Creameries and Dairying in Nebraska: What Has Been Done and What May Be Done (1883)

J. T. Allan
Creameries or Dairying in Nebraska.

What Has Been Done--

And--

What May Be Done.

Published by the Union Pacific Railway Company's Land Department, Omaha, Neb.

Prepared and Compiled by J. T. Allan.

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CREAMERIES
AND
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PUBLISHED BY THE
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1883.
Dairying is the great national industry. The money value of its annual product is greater than that of wheat, more than corn, and more than cotton and wool combined. Five millions of our people are interested in this industry, and the capital invested in dairy lands, factories, cows, etc., is estimated at $3,000,000. The Atlantic States look to the prairies for bread and meat, and from the wide grazing lands of the west must soon come the great supply of butter and cheese. Some of the eastern States, which cannot make grain growing profitable any longer, are compelled to use their lands valued at $100 per acre for dairying lands, which have to be kept up by use of expensive fertilizers. If these lands pay a profit from pursuing the best methods of soiling, etc., what profit may be realized here, where land is rich and cheap, and nature has furnished an unlimited extent of free pasture? But a few years ago there was a regular quotation in the New York butter market which read, "Western Grease," and this referred to the quality of the butter sent from the west. Now the market reports show that the west "has made them taste it." Western creamery butter is quoted in Boston above fall made New England, and at the Centennial and the large dairy fairs held in New York city, the premiums were largely awarded to western creameries. The creamery system, which is growing so rapidly in the west, shows a great saving of labor when one man and one churn can do the work which once required a hundred men and churns. And here a thousand pounds of butter of uniform quality can be made and marketed at less expense, and with good profit both to the factory and the farmer.

The question with every farmer is, how to make the most from his land. Grain growing by itself will not do it, but grain, stock and dairying will. While crops of corn, oats, rye and millet are growing, the cows are turning the grass of the prairie into butter, calves and hogs. The butter brings cash monthly; the calves and hogs convert the grain into beef and pork. The demand for butter, cheese and condensed milk is increasing faster than the supply, and the market at our western doors, where good articles will always bring the highest prices, will take all the surplus which Nebraska will for years produce. Not what might be produced if a million more acres of her now unused pasture lands were occupied. The object of this article is to give a sketch of the creameries of the State, and those which have been built in the Platte valley during the year in Nebraska, to show the profitable working of the system to the manufacturer, and the demand for an increase of butter and cheese factories. The profit of the farmer is shown by the statements of reliable men, with some practical remarks as to the proper means of bringing the work of the farmer up to the highest standard of profit.

THE NEBRASKA CREAMERY ASSOCIATION.

This company is composed of citizens of Fremont, Nebraska, who have furnished the capital, and with the experience of last year, are well satisfied with the returns of the business. The officers are: J. Dixon Avery, President and
Manager; Otto Magenau and L. D. Richards, Vice-Presidents, the latter being also Treasurer, and Otto Huette, Secretary. They combined the manufacture of butter and cheese with the gathering of cream and milk from the farmers, which has been successful and profitable to both parties.

This factory is located at Fremont, Dodge county, on the Union Pacific, and is one of the largest and in all respects the most complete of butter and cheese factories in the west. The building is of brick, 50x100 feet, and with the basement, four stories high. The daily capacity is for the milk of 3,000 cows, and the cream of 9,000. On the first floor is a receiving and cream-raising room 14x42 feet; a churning room 19x36, with two revolving churns which hold 600 gallons each; a cheese-making room with five vats, which hold 8,000 pounds each, and besides these rooms, offices, etc. On the second floor are: a cheese-storing room 30 feet square, capable of holding 1,000 cheese; two cheese storage rooms 30x35 feet and 14x32 feet, and a mill room for grinding feed for patrons, 14x32 feet, which can turn out 60 bushels per hour. Above is a storage room with bins for ground corn and oats, bran, etc. The refrigerator room is 32 feet square, with a large ice room 18x24 feet. A 30-horse-power engine pumps hot and cold water throughout the building, grinds the grain, runs the elevator and shafting in the butter and cheese rooms. In the second and third stories are well-finished family and sleeping rooms for the employees. One important feature which prevails along the whole Platte valley, is the abundant supply of pure water. Here it is brought from a bed of gravel 30 feet below the surface, where it is not affected by surface water or decaying vegetable matter, three drive wells furnishing 150 gallons per minute.

Butter making commenced in November, 1881, with the milk of 40 cows. During 1882 the number reached 1,800, and in 1883 will be at least doubled. Farmers are giving more attention to breeding for better milking strains, Holsteins being in general favor. There will soon be sufficient blue grass pasture to continue the creamery work longer in the season, and the feeding in winter, with good stables and abundant rich milk-producing food, chopped corn fodder, mangolds and corn meal, which is the best and richest food that can be given to milch cows, with systematic feeding, pure water at a higher temperature than can be had at a cold stream on a wintry day, all combined, will make great profits for the dairymen in winter.

The reduction in the quantity of milk from 235,000 pounds in July to 111,000 in October, is a sufficient argument in favor of fall pasturage, soiling and ensilage. The books of the company show, for the first year's business, the bare commencement of a large manufacture: Pounds of milk bought, 1,412,416; pounds of cheese made, 96,660; pounds of butter, 82,830. To show the profit to farmers who keep dairy cows and sell their milk and cream, the following figures from the books of the creamery will show where a large amount can be placed on the credit side of the farm account book, which every man ought to keep. During the summer grass season of three months, the price paid was 90 cents per hundred pounds for milk, and since then from $1 to $1.25. For two months the price of cream was 15 cents a degree, then 16 cents, and since that time from 18 to 25 cents. Any farmer can calculate, with the cheap feed grown on the farm, whether winter dairying pays, and with warm sod stables he can have a monthly income in what used to be called the dead time of the year. Butter has been shipped to New York, Boston, Philadelphia, Denver and San Francisco, and has realized a price equal to the best brands of eastern dairies.
Orders are daily received for four times the amount that can be shipped, both of butter and cheese.

Sprague, Warner & Co., of Chicago, the largest dealers in cheese west of New York, have offered to contract for all that is manufactured, which is a guarantee of the quality. J. Dixon Avery, of Madison county, N. Y., is President of the company and Superintendent, and to him is due the credit of establishing a creamery which may be taken as a model by future builders. The profit to stockholders is indicated by the recent offer of 9 per cent. premium for shares of the stock, which was refused. The great breadth of unused grass lands in Nebraska, invites the profitable investment of capital. There is an opening for a creamery every twenty miles along the line of the Union Pacific for the first three hundred miles. Parties intending to engage in this business should not fail to examine this model factory; an examination of its perfect arrangements will be worth more than reading volumes of theory. In Mr. Avery they will find a pleasant gentleman, who takes just pride in the success of the enterprise, and is thoroughly acquainted with every detail.

This association has erected at North Bend, 15 miles west of Fremont, a new building as a branch of their business, which will go into operation as soon as spring opens, with a full equipment of improved machinery, both for cheese and butter making. The building is 38x64 feet, very substantially built, the first story being 124 feet, and the second 104 feet, the whole being two and one-half stories, with a high basement. This will have a capacity for the milk of 3,000 cows and the cream of 5,000. No better proof of the capacity of this section for dairying could be shown, than the movement of this association, who have realized profits on their first investment sufficient to warrant the exten-
sion of their business in the same county, by erecting their new factory at North Bend. With the great amount of free pasture lands, the amount of feed which can be cheaply grown both for soiling or winter, and the demand from both east and west for the products, at high prices for the finest quality of the articles which can be made here, there is no doubt but the man who puts up the factory, and the farmer who invests in good milking cows, can receive a large profit on their investments.

SCHUYLER CREAMERY, COLFAX COUNTY.

The main building is 24x36 feet, two stories high, with an addition of 14x20 feet; capital stock, $6,000; commenced operations June 1st, 1882, with 100 cows, and increased to 800. Pounds of butter made in five months, to November 1st, 36,-220. Mr. Harding, the Manager, gives some very practical suggestions worthy of the attention of those interested in this important industry. He says, previous to the introduction of this system, farmers considered a cow of but little profit, except raising a calf; now he can sell his cream for more than he could get for his butter, raise his calves as well on the skim milk, and the increase of his hogs will pay the expense of milking. Judging from the general expression of our patrons, there will be an increase the coming year of 50 to 75 per cent. in the number of cows, and 100 per cent. in the amount of cream. This is due to the fact that the farmers have learned, by one year's experience, that it pays to give more attention to cows; that in the fall, when the natural grasses fail, they must have sowed corn, rye, millet and root crops, like mangolds or carrots, to keep up the flow of milk. There is nothing better than repeated sowings of corn, which will yield 6 tons per acre. This, if cut and well cured, with a little meal, will be eaten with avidity during the winter. Ensilage of green corn fodder will be extensively used here when the dairy interest has become of more importance. Another and very important point, is the grading up of cattle, with a view to their milking qualities. Farmers are realizing this fact, and we see some fine herds of Jerseys, Guernseys and Holsteins. It is generally conceded that a half-breed of any of these from milking strains, for practical purposes to the western farmer, is equal to a thoroughbred. One disadvantage at present is the great distance necessary to travel to gather the cream, while there is such a large amount of pasture free and unused near the factory; but there will be a decided improvement in another year. Tame pasture is a great necessity, and some of our farmers have tried blue grass with satisfactory results. One patron who has 40 acres, on November 9th, last, furnished as much cream as at any time during the summer. During July and August we made 10,500 pounds of butter, which fell off to 600 pounds in September, on account of the failure of native pasture. Timothy and clover do well wherever tried. As to market along the line of the Union Pacific, there is but little choice. Butter can be laid down in New York or Denver at about the same price, and good goods are always in demand everywhere; but I think the west is bound to be our market in the future.

COLUMBUS CREAMERY.

This factory is a joint stock concern, like the packing house and flax company, owned and operated by some of the solid men of the town. The main building is of stone, 20x43 feet. A butter-working room 20x20 feet, an engine
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room 12x14 feet, two refrigerator rooms, and an ice house 24x44 feet, with a capacity of 400 tons. The capacity of the works is 3,000 pounds of butter per day. The price paid in summer for cream is 15 cents a degree, and 75 cents per hundred pounds for milk, and the skim milk returned. Operations commenced in June, 1882, and during that month 400 to 500 pounds of butter were made per day; through July and August, 500 to 1,000 pounds, until the drying up of the native grass. This is a strong argument for blue grass pasture to keep up the flow of milk. All the butter, 60,000 pounds, has been shipped to Denver, and the price has been equal to the best Elgin. The company has declared a dividend which is very satisfactory to all the stockholders, paying a good per centage on the investment. All who have furnished cream are entirely satisfied, and the increase this year will be at least one hundred per cent.

GIBBON CREAMERY, BUFFALO COUNTY.

D. P. Ashburn, who had experience in butter making in Ohio, commenced April 20th, invested $1,500 in a building, a 4-horse power engine, one cream vat, a 350 gallon churn, cans, etc. This was the first attempt at the business in western Nebraska. The farmers did not see the advantages until they tried it. Many of their cows were young, and the supply of cream was not as large as desired. The average number of cows has been 260, when the milk of 500 could have been used with very little increased expense. The full capacity of the creamery is the cream from 1,000 cows. The patrons received 15 cents for a degree of cream, equivalent to one pound of butter, and are well satisfied with the return. Over 4,000 pounds of butter was made, which was contracted to hotels in Denver, Cheyenne and Sidney, bringing 30 cents net. The work has been done by one man at the creamery, and two drivers. This year he confidently expects an increase of business of at least one hundred per cent. One hundred and fifty dollars was received from the sale of pigs fed on the buttermilk, which Prof. Johnson says is richer than skim milk, and better for producing bone and muscle. Mr. Ashburn says, at the commencement of this business, which promises to be so extensive, the greatest need is good dairy cows. The best will, no doubt, come from crosses of the Holsteins with Durhams. The latter has been bred for generations for beef alone, and hence does not stand high as a milker; but in the dairy districts of Ohio, by judicious breeding of the best milking strains, they are the staple dairy cow. It is a question to be considered—how much beef will the animal make, after its usefulness has ceased for milk? For this purpose the Durham will probably find favor in the west. Breeders of Poiled Angus also claim the advantage of both milk and beef for that breed. We want a cow that will give a large quantity of milk, which will make as much butter as a Jersey, and will leave milk enough for a calf and pig, or a good yield of curd, and at the same time, when old, prove a profitable feeder. The Holsteins will probably meet all these requirements to a greater degree than any other breed.

The present low price of grain and high price of butter will allow liberal feeding. The average yield of oats in Buffalo county is 60 bushels per acre. No other grain will promote an equal secretion of milk. Rye, at the present price, will double its market value in butter, while the pasturage, from a fall-sown crop, is found necessary on every farm. Feeding, commenced before the
native pasture has entirely failed, and kept up, with an occasional change of different kinds of ground feed, stalks of sowed corn, well cured and cut up with a little meal, etc., will keep up the flow of milk ten months.

Price & Hultz are opening a dairy farm of 800 acres near Silver Creek station, in Merrick county, which will employ a capital of $15,000. They were November last erecting a farm house to cost $1,500, and will have a building ready this spring supplied with the best machinery for butter making. At present they have 200 cows, which will be increased to double that number this year. Stabling is finished for 150 cows, with all conveniences for feeding and water. The milch cows, during the winter, are fed ground corn and oats, and the others sufficient grain to keep them in good condition. Next spring 200 acres will be broken, and a sufficient amount of grain grown yearly to supply abundant feed. At present there is an abundant free summer pasture, but tame grasses, sowed corn and root crops will receive early attention. The object is to make this a paying investment from the beginning, by what is termed high farming in connection with dairying. A few instances will be sufficient to show the profit of selling cream to the factory:

J. R. Davis, of Dodge county, has 49 cows. Received for cream sold last year, $632; 49 calves, $400. Total expense for help, $450. Net profit, $1,682, or $32.30 from each cow.

William Ruwe, of Washington county, has received from 100 cows, $25 to $30 each for cream sold last year. He is breeding full-blooded Holsteins, with 80 high grade short horn cows, and thus expects to increase his profit 40 per cent., with tame grass pasture and feeding mangolds and meal. Calves and pigs fed on the skim milk, with rye pasture during fall and winter, are at least 25 per cent. in advance, in size and quality, over those brought up in the old way.

BEATRICE CREAMERY.

This factory is located in Gage county, and is a building 58x32 feet, two stories high, with the addition of an engine room 16x22 feet, and has the capacity for the milk of 2,000 cows. This is another home company, with C. G. Dorsey, President; John E. Dorsey, Treasurer, and C. W. Miller, Secretary. This factory commenced operations January 1st, 1882, and up to November 1st had made, during the five months, 15,000 pounds of butter. The price received was: For June, 28 cents; July, 31 cents; August, 32 to 33 cents; September, 36 to 38 cents; October, 40 to 41 cents.

The price paid for milk in June was 69 cents per 100 pounds; in July, 68 cents; in August, 87 cents; in September, 93 cents, and October, $1.10 per 100 pounds. An increase of 1,000 more cows is expected in 1883. The farmers get the best native and grade cows, and on these breed up with best milking strains. They are realizing that there is nothing which will pay them better than the dairy business; and high breeding and high feeding during winter, extending the dairy season to at least ten months, will give a return of $40 per cow for the year, for milk and cream sold. In this connection attention is called to the report of the experience of H. C. Stoll, as given in another column.

H. C. Stoll, Gage county, Beatrice postoffice, is one of the most prominent practical stockmen in Nebraska. He says: "My experience is that a good, fair cow will pay $30 to $40 a season, besides raising a calf or at least $10 more. I
have had cows that have paid me from $60 to $80 per year. The more feed you give a cow, the more milk you will get. I am well pleased with the return from my cows the present season (1882), and shall try to milk three times the number next year. A good cow will give 18 pounds of milk per day for nine months, or 274 days, which will be a total of 4,932 pounds for the year; taking the average price paid by the creamery, which was 85 cents, and the return is $41.92. Now give that cow a proper feed evening and morning of ground oats, corn or rye, which you can grow on the farm at a small expense; give her a good, warm stable, and as much water as she wants, not requiring her to go to a cold stream or pump; give her the benefit of exercise in the yard during pleasant days, and the comforts of the warm stable when it is stormy, which is also a relief to the milker, and you will find a large increased return over the

above figures. Ground feed will always be found a saving of at least 25 per cent., and a small grinder can be attached to a windmill without any extra expense for power. This gives a chance to mix different kinds of grain, and a change of feed is always beneficial. During a recent visit to Illinois, where land was worth $75 an acre, the farmers were hauling milk ten miles through the mud, and said it was the most profitable part of their business. Where grain is not always a sure crop, the grass is certain. Where wheat sells for the cost of raising, milk will bring as much as it does within ten miles of Chicago, where land is worth $100 an acre. With 25 cows, there is a cash income of $700 to $800 coming in monthly installments from grass which, in summer, costs nothing.” His advice to farmers is to grow corn, oats and rye, get all the cows they can, feed the grain, and the return will be five dollars where they would get fifty cents from growing wheat.
Kelsey & Williams have erected a substantial building, 20x60 feet, with double walls, the space being filled with sawdust. This renders the building cool in summer. In the butter-making room are two Boss churns, of 150 gallons each, a Hawkeye butter worker, and two tanks 4x12 feet, where the cream is allowed to stand twelve hours to cool. They have continued demands for their goods, which they cannot supply. Farmers are receiving 25 cents a degree for cream, and realizing the fact that winter dairying pays well for the extra feeding. They expect to have during the grass season 1,200 cows, and the capacity of the factory will allow the making of 2,000 pounds of butter per day. Mr. Williams says, for dairy cows get the best native cows and breed up with Jerseys or Holsteins, preferring the latter on account of furnishing a larger beef animal after their usefulness for milk. L. B. Messenger & Co. are the largest breeders of Herefords in the county, and in using high grade imported stock, are claiming superior milking qualities.

The company have 260 acres of fine farming land in connection with the creamery, and 2,300 acres ten miles north on Plum Creek, which is used as a stock farm for breeding and fattening, where they have 600 head of cattle, and this number will be increased equal to the full product of grass and grain on the farm. The creamery, and buildings for stabling, etc., surrounding, are located on a slope protected by hills and groves, one-half mile from the railroad station. The creamery throughout is a model of cleanliness, which Mr. King says must be maintained in a butter factory.

In the receiving room, 25x30 feet, in two vats of the pool system, 150 cans, eight inches in diameter and twenty inches deep, were floating in ice water at a temperature of 40 degrees. The milk is allowed to stand in these twenty-four hours, and then skimmed with a conical dipper. The churning room is 18x25 feet, containing three "Boss" barrel churns, which will be increased in number; also some small churns of the same kind for testing the milk of single cows. Adjoining is a room for washing cans, 12x25 feet, and then the packing room, where the rolls of butter in nice muslin are put in two-pound tin cans for retail customers, while those for hotels are double that size. On the second floor are pleasant family rooms, office, and sleeping rooms for the 40 employees; all convenient and comfortable. A five-horse power engine, with a boiler of double that capacity, heats the building, furnishes all the power, and puts hot and cold water into every room. All the fuel used is cobs from the corn sheller. At present 300 cows are stabled, and the arrangement of the barns for convenience and for the comfort of the animals, deserves special mention and the attention of those who intend to engage in this business. In each barn, which holds 100 cows, the eastern plan of stanchions is adopted. A row of heads is presented.
on each side of a seven-foot alley as you enter the barn. The platform where the cow stands is well bedded and dry, so the cow's bag is always clean. Behind this is a gutter 14 inches wide, and then 30 inches to the back wall. On the clean boards in front of these two rows, is a full ration twice a day of cut corn fodder mixed with five quarts of bran and three quarts of corn meal. Mr. King says: "Always grind the meal fine to aid digestion, either for milk or fat; the more the animal can digest, the more the return."

As soon as the feeding is finished, a plank on hinges is turned back, showing a clean trough, into which is turned a clear stream of pure water at a temperature of 50 degrees, of which the animals have their fill—much better in winter than from the cold stream which runs through the yard, where the water is 15 degrees lower. The animals are turned out once a day into the yards, where in pleasant weather they stay two or three hours; and in this time the stables are thoroughly cleaned and ventilated. Every particle of manure is saved, and in the spring the yards are scraped clean, all going back on the land, and all the fertilizers being raised at home. Milking commences at 5:15 in the morning and 5:30 in the evening, one man to eleven cows, and each keeps a slate, marking the product, which is daily returned to the office and entered on the books. The book-keeping is most complete. Every cow is marked with a file on the horn, giving her number. The books show her history, date of her calf and its sire, the amount of milk she has given and the butter product. As soon as a cow fails to give satisfaction, she is fattened. None are kept but those which yield the large profit. The following was taken from the books: Guernsey cow Bianca, No. 264, during January gave an average of 35 pounds, and this gave 2 pounds and 6 ounces of butter. Jersey heifer West Point Beauty, gave one pound of butter per day. The average which they are getting is at present one pound of butter per cow per day for the whole number of full bloods and grades, which will be the amount during the whole year.

Commencing in February, ensilage will be fed, with the same ration of bran and meal, until there is an abundance of grass. The storage barn where the corn is cut is 30x44 feet, with close sheds on the south side, where are pens for 200 calves, and warm calving places 5x8 feet for the cows. The calves are brought up by hand; at the first with fresh milk, and followed with skim milk mixed with oil meal and ground oats. The calves are full fed from the start, and as soon as there is grass, they are sent to the farm. Two thousand bushels of oats are on hand for young stock, 1,500 bushels of rye to be ground and fed with skim milk to the young pigs, and 20,000 bushels of corn will be carried over for fall feeding of hogs and cattle. This year they will increase the number of cows to 400, and the whole number of stock at the creamery and farm to 900 head. Up to this time they have been using only the milk from their own cows, but this year will commence cream-gathering from farmers. At the start they bought 300 native and grade cows in Indiana, and on these have bred full-blood Jerseys and Guernseys, the second cross giving three-quarter bloods, and all have shown the desired increase in milking qualities. The following list shows the high quality of the stock, which is all registered in the herd books of each breed, and is well known to all the breeders of the United States:

GUERNSEYS.

BULLS.—Bashaw Boy, 222, Mount Hope, and three full bloods just received, of which the pedigree had not arrived at the time of writing.
Cows.—Helen K., No. 300; Lily E., 2d, No. 301; imported La Blanché, No. 193; imported Bianca, No. 264; Victoria 2d, No. 108. In all, twelve full-blood cows and heifers.

JERSEYS.

Bulls.—Jersey Gold Dust 2d, No. 2,713; Middletown, No. 3,520; Dr. E., No. 3,950. Also on hand five bulls eligible to register, and four just received, one of which is a son of the Duke of Darlington, whose dam was Eurotas, owned by Darling & Co., of New Jersey. This cow made the highest Jersey record of 778 pounds of butter in eleven months.

Cows.—There are nineteen head of full-blood cows and heifers, and among them Bonnie, No. 3,064; Julia Morgan, 7,770; Sister Hand, 7,777; West Point Julia, 10,910; West Point Belle, 10,909; Bens Pet, 10,911; Bonnie Maid, 10,012; Sister Hands Beauty. These five have been bred at the creamery. Hazalena, No. 3,275; Dam Dimple, 3,248. Some of these have made two pounds and six ounces of butter per day. Crossing gives a fair-sized beef animal, while they fatten their full bloods for home use, for the 160 hands employed in all departments of the company's manufacturing. Holsteins, from their large flow of milk, will no doubt be profitable for cheese factories, and the size of the animal is much in its favor as a combined dairy and beef animal. Their Jersey steers will weigh from 1,200 to 1,300 pounds.

One important and profitable part of the business is raising and feeding hogs. They have at present 550 head, and are fattening 400 April and May pigs, of the best crosses of Poland China and Berkshire. These weighed 175 to 200 pounds November 1st, and were brought up by high feeding from the start. As soon as the young pig will eat, it is given plenty of skim milk and buttermilk, mixed with ground rye, and never allowed to want a full supply of food. This furnishes a growth of bone and muscle. The hog buildings are 24x200 feet, with an alley in the center, and a row of pens 6x8 feet on each side. Connected with each of these is a yard 8x10 feet, which, like the pens, is floored and furnished with plenty of clean straw, and seven hogs allowed to each pen. Experiments of feeding large lots and small numbers together, is decidedly in favor of the latter. In one end of each building, are bins of ground rye and oats mixed, ground and shelled corn, with barrels of milk. Of the 250 head marketed last year, the last lot averaged 337 pounds, and the increase during fall feeding had been two pounds per day; 72 head, 7 in a pen, fed on ground rye and corn, increased 3 pounds per day, the last two months having been fed shelled corn, which netted $1 per bushel. While the butter product of itself pays a good profit, the using of the skim milk combined with grain of various kinds, allowing a change of feed, adds largely to the return from a creamery, when it is turned into pork. The crop of young pigs during the spring of 1883, is expected to reach 1,000 head, which, fed on the milk of the creamery and the grain grown on the farm, will be ready for market when they are twelve months old.

MILK CONDENSING.

In connection with the West Point factory, the company have, in their large brick building, complete machinery for making sugar milk, which can be done in the summer, when they have the option of making this product or
butter, as either pays best. On the main floor is a large vacuum pan, with a capacity of 400 gallons. In the basement are two large vacuum pumps, the power being furnished by two 30-inch turbine wheels. These extract the air and 75 per cent. of the water from the milk, leaving nothing but the sugar and fatty elements. Four pounds of milk are condensed by this means into a one pound can, and 4,000 cans can be turned out per day. In the upper story is a tin shop, well stocked with tools and material, where all the cans for the creamery, condensing works, and other tin work for the factory, are made. When we consider that the mountain regions adjacent to Nebraska on the west, will consume a large amount of these goods, the great importance of this interest will be apparent. The demand from the west for butter, cheese and milk, will keep pace with the great advancement of the mining regions, which are calling for the products of Nebraska, as the nearest base of supplies, condensing her products: corn into beef and pork; grass into butter and cheese. Winter dairying pays the best profits by feeding. Our sowed corn, millet, etc., combined with ground feed, are all demanding the attention of those who wish to "farm for profit."

WHAT IS THE BEST DAIRY COW?

The object in this pamphlet, is to present the facts in regard to different breeds, so that dairymen will consider what is the best for profit, what will be best for butter, or what will combine for the best beef. While the heifer calves belong to the creamery, the other sex must be of a breed which can be turned into profitable beef. The number of farmers coming west to engage in combined grain, stock and dairying, should carefully look over the field at the start. There is no doubt but that with full-blood sires of either breed men-
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mentioned, crossed with good milking grade short-horn cows, a good dairy cow will result, which will give satisfaction.

In introducing cuts of the different breeds—the Guernsey of Silas Betts, of New Jersey, and the Jersey of T. S. Cooper, of Pennsylvania,—attention is called to the results from these breeds by the West Point creamery. Smiths & Powell, of New York, who have given attention to breeding Holsteins, claim that they are the best breed, combining milk, cheese, butter and beef. The milk record of some of their cows has reached as high as 18,000 pounds per year, and a butter record of 14 to 19 pounds per week. As a beef animal, some cows at 2 years weighed 1,280 pounds, and 1,880 pounds at 7 years. Thirteen half-blood steers at 27 months, weighed from 1,345 to 1,600 pounds.

WHAT IS THE BEST FEED?

Any dairyman will at once answer with one word—grass, of which Nebraska has a million of acres yearly unfed. As the grass in late summer becomes tough, use with it green corn fodder wilted before feeding. For late fall and winter pasturage, tame grasses have proven profitable. The experience of a number of farmers in the State, is given in a pamphlet published by the Union Pacific Land Department, entitled, “Nebraska and its Settlers.” A cow cannot digest sufficient dry hay to support herself and furnish a flow of milk; hence the necessity of cut corn fodder, mixed with ground oats, corn, etc. The relative value of the different kinds of feed, is given in the following order: Oil meal, fine corn meal, ground oats, rye, etc., all of which can be cheaply produced in Nebraska. Attention is called to the instances given of the cost and value of ensilage, which promises to be a very economical winter food.

ENSILAGE AT THE WEST POINT CREAMERY.

The building is 43x54, very substantially built, the posts and plates being heavy timbers twelve inches square. It is set in an excavation on a side hill, so that the north side is against a bank 20 feet deep, and the south foundation is level with the roadway. The studding of the outside walls, and the partitions between the four silos into which the building is divided, is 2x12, planked on each side with two-inch pine, making a hollow wall of one foot, which is filled with clay closely packed. This renders the sides of the silos perfectly air-tight. The building cost about $3,000, and Mr. King says, if they were building again they would use brick and cement the walls, which would save the inconvenience of three cross-beams 12x12 in each silo. Each silo is 12x40, and 19 feet deep, holding 180 tons, being 60 pounds to the cubic foot. Last year they commenced August 20th, to fill with green corn fodder, cut three-eighths of an inch long by a cycle cutter, the power being furnished by a ten-horse portable engine, five days being required to fill each silo, the cut corn running directly from the machine into the pit. This corn was drilled in rows 23 inches apart, and cut when it was in flower. In a part of the field which was manured, the stalks were twelve feet high; still the cows ate the soft ensilage from these large stalks as readily as smaller ones. The stalks were cut with a reaper which threw it off in bundles. These were loaded on a wagon, the heads all one way, drawn to the cutter, and fed butts first. The cut corn was not
weighted till the silo was full, but though it showed signs of heating, this was not considered damaging, though Mr. King says he would prefer weighting every day. One day when the work was stopped by rain, the weights were put on, and after 24 hours it was found perfectly cool.

As each silo was filled, it was covered crosswise with 1 1/2 inch plank, and on these three rows of boxes 4x13 feet, placed lengthwise and filled with earth. He estimates the weight on each silo at 30 tons. The same amount was put in last year in the like manner.

FEEDING.

Last year they opened the first silo February 15th, and commenced feeding 60 pounds per day to milch cows, in two and sometimes three feeds per day, mixing five quarts of bran and three of corn meal ground fine, and changing some feeds to ground feed dry. Previous to this, they had been feeding cut corn fodder, with the same ration of bran and meal. There was not much increase in the quantity of the milk, but where it took 26 pounds of milk for a pound of butter, this amount was reduced from 22 to 23 pounds with ensilage. The above shows that the position of some dairymen, claiming an increased flow at the expense of quality, is wrong. Ensilage feeding continued until May 27th, when there was abundant fresh grass pasture, and then both milk and butter increased 50 per cent. In feeding, Mr. King says, 60 pounds per day is sufficient, though the cows would eat more if it was fed to them. When it comes out of the silo it is a very pale green color, slightly moist, with a decided acid smell. It has been satisfactorily fed to bulls, but has never been tried with hogs or horses. In feeding cut corn fodder there is always some waste, but every particle of the ensilage is eaten. Last year the total expense of cultivating the corn, cutting and putting in the silo, in fact, all it cost to make ensilage, was 93 cents per ton, which was less than the cost of corn fodder when it had to be shocked, hauled and cut, and from the latter two to four pounds more milk is required to make a pound of butter. This year the feeding of ensilage will commence about the 1st of February; and continue until grass. All dairymen know that a change from dry feed to grass is not beneficial to health, while from ensilage there is no visible change.

ENSILAGE AT THE STATE AGRICULTURAL FARM.

The silo is 22x12 feet, 10 feet underground and five feet above, to allow the contents to settle so that it will be below ground. The capacity is 60 tons. The sides are narrower at the bottom than at the top, bricked up with brick on edge and cemented, the whole costing $125. Prof. Culbertson, who is the practical manager of the farm, says he believes in our soil all that is needed is to cement on the earth walls, which can be done at small expense. The material used for ensilage was corn, drilled in rows three feet ten inches apart, the plants standing six inches in the row; yield, 16 tons to the acre, and was cut when the grains in the ears were half filled. Cutting was commenced August 16th, two and three-quarters days being required to fill the silo, the corn being cut five-eighths of an inch long by a Rumsey cutter, a common four-horse thresher furnishing the power. After filling, the cut corn was covered with flooring made into sections three feet wide, and this was weighted with soil 12
inches deep, which gave a pressure of 100 pounds to the square foot. The silo was opened December 2d, and the ensilage found in prime condition, and feeding was commenced to milk cows and fattening steers.

Cows were given 40 pounds with a peck of ground corn, and steers 30 pounds with double the quantity of ground corn. There was a slight increase in the quantity of milk, and a very noticeable increase of appetite in the steers. The latter were carefully weighed, and the results of the feeding will be noted in comparison to others fed on shelled or ground corn, which it is confidently anticipated will be much in favor of ensilage. In feeding corn alone a steer sometimes gets off his feed, but never with ensilage, as he is always ready for his ration. The cost of the ensilage, including rent of land, seed, all expenses of cultivation, filling the silo, $10 for wear of machinery, wages of hands, etc., was $1.30 per ton. Pigs eat it readily, and it is considered an excellent change from feeding corn exclusively. No inconvenience was felt in feeding during cold weather in open boxes in the yards. A great saving of labor is found in feeding the ensilage and meal to cattle in sheds, over handling hay or cut corn fodder. Satisfactory results are confidently expected, which will cause an increase of silos another year.

SWISS DAIRIES.

In connection with this important industry, where grass is free and grain is cheap, it may be well to see what can be done on a small area of high-priced land. Swiss butter and cheese are famous the world over, and at Cham is the largest milk-condensing factory in the world, using the milk of 6,000 cows. This milk is put up in cans, transported half way across Europe and across the ocean, pays duties, and is sold at less price than American made. The best lands are worth $500 per acre, and cows $100 to $150 each. The feed is entirely grass in summer, and 30 pounds of hay per day in winter. Oil cake, cottonseed meal, ensilage, etc., are unknown. The cows are kept in clean stone stables, and only allowed to go out a short time each day for exercise. It is not uncommon to keep 100 cows on 150 acres. All the liquid manure and droppings are saved and put on the meadows, which are mowed three times a year. During the milking year of nine months, the average per cow is ten quarts per day, which gives 1,307 more pounds per year than the high fed cows of western New York. This is sold for two to three cents per quart. The belief is general that high feeding increases the quantity of the milk at the expense of the quality. The world is not settled in the opinion that stuffing is any better in the end for animals than for men and women. The Swiss cow is of a beautiful mouse color, running into brown, small horns, two-thirds white, tipped with black; nose and mouth dark gray, udder large and white; usual weight, 1,200 to 1,300 pounds; extremely kind and docile.
CHEAP LANDS

ESPECIALLY ADAPTED TO

Sheep and Live Stock Growing

May be found in considerable quantities in the following
Counties in Nebraska.

ESTIMATE.

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<tr>
<th>County</th>
<th>Acres</th>
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<tr>
<td>Merrick</td>
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<td>Howard</td>
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<td>Hall</td>
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<td>Kearney</td>
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<td>Buffalo</td>
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<td>Dawson</td>
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<td>Custer</td>
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<td>Gosper</td>
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These Lands are well supplied with nutritious grasses, convenient to Railroads, Markets, and are surrounded by and intermixed with some of the RICHEST AGRICULTURAL LANDS in the West.

FREE INFORMATION TO ALL.

LEAVITT BURNHAM,

Or Land Com. U. P. R'y.

OMAHA, NEB.