw, and also is in the way of making a fine butter and cheese maker. Still another boy takes a great interest in having fine hogs, chickens, etc.

At the same time they are all fully alive to the importance of the milk cow and her products and are first class milkers. Any one of them can conduct the work from pail to the finished butter and are growing in knowledge daily from my teachings, coupled with our many dairy papers, which, I am glad to say, they read with interest. I give them practical lessons in feeds and feeding, teach them to be systematic in all work connected with the herd and dairy, call their attention to all improvements that are being made in creamery and herd management, give them the running of the Babcock test, let them solve the problems that arise in manipulating the test—such as various degrees of density of acid, variations in fats, how to get best readings, figuring yields, proving tests from herd's milk to the buttermilk.

Any one of my sons can take a stranger into our pasture, point out any cow in herd and tell how much feed she gets daily, how much milk she gives and what it will test. The whole secret of my success with my boys and cows is in keeping the former interested and the latter perfectly contented.

Salting Butter In Denmark.

In Denmark as soon as the buttermilk has been removed the butter is weighed in order to calculate the amount of salt required, and the salt is worked in at this time, usually on the butter worker. Sometimes it is all incorporated at one working, but in many places it is preferred to add it in two workings. The amount of salt used is not uniform. It is adapted to the taste of the market where it is expected to be sold, but it varies between 4 and 5 per cent of the weight of the butter. The salt is worked into the butter with the least possible amount of handling, and it is then laid aside for some time before the next working takes place. In summer it is put in butter coolers, which are a sort of icebox. In winter it is either laid in large rolls in the butter trough or on a table provided for the purpose. It lies here for a couple of hours in the cold season, but when the weather is warm it is allowed to remain for eight or ten hours or until the cool of the following morning before it receives the final working. The object is not only to cool the butter, and thus allow it to become firmer, but also to allow the salt to dissolve and to penetrate the whole mass. When the butter has attained the proper degree of firmness, it is again put through the worker, and a considerable portion of the brine formed from the salt is worked out. The amount of working it can stand differs much in individual cases. Care is taken, however, that it is not the least bit overworked, so as to become greasy and sticky. This working may be repeated a couple of times, or it may be packed for shipment at once.—Dublin Farmer's Gazette.

Goose Butter.

State Dairy and Food Inspector Lawrence of Minnesota tells a good "butter" story which reminds us that some of these quiet old farmers can sometimes beat the chemists in the art of "substitution." He says that one of the men connected with the department was on a tour of inspection in Steele county, and in his rambles stopped at the house of an old German farmer, who gave him a lunch of bread and butter and some "dairy" drink. After the frugal repast was finished the host asked his guest how he liked the butter. "I think it is very good—might have a little more salt," he replied. "I have 40 cows," the farmer said, "and I send every bit of the milk to the creamery. The creamery is a co-operative and I am a stockholder in it. Now, you see those geese?" (There were 230 of them.) "Well, I feed them on a plank, put staples down over their feet and *hold them there.* Then I feed them till they are so fat they can eat no more and can scarcely waddle. Then I kill them. I refine the goose fat and make it into butter, with a little dressing." The man from the dairy food commission recalled the days when his mamma used to feed him goose grease for the good of his throat and beat a hasty retreat into the open air.

Adulterated Cream.

No sooner does an article of food become widely used than a certain class of men begin to devise methods to falsify and adulterate it. The use of cream is spreading rapidly in the cities, and, as a consequence, methods for giving the cream a false richness are in demand. Fortunately the men who get up these methods of adulterations are almost invariably profoundly ignorant of the possibilities of chemical analysis, and the crude compounds which they put upon the market are easily distinguished if enough is used to make the adulteration profitable. The latest method which has come to our notice is one for falsifying cream, giving it a richness not due to butter fat. The product is called "albuminoid" and is a mixture of boric acid and gelatin. This compound when added to cream makes it thicker and apparently richer, and also, owing to the boric acid, makes it keep longer. Fortunately both these compounds are easily detected by the chemist, and the dairyman who thinks to increase his profits by the use of such a mixture stands a good chance of incurring a fine that will make a hole in his profits, and the hole will be of sufficient size to make him think twice before running the risk a second time. The tendency at the present time is toward pure food products, and, although such compounds as the above appear on the market with great regularity, we notice that in a short time they disappear.—Hoard's Dairyman.

Filth and the Separator.

Many dairymen are inclined to attribute to the separator good points which it does not possess. A dairyman recently made the remark to the writer when it was mildly suggested that his stables were not as clean as they might be that all odors and filth which might by accident get into the milk were removed by the separator at the creamery where the milk was sold. No one will question the value of the separator for doing what it was intended to do—separate the butter fat from the milk—but it surely was never intended to remove filth. The dairyman who will deliberately permit filthy cows and stables to be the rule should be forced out of business, and the time is not far distant when creamery operators will find a way of detecting the source of supply of tainted and filthy milk. Then the dairyman will be forced to do what he should now voluntarily do as a matter of decency.—Atlanta Journal.

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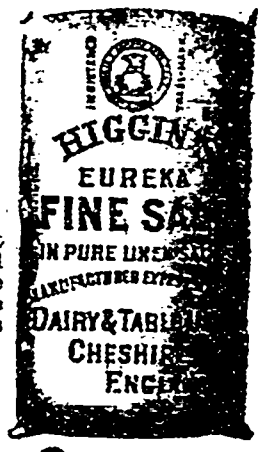

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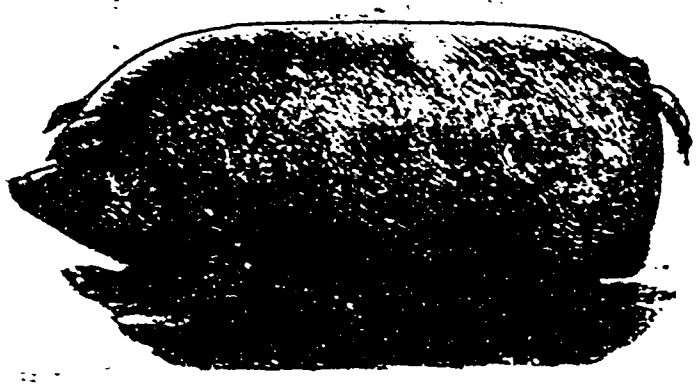

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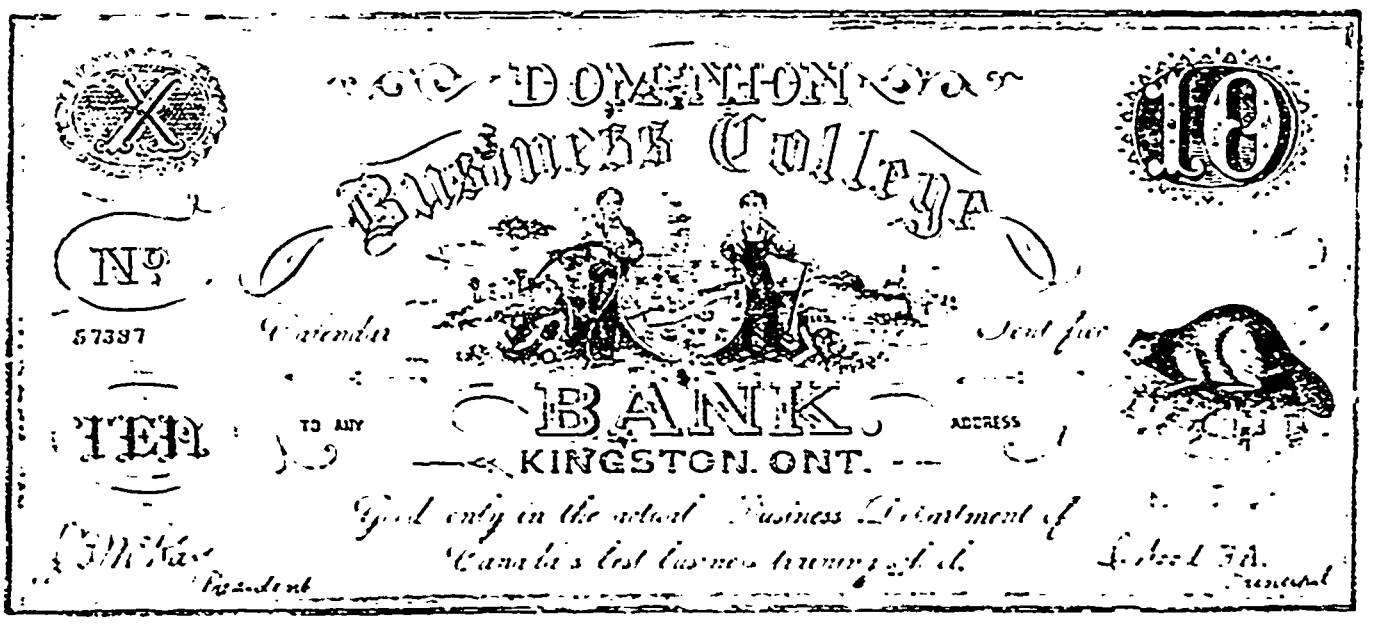
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