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KANSAS FARMER.

Established in 1863.

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KANSAS FARMER CO.,

116 West Sixth Ave., Topeka, Kans.

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The alfalfa farmer produces bone and meat, or milk and butter at less cost than is possible to the farmer who is without this legume.

Mr. O. H. Elling, acting superintendent of the Hays Branch of the Experiment Station, is a graduate of the Kansas State Agricultural College; Mr. A. D. Cullison, who has been elected assistant in agriculture, will receive his diploma this spring; Mr. J. L. Pelham, acting assistant in horticulture, is another Kansas State Agricultural Col-

lege boy. Several short-course students have taken positions at Hays and several others will go to that work at the end of the spring term.

An echo of the attempt to corner May wheat comes in the defalcation of the cashier of the First National Bank of Milwaukee, Wis. The cashier and his son had used \$1,450,000 of the bank's money in the purchase of options. The corner was broken, wheat prices fell and the million and a half remained in other hands. Not all of those caught are little fishes.

Kansas wheat crop is making great promises of the contribution it proposes to the farmers' prosperity. Much corn has been planted under favorable conditions. Alfalfa is almost ready to yield one of its four or five harvests for the season. Fruits, except peaches, are progressing favorably. Animals are in good health and thriving. Butter-fat commands good prices and the cows are learning to furnish it more liberally than in times past. Bank balances are in thrifty condition and growing. The bank accounts threaten to expand greatly before snow flies again. There is every prospect that they will be well fed.

There is much talk of substituting crude oil for coal as a Kansas fuel. A few months ago the writer traveled several hundred miles in trains drawn by oil-burning engines. There was no trouble about getting up steam quickly. Three barrels of oil are estimated to equal one ton of coal for fuel purposes. Doubtless many stoves and furnaces will be remodeled to burn oil. The labor of handling the coal and of disposing of the ashes will be replaced by the very much less burdensome care in feeding of the oil to the flame. A maximum fire can be made in a minute. The power to perfectly regulate the fire to the needs of the occasion is one of the chief advantages of using the new fuel.

The dairy people have almost complete possession of the KANSAS FARMER this week. But they are good people, and, look at the size of the paper—40 pages. File it away for reference. A noticeable feature of the dairy proceedings this year is the attention given to the farm end of dairying. A hopeful indication for the future programs of the State Dairy Association is presented in the election of the associate editor of the KANSAS FARMER to the office of secretary. Yes, the farmers' interests will continue at the front. Of course we all love the creameryman and we need him in our business. But there are not many of him. He needs cream too. To get cream, the profits of the man behind the cow must be assured. We shall, therefore, all work together for a bigger and better State Dairy Association.

GOVERNOR FOLK OF MISSOURI.

The admiration of Western people is for the man who finds opportunities and does things. One such man is worth to the community, to the State, to the Nation and to the world more than an acre of "images," each able to give forty-seven of the best reasons in the world why things were not done.

Just now a man over from Missouri, a man of small stature, polished of the short German name, Joseph Folk—is demonstrating that the right man in the right place can do a right thing even in the face of big opposition. Joseph Folk is Governor of Missouri. He took a solemn oath to uphold the constitution and laws of his State and to perform the duties of the office of Governor to the best of his ability—even as the Governors and other officers of all other States have taken similar oaths. The laws of Missouri contain some provisions not liked by manufacturers and vendors of intoxicating liquors. These laws have long been disregarded by the liquor element. This kind of lawlessness has been so flagrant in the larger cities that law-enforcement was deemed an impossibility. An element of strength of the lawless elements was and is their immense political influence. But Joseph Folk had sworn to execute the laws of Missouri. Those laws forbid the operation of saloons on Sunday. Orders were issued that the saloons be closed according to law. To the great surprise of most observers the police saw to it that Folk's orders were obeyed. Great indignation was provoked in the liquor element. The idea that liquor-sellers must obey the law was to them preposterous. Meetings were held. Preparations were made to raise \$1,000,000 to fight the execution of the law. They would stop every other activity on Sunday. The street-cars should not be run. The newspapers should not be issued. The public should get as much as it wanted of Folk's "Puritanism."

Without bluster or threat there went out from the Governor's office at Jefferson City an influence which steadied the nerves of every official charged with the enforcement of the law. The million dollars could be raised to fight Folk. But lawbreakers had been up against his backbone when he was in the lower position of prosecuting attorney and they had been sent to the penitentiary regardless of their money and political pull. The ablest lawyers in St. Louis were retained for the present fight. These lawyers knew what they were against. They knew the fight against the little Governor would be a losing one. The Governor's victory was complete. The brewers announced last Friday evening their advice that the law be obeyed. The fight was practically abandoned. Missouri's large cities had the driest Sunday of their history.

Would there were forty-five Governors with Joseph-Folk backbones through their anatomies.

THE KANSAS FARMER DAIRY EDITION.

This issue of the KANSAS FARMER needs no apology. It speaks for itself. It will be found to contain, in the reports of the two greatest meetings of the kind ever held in the sister States of Kansas and Missouri, a large amount of matter of great value to every farmer in the Mississippi Valley.

The interests represented are enormous. In Kansas alone the cash value of the dairy products for 1904 were, according to the State Board of Agri-

culture and stated in round numbers, \$8,000,000. Dairy experts place their estimates much higher than this by giving a value to the skim-milk that is fed on the farm.

In contrast with this great revenue may be placed that derived from the oil and gas wells and refineries of the State whose total product amounted to but \$4,000,000 in 1904 while the horticultural interests of Kansas, which include the largest apple-orchard in the world, produced only \$3,000,000 in the same year.

Both of the interests just mentioned are prominent ones and are referred to with pride by every true Kansan. Both are fostered by the State and receive liberal legislative appropriations for their encouragement and maintenance though one, at least, is of direct financial value to but a limited number of our citizens.

The dairy, on the other hand, is of direct personal interest to every man, woman and child in the State and should receive every encouragement. The dairy, like the other live-stock interests, receives no recognition at the hands of the Legislature though it has repeatedly been asked and is sorely needed.

Dairying is an advanced form of agriculture. The dairyman produces the most valuable of all the known farm products. Dairying means careful methods—intensive instead of extensive farming; the enrichment instead of the impoverishment of the soil; the constant and profitable utilization of all the working force of the farm and the using of all the materials produced on the farm in creating wealth. Communities which practice dairying are always relatively wealthy and it offers the only general solution of a profitable return from high-priced land.

States that have appropriated money for the encouragement of the dairy industry have always found the investment a profitable one. The State Dairy Associations whose proceedings are reported in this number are doing an immense amount of good in advancing the material welfare of the States, but they are restrained from doing their utmost by a lack of funds. More information is needed by the producer and those farmers who should be producers of dairy products. Questions of breeding, feeding and handling dairy stock and of caring for the products should be answered by practical demonstrations, made by experts in a series of dairy institutes. Questions about alfalfa, ensilage, rotation of crops, the conservation of soil moisture, etc., are vital and could be answered in the same way. The work is great and the workers are few, yet it is a pleasure to announce that the officers of the Kansas Dairy Association now contemplate a series of dairy institutes to be held next winter, in which just such information will be given out by experts, provided the dairymen and farmers of the State will encourage it by becoming members of this association.

Magnificently endowed with all the natural resources that lie at the foundation of National wealth, Kansas has made wonderful strides in the past and has won a place among her sisters of which she may justly be proud. But

with all her progress she has advanced only enough to show something of previously undreamed-of possibilities. Heretofore her agriculture has been the skimming of the cream of natural wealth from the native fertility of the soil. Now a new era dawns. Fertility must be conserved and restored to the soil. Careful methods must prevail instead of the older and more wasteful ones. A new impetus is needed and it is to the dairy cow and the careful methods which go with her that Kansas must look in the future.

THE SHAWNEE BREEDERS' ASSOCIATION.

Last winter there was organized in Topeka an association of breeders the purposes of which mean much for the State as well as for local breeding interests. Among the objects sought in the organization of the Shawnee Breeders' Association is the establishment of a pure-bred sale center at Topeka for the benefit of the breeders of Shawnee and adjacent counties. It is also designed to erect a permanent sale pavilion so that annual or semi-annual sales of each of the different breeds may be held here. Topeka is the social, political and mercantile center of the State. It has ample facilities in the way of railroad and hotel accommodations and is the center of one of the greatest pure-bred territories in the West. It ought always to be an easy matter to attract a large crowd to Topeka for any good, pure-bred sale that may be announced here and the forthcoming first annual Shorthorn sale, which will be held at the State fair grounds by this association on May 16, will serve to demonstrate it.

The business interests of Topeka are now putting forth efforts to build up a greater Topeka. Every legitimate opportunity to increase her population, her manufacturing and her other business interests will be grasped by the enterprising business men of the city as represented by their Commercial Club. The Shawnee Breeders' Association has the support of the business interests of the city in their efforts to erect a suitable permanent sale pavilion and it is their purpose to begin their series of pure-bred sales with the Shorthorn sale already mentioned and to follow this up by holding sales, at the proper season, of other breeds of cattle and swine and also to take over the management of the Topeka Horse Sale Company whose sales will be a part of this series.

The Shorthorns to be offered in the sale of May 16 are among the best-bred individuals that can be found in Kansas. Many of them are in show condition and all of them are in excellent breeding condition. This sale will be largely a bull sale, as the demand for them at this season is more pronounced, although there will be a goodly offering of cows and heifers included.

Mr. I. D. Graham, of the KANSAS FARMER, is secretary of the Shawnee Breeders' Association and will be pleased to send catalogues of the sale or other information to interested parties who make inquiry.

THE YOUNG MAN AND HIS WORK.

The world is a strange place to the young man. Born filled with ambition, associated for a time, if he is so fortunate, with men of high ideals and noble attainments, he is after a time pitched out into real life to apply as much of his burning zeal and new ideals as he can find place to use. Often he becomes dismayed and disappointed and sometimes discouraged at the apathy he finds, in the seeming lack of appreciation he receives. The writer has sent several young men from the agricultural colleges to begin their life work on stock farms. A recent letter from one such young man who is full of high purpose and enthusiasm tells of his discouragement on a farm rather backward, under a foreman incapable and unappreciative and somewhat given to dissipation. The young man asks: "Shall I stick?"

There is the very place to stick. It is the place where a good man is needed. No better thing can befall a young man than to have opportunity to do good and faithful work and this young

man has that chance. The owner is bound to see the value of a young man who goes steadily on putting things on a right basis, straightening out the crooked places, bringing order out of chaos. The fear of the young man that his employer will never know that he is doing honestly and well, as he is not there to see, is entirely groundless. Employers who have any sense at all do know, and do consider how to reward the faithful one.

In such cases there is always the possibility that the young man fresh from school has too much of theory just at first, and must learn to fit it to practice. Sometimes seeming backwardness is the expression of prudence founded on experience. Methods, plants, and animals that are adapted to one place may not fit in another. It is wise for beginners to think a good deal, observe a good deal and say little of the practices they find in a strange land. Sooner or later the chance will come gradually to try newer and presumably better methods. Employers will welcome successes thus achieved.

The chance to work is the young man's opportunity. The harder the place the better the opportunity, the more sure the development.—Breeder's Gazette.

STOCK-BREEDERS' ANNUAL FOR 1905.

On account of the reasonable anticipations that the Legislature would provide for the publication and distribution of the Stock-Breeders' Annual for 1905, the matter of getting it out has been delayed. The ways and means committee of the Legislature decided to ignore the recommendations of the committee which favored the measure, and consequently the Kansas Improved Stock-Breeders' Association will issue it shortly the same as heretofore.

The 1905 Annual will contain the full proceedings of the fifteenth annual meeting of the Kansas Improved Stock-Breeders' Association, and the addresses, papers, and stenographic report of the great discussions. It will also contain the Kansas Breeders' Directory, a classified directory of nearly one thousand Kansas breeders. A copy will be sent free to every member.

Readers of the KANSAS FARMER who desire a copy of this up-to-date livestock manual, may have a copy of the Stock-Breeders' Annual for 1905 (it will be ready for distribution early in May), until the supply is exhausted, by sending ten cents in stamps to defray cost of mailing, to H. A. Heath, Secretary, Topeka, Kans.

BLOCKS OF TWO.

The regular subscription price of the KANSAS FARMER is one dollar a year. That it is worth the money is attested by the fact that thousands have for many years been paying the price and found it profitable. But the publishers have determined to make it possible to receive the paper at half price. While the subscription price will remain at one dollar per year, every old subscriber is authorized to send his own renewal for one year and one new subscription for one year and one dollar to pay for both. In like manner two new subscribers will be entered, both for one year, for one dollar. Address, Kansas Farmer Company, Topeka, Kansas.

Special to Our Old Subscribers Only.

Any of our old subscribers who will send us two NEW SUBSCRIPTIONS at the introductory rate of fifty cents each, will receive any one of the following publications as the old subscriber may choose, viz., "Woman's Magazine," "Western Swine Breeder," "Vick's Family Magazine," "Blooded Stock," "Kimball's Dairy Farmer," or "Wool Markets and Sheep."

Our Special Club List.

By special arrangement with publishers of leading magazines, dailies and other publications, we are able to offer KANSAS FARMER subscribers the most attractive club offers ever made by any publisher or subscription agency.

All combination offers include one

year's subscription to the KANSAS FARMER. If more than one other publication is wanted subtract \$1 from the combination offer and the remainder will show the amount necessary to add for each additional paper wanted. If your subscription is already paid in advance you can send the KANSAS FARMER to some other address. In taking advantage of our Special Club List it is not necessary that all papers should go to one address; they may be sent to any address you name.

If other periodicals are wanted that are not named here, write for what you want, as we have the lowest clubbing rates with all publications. Address all orders to Kansas Farmer Company, Topeka, Kans.

DAILIES.

	Price.	With Farmer 1 year.
Kansas City Star and		
Kansas City Times, 1 year....		\$5.20
Kansas City Journal, 1 year....	\$3.00	3.50
Topeka Capital, 1 year.....	4.00	4.00
Topeka Journal, 1 year.....	3.50	3.75
Topeka Herald, 1 year.....	3.50	3.75

WEEKLIES.

Western Horseman, 1 year....	2.00	2.50
Breeder's Gazette, 1 year.....	2.00	2.00
Inter Ocean, 1 year.....	1.00	1.25
Globe-Democrat, s. w., 1 year....	1.00	1.00
Kansas City Journal, 1 year....	.25	1.15
Mail & Breeze, 1 year.....	1.00	1.50
Capital, s. w., 1 year.....	1.00	1.50

MONTHLY MAGAZINES.

Cosmopolitan, 1 year.....	1.00	1.65
McClure's, 1 year.....	1.00	1.80
Leslie's Magazine, 1 year.....	1.00	1.70
St. Nicholas, 1 year.....	3.00	3.50
American Boy, 1 year.....	1.00	1.60
Lippincott's, 1 year.....	2.50	2.50
Success, 1 year.....	1.00	1.75
20th Century Home, 1 year.....	1.00	1.65
Metropolitan Magazine, 1 yr....	1.80	2.00
New England Magazine, 1 yr....	3.00	3.50
Kimball's Dairy Farmer, 1 yr....	1.00	1.25
Hoard's Dairyman, 1 year.....	1.00	1.70
Irrigation Age, 1 year.....	1.00	1.60
Western Fruit Grower, 1 yr....	.50	1.30
American Swineherd, 1 year....	.50	1.30
Western Swine Breeder, 1 yr....	.50	1.30
Good Housekeeping, 1 year.....	1.00	1.75
The Outlook, 1 year.....	3.00	3.75

Miscellany

Garget (Congestion of the Udder.)

DR. F. H. SCHOENLEBER, KANSAS STATE AGRICULTURAL COLLEGE.

Garget is a disease of the udder usually affecting heavy milkers. It may occur at any time of the year, is not confined to any particular locality, and is not contagious. The udder being a very highly organized gland, any condition which affects the general health of the cow is very apt to involve this structure and show itself in the form of gargety milk. It frequently happens that a cow is affected with garget or gives bloody milk at more or less irregular intervals. Such animals should be examined by a competent veterinarian, as it is quite likely that the animal has some special disease of the udder, such as tuberculosis or actinomycosis. In that event the milk would be considered unfit for food, even during the apparently normal condition of the animal, though it may look perfectly healthy. The germs might be present in the milk and transmit the disease to other animals using it. The presence of these germs in the milk could be demonstrated only with the microscope.

Causes.—Injuries (blows on the udder with stones, clubs, feet, or horns, from projecting nails, or edge of boards, sharp or cold stones); exposure to sudden and extreme changes of weather; over-feeding on rich food, such as cottonseed, peas, or beans; indigestion; sores on teats, or insufficient stripping of the udder; it also frequently happens that a newly born calf can not drain the udder completely; overstocking of udder for an entire day or more with a view to making a show of this organ for sale purposes.

Symptoms.—Usually, the first that is noticed is the condition of the milk, which is watery, colored with more or less blood, and containing a clotted, stringy substance (casein). This is frequently followed by a white pus-like fluid and, in many cases, a very offensive odor.

In severe cases the first symptoms to be noticed are first a chill, with horns, ears and limbs cold. This stage which lasts from a few minutes to hours, is followed by a period of fever in which the horns, ears and limbs become unnaturally warm and the udder

is hot, swells, and becomes more or less solid in one or more quarters. The muzzle is dry and hot; the temperature of the animal is raised, the pulse is full and rapid; the breathing is quickened. The cow has little or no appetite, and she does not chew her cud. The bowels are more or less constipated. The amount of milk is lessened and the flow may be entirely absent in the affected portion of the udder.

In mild cases many of these symptoms can not be recognized and the first ones noticed are the swelling, heat and tenderness of the udder. If the trouble grows worse the tenderness causes the animal to straddle with its hind legs. If the cow lies down she will lie on the well side. The above troubles may disappear in a few days and the udder resume its normal condition. If not, it changes into a chronic form in which the symptoms partially subside. The result is, the udder, or the affected part of it, becomes dry or forms abscesses. In the case of drying up the parts may become hard and remain so permanently or only until the next time of calving. If abscesses are formed they should be opened by a competent person and properly treated. Should infection take place at any time (the entrance of disease germs into the affected part) the result may be serious and may even cause the death of the cow.

Treatment.—The treatment will depend upon the severity of the case and the stage in which the disease is discovered. If the animal is cold, two ounces of ground ginger given in a pint of warm water or any hot drink may cut short the attack. This must be given from a horn or bottle. Blanket the animal and rub her limbs with whisps of straw, making her as comfortable as possible. Moist heat should be applied to the udder by using heated wheat bran in bags, held in place by strips extending over the loins, between the hind limbs and around the abdomen.

Should the udder be very painful and the animal feverish, fomentations of hot water, as hot as the attendant's hand can comfortably bear, should be applied for several hours, for about fifteen minutes at a time. This may be done by passing a sheet around the body with four holes cut for the teats and soft rags or bran packed firmly between it and the udder. After the fever has subsided, drench the animal with one or two pounds (depending on the age, size, condition and strength of the cow) of Epsom salts with two ounces of powdered ginger in a sufficient amount of water. When the purging has ceased, one ounce of salt-peter may be given daily. The udder will need constant attention for some time in the way of gentle rubbing with camphorated oil, several times daily; at the same time gently removing all the milk by squeezing the teat instead of pulling or stripping it. If this causes the animal too much pain, a teat tube may be used but must be boiled thoroughly for five minutes each time before using. When the udder is not tender, thorough hand rubbing several times daily, with or without the camphorated oil, will aid in bringing about a normal condition.

An attempt was made at Chicago to "run a corner" on wheat for May delivery. The price was forced to a high figure. Word was given out that heavy financiers were behind the deal. Every argument was used to show that to buy May options was the same as making money. No doubt the "public" took the bait. But, a week before the alleged corner was to have squeezed the "shorts," prices went tumbling down at such a rate as to confiscate all the money the public had put into the deal. This was accompanied by the announcement that the great financier had saved himself by settling. But he forgot to save the "lamb" who went into the deal under his leadership. This option trading is one of the neat, efficient and successful schemes for transferring country money into city pockets without consideration. Better let it alone. Besides its immorality, it is pretty certain to take your money sooner or later.

THE EIGHTEENTH ANNUAL MEETING OF THE KANSAS STATE DAIRY ASSOCIATION

The eighteenth annual meeting of the Kansas State Dairy Association was held in Salina on April 5-7, 1905. This beautiful city of 12,000 inhabitants is located in Central Kansas in the midst of the great alfalfa belt and is an ideal place for a dairy meeting. The citizens of Salina, and especially their Commercial Club, did everything in their power to make the meeting a pleasant and profitable one. A spacious new hall was provided for the meetings and the exhibition of dairy machinery and supplies. The meetings were rendered doubly pleasant by the music furnished by Harms' Orchestra of Salina.

Unavoidable circumstances had compelled the association to fix an unusually late date for its meeting which seriously conflicted with active operations on the farm. While this probably caused a decrease in the attendance all who were present united in saying that this was the best meeting ever held by the association, and it is with pride that the KANSAS FARMER presents in this issue all of the papers read at that time.

The meeting was opened on Wednesday evening by an address of welcome given by Hon. James A. Kimball, president of the Salina Commercial Club, whose speech was most cordial and whose manner indicated that he meant what he said. He succeeded in making the delegates feel at home at once. Throughout the meeting, the Salina Commercial Club, which is one of the most enterprising business men's associations in the State, did everything in their power for the comfort and convenience of the members of the association. The address of welcome was responded to very appropriately by Ex-President J. E. Nissley, of Topeka, who is one of the founders of the association.

It was noted that this splendid program was furnished entirely by Kansas men and women, with the notable exception of Hon. A. J. Glover, associate editor of Hoard's Dairyman, Fort Atkinson, Wis., who was the only speaker from a distance.

President E. H. Forney, who is also general manager of the Belle Springs Creamery Company at Abilene, proved himself a very efficient worker and presiding officer. He gave the association a very pleasant diversion on Thursday afternoon by chartering a Union Pacific train at his own expense and taking the members, to the number of 175, to Abilene for a visit to the Belle Springs Creamery. On arrival at Abilene, the party was entertained by the Abilene Brass Band and each member was decorated with a silken badge bearing the name of the Belle Springs Creamery and invited to help himself to a bountiful supply of luscious apples and all the buttermilk he could drink. The writer has visited many creameries, both large and small, but has never seen one that was more thoroughly equipped with modern, up-to-date machinery or that was conducted in a more approved manner than is the Belle Springs Creamery at Abilene. President Forney earned the thanks of all who participated in the excursion.

Among the business matters occupying the attention of the association was the election of officers, which resulted as follows: President, H. Vanleeuwen, Ottawa; vice-president, C. F. Stone, Peabody; secretary, I. D. Graham, Topeka; assistant secretary, R. W. Meunch, Gypsum; treasurer, Bert Ramsey, Topeka.

The committee of resolutions, consisting of C. F. Armstrong, Clyde, A. L. Goble, Riley, and F. L. Benjamin, Lyon, reported as follows:

Whereas, The discussions brought out at this meeting make it evident that a wider and more general dissemination of dairy knowledge among the producers of milk is a most urgent necessity, therefore be it

Resolved, That we recommend a system of instruction in our rural

schools that will give at least the rudiments of practical agriculture and dairying in the common-school course either by special instructors or by the adoption of suitable textbooks, or both. Also an attendance of our dairymen and patrons at the annual meetings of this association and of all other meetings of a similar nature where dairying forms a part of the program. We further recommend to the creamerymen of the State that they use their best efforts in this direction, even to the extent of offering premiums.

Resolved, That we do most earnestly recommend that every honorable means be used to procure from our next Legislature an appropriation for the purpose of fostering the dairy industry.

Resolved, That the trip to Abilene for the purpose of seeing the splendid and well-equipped plant of the Belle Springs Creamery Company, which is the pioneer creamery of the State, was a most pleasant diversion from the regular routine of the program and one enjoyed by all, and we do hereby express our appreciation in behalf of the association and our thanks to President E. H. Forney for this well-planned excursion.

Resolved, That we extend our heartiest thanks to the officers of this association for the time given and the efforts put forth in arranging for this meeting. Our thanks are due and are hereby extended to those who participated in the program and made of this meeting such a conspicuous success. Especially do we thank Hon. A. J. Glover, of Wisconsin; Professor Cowgill, editor of the KANSAS FARMER; Colonel J. W. Robison, president of the State Board of Agriculture; and Professors TenEyck, Calvin, and Erf of the State Agricultural College.

Resolved, That we extend the thanks of this association to the Commercial Club, the dairy papers, and the citizens of Salina for the interest they have manifested in our meetings and for their generous hospitality.

Report adopted.

On motion of Mr. C. A. Barnes, of Topeka, a special vote of thanks was extended to Acting-Secretary I. D. Graham, of the KANSAS FARMER, for his splendid success in the preparation of this program and in doing the double duty made necessary by the serious and prolonged sickness of Secretary T. A. Borman.

Prof. E. W. Curtis, of Kansas City, introduced the following resolution:

Whereas, The Kansas State Dairy Association has now been organized for eighteen years, and we are advised by the secretary that the records, constitution and by-laws of the association have been lost or destroyed, therefore be it

Resolved, That a committee of three be appointed by the president whose duty it shall be to report at the next meeting of the association, a constitution and such by-laws as may seem necessary for adoption or rejection as the association may see fit. It shall also be the duty of this committee, so far as may be possible, to collect into permanent form the past records of the association and the names of its former officers. This resolution was adopted and T. A. Borman, I. D. Graham, and J. E. Nissley, of Topeka, were appointed as the committee.

The cordiality of the people of Salina, together with the splendid program of the meeting, sent each member home with renewed interest in the work of the association and a renewed determination to make of it one of the strongest and most influential associations in the United States. The field of its usefulness is broad. Kansas is unrivaled in its possibilities as a dairy State. Its creamery interests have developed until it now has the largest interests of the kind of any State in the world but its possibilities are not yet reached. It will be the policy of the new officers to do all in their power to interest the farmer, the creamery pa-

tron, the man on whose farm the milk is produced. As is well known, the manufacturing interests are far in advance of the producing interests in the knowledge necessary to securing the best dairy products, and the association feels that its first duty is to the producer without losing sight of or interest in the manufacturer of dairy products.

Following will be found the papers read at this great meeting and their publication in the KANSAS FARMER will make of this one of the greatest special editions ever issued by this paper and one that will make of it a reference book that will be valuable for years to come.

The Farmer's Dairy Cow.

A. J. GLOVER, ASSOCIATE EDITOR HOARD'S DAIRYMAN, FORT ATKINSON, WIS.

For over three years the department of dairy husbandry of the University of Illinois has been conducting field work among the dairymen of the State. A number of them were persuaded to weigh and sample each mess of milk a sufficient number of times during the year so that the performance of each cow could be estimated with a considerable degree of accuracy. It has been demonstrated by a number of our experiment stations that many cows are kept in the dairy at a very small profit and some at an actual loss. In order to determine the facts and to lead the dairymen to realize their full force and meaning, a man was sent into the field to persuade a number of them to keep a record of every cow in their herds. While this paper gives no facts new to science, yet it presents a line of work on which we have but little data and it brings the farmers face to face with facts that exist upon their own farms. It shows them that some herds are kept at a good profit, some at a small profit, and others at an actual loss.

HOW THE FARM TEST WAS MADE.

The farmers who took up this work were required to weigh and sample the milk from each cow in the herd every seventh week for fourteen consecutive milkings. After each cow was milked the milk was poured into a weighing-pail, weighed, and the weight recorded on a milk-sheet directly under the cow's name. A small sample of milk was then taken with a sample dipper or a milk-thief and put into the sample bottles. Corrosive sublimate tablets were used to preserve the samples of milk. Instructions were given to each man to shake the composite samples each day so as to mix the fresh samples with the rest of the milk and keep the cream from becoming dry or hard on the sides of the bottle. The jars that were used for keeping the composite samples were one-half pint, tin-top, covered bottles. When the period of weighing and sampling was completed the samples were tested either on the farm or at the creamery.

CALCULATING THE AMOUNT OF MILK AND BUTTER-FAT.

The milk was weighed and sampled during the fourth week of the seven-weeks' period. From the total amount of milk that each cow gave during this time, and the per cent of fat, was calculated the amount of butter-fat produced in the week. From these results were estimated the amount of milk and butter-fat each cow produced during the three weeks before, and the three weeks following the test. The cow's yearly record was made up from these tests, and in this way the total amount of milk and butter-fat that she produced during the entire year was determined. It may be objected to that this method did not secure results absolutely correct. On this it may be said that the chief object was to secure data from which cows could be compared with each other and that this object was fully attained even though the totals may have been either slightly too large or too small. Check methods show, however, that the data are very close to the actual amounts produced. In many cases the dairymen also kept an approximate account of the grain and roughage that each cow consumed during the year.

Where this was done the records are of exceptionally high value, for they clearly show the profit or loss of every cow kept in the dairy.

Ten dairy herds, namely, A, B, C, E, F, I, J, L, M, and N, have been tested for two years and I will give you the summary of the ten herds and a detailed report of two dairies. In the ten herds 145 cows completed their second year's work. The best cow gave an average yield of 7,190 pounds of milk, 367 pounds of butter-fat, and 423 pounds of butter. The poorest matured cow gave an average yield of 4,560 pounds of milk, 135 pounds of butter-fat and 158 pounds of butter.

In the first two years the average production of the herds was, 4,944 pounds of milk, 201 pounds of butter-fat, and 235 pounds of butter. The second year the average was 5,611 pounds of milk, 229 pounds of butter-fat, and 267 pounds of butter.

The average production for the two years was, 5,261 pounds of milk, 214 pounds of butter-fat, and 249 pounds of butter.

Herd "A" made the greatest increase in the second year's test. It produced 1,285 pounds more milk and 60 pounds more butter-fat per cow, than it did in the first year's work. The percentage of increase was 32.4 per cent of milk and 42.5 per cent of butter-fat.

In herd "B" there was a small decrease in the second year's test; it gave 61 pounds less milk and 5 pounds less butter-fat, per cow, than in the first year's test. All the herds, except "E", in the second year's test, showed an increased yield of milk and butter-fat, over the first year.

The average percentage of increase in the second year, per cow, was 13.7 per cent of milk and 13.9 per cent of butter-fat.

In other words, the average increase per cow was, 667 pounds of milk, 28 pounds of butter-fat, and 32 pounds of butter.

The increase seems to be due to the following:

- (1) The cows on the whole received better care.
- (2) The herds were fed better rations.
- (3) From nearly all the herds a few poor cows were sold.
- (4) In some cases cows were purchased that proved to be good dairy animals.

I shall give a report of herds "A" and "F." It should be observed that great improvement was made in each of these dairies.

REPORT OF HERD "A".

At the end of the first year's test, the owner of this herd disposed of a few of the poorest cows, but the herd still contained many poor dairy animals. The herd was composed of natives, grade Holsteins, and grade Shorthorns, which were by no means of the dairy type. The cows were in better condition during the second year than they were in the first year's test.

In the second year the herd received a better ration, the rough fodder was about the same, but the meal portion of the ration consisted of shorts and Peoria gluten, instead of cornmeal and ground rye which were the chief concentrates during the first year. The kind of concentrates and roughage fed during the two years was as follows:

First year: Cornmeal, ground rye, ground oats, crushed corn-and-cob-meal, corn silage, timothy hay.

Second year: Shorts, Peoria gluten, corn stover, corn silage, timothy hay.

It will be seen as was reported in Bulletin 85, that this herd received rather poor rations during the first year which were about as follows:

The fresh cows received a small allowance of bran and cornmeal together with timothy hay and silage, from October 1, 1901, to January 1, 1902. During the months of January and February to the cows giving the largest flows of milk, was given approximately the following:

Foodstuffs.	Lbs. Matter	Dry	Pro-	Carbo-	Fat
			tein	hydrate	
Cornmeal.....	10	8.91	0.790	6.670	0.430
Silage.....	35	7.31	.315	3.955	.245
Timothy hay 10	8.68	.280	4.34	.140	
Total nutrients..	24.90	1.385	14.965	0.815	

The ration which the cows received from March 1 to May 1 was perhaps

somewhat better than the ration fed in January and February, but it could have been much improved with mill feed. The ration to the fresh cows was about as follows:

Food-stuffs	Lbs.	Dry Matter	Protein	Carbohydrates	Fat
Rye.....	4	3.54	0.396	2.704	0.044
Crushed corn and-cob-meal	4	3.40	.176	2.400	.116
Silage.....	35	7.31	.315	3.955	.245
Timothy hay..	7	6.08	.196	3.038	.098
Total nutrients..	20.33	1.083	12.097	0.503	

May 1 ground oats were substituted in the place of rye. The cows were turned out to pasture about May 25, but were given a small allowance of silage to July 1. From this time on to the completion of the year's work they received nothing but grass.

It is plain to the skillful feeder that the rations of the herd received were very poor. The general unsatisfactory condition of the herd bears out this fact. The dairy was fed somewhat better during the second year.

From October 1, to November 15, 1902, the herd received a little shock corn with grass. Beginning November 15 and continuing to February 1, 1903, the best cows received about the following:

Food-stuffs	Lbs.	Dry Matter	Protein	Carbohydrates	Fat
Shorts.....	9	7.94	1.098	4.500	0.342
Silage.....	25	7.31	.315	3.955	.245
Corn-stover....	15	8.91	.255	4.890	.105
Total nutrients..	24.16	1.668	13.315	0.692	

During the months of February, March, and April the best milkers received the following:

Food-stuffs	Lbs.	Dry Matter	Protein	Carbohydrates	Fat
Shorts.....	6.5	5.73	0.793	3.25	0.247
Peoria gluten	2.5	2.25	.582	1.26	.067
Silage.....	40	8.36	.380	4.52	.280
Total nutrients..	16.34	1.735	9.030	0.594	

In connection with the above ration either corn-stover, or timothy hay was given in quantities large enough to satisfy the animal's appetite.

May 1 the herd was turned out to pasture and during this month received all the silage they would eat. From June 1 to the completion of the test the dairy received nothing but grass.

Average Yearly Record of Herd "A" for two years, and Average Production for that Period.

Year's work	Number cows.	Milk lbs.	Fat per cent.	Fat lbs.	Butter lbs.	Days in milk.
First.....	18	8,970	3.55	314	164	
Second.....	14	5,255	3.82	201	234	
Av. for 2 years.		4,613	3.71	171	199	

The herd in the second year gave 1,285 pounds more milk and 60 pounds more butter-fat, per cow, than it did in the first year. This increase in milk and butter-fat was largely due to better system of feeding during the second year. There were, however, a few new cows in the second year, and a few of the poor cows were sold at the end of the first year. This change, of course, had something to do with the increased yield of the herd. There were still a few cows kept upon this farm that were so poor that the owner would not enter them in the test.

Record for cow No. 6 for two years, and her Average Production for that Period.

Year's work	Age yrs.	Breed	Date of calving	Milk lbs.	Fat per cent.	Fat lbs.	Butter lbs.	Days in Milk.
First.....	3.5	Native	May 20, 1902	1,838	4.43	81	95	210
Second.....	4.5	Native	May 4, 1903	3,624	3.84	139	162	238
Average for 2 years				2,731	4.02	110	128	224

Cow No. 6, the poorest animal in herd "A", in two years gave 5,462 pounds of milk and 220 pounds of butter-fat. A good dairy cow should produce as much in one year as three animals of this kind.

Record of cow No. 10 for two years, and her Average Production for that Period.

Year's work	Age yrs.	Breed	Date of calving	Milk lbs.	Fat per cent.	Fat lbs.	Butter lbs.	Days in Milk.
First.....	4	Native	March 5, '02	3,833	3.87	129	150	245
Second.....	5	Native	March 1, '03	3,553	3.55	126	147	298
Average for 2 years				3,693	3.46	128	149	272

The average of cow No. 10 is very low. Why she produced more milk and butter-fat in the first year's test than in the second, when a better ration was fed, can not be intelligently answered.

Record for cow No. 15 for two years and her Average Production for that Period.

Year's work	Age yrs.	Breed	Date of calving	Milk lbs.	Fat per cent.	Fat lbs.	Butter lbs.	Days in Milk.
First.....	9	Grade Polled Shorthorn	Nov. 4, '01	6,145	3.83	233	260	294
Second.....	10	Grade Polled Shorthorn	Nov. 15, '02	6,874	3.87	266	310	273
Average for 2 years				6,510	3.76	245	285	283

Cow No. 15, which was the best animal in herd "A", gave considerably more milk and butter-fat in the second year's test than she did in the first. Her increased yield seems to be entirely due to a better system of feeding.

REPORT OF HERD "F".

There were seventeen Holstein cows in the second year's test; their average weight was about 1,100 pounds. The herd was kept in a comfortable barn, was in healthy condition during the two years and did a much better year's work during the second test.

The cows were given but little grain during the first year. For a period of seven weeks in the winter they received no grain, but were fed corn silage, clover and corn-stover. During the second year the herd received a liberal allowance of grain.

The kind of concentrates and roughage fed during the two years was as follows:

First year: Bran, oats, grano gluten, clover hay, corn-stover, corn-silage.

Second year: Bran, oats, dried malt, dried brewers' grain, clover hay, corn-stover, corn-silage, timothy hay.

The herd was fed during the first year as follows:

From October 15 to December 1, 1901, the best cows received about the following:

Food-stuffs	Lbs.	Dry Matter	Protein	Carbohydrates	Fat
Bran.....	4	3.54	0.516	1.604	0.168
Oats.....	4	3.56	.368	1.892	.085
Clover hay....	5	4.25	.340	1.790	.085
Stover.....	10	5.95	.170	3.240	.070
Silage.....	35	7.31	.315	3.955	.245
Total nutrients..	24.59	1.709	12.481	0.704	

From December 1, 1901, to February 1, 1902, the ration consisted of thirty-five pounds of silage, five pounds of clover hay, and all the corn-stover they would eat.

The best cows received about the following ration from the first of February until they were turned out to grass:

Food-stuffs	Lbs.	Dry Matter	Protein	Carbohydrates	Fat
Grano gluten..	2	1.88	0.534	0.776	0.248
Silage.....	35	7.31	.315	3.955	.245
Clover hay....	5	4.23	.340	1.790	.085
Corn-stover....	10	5.95	.170	3.240	.070
Total nutrients..	19.37	1.359	9.761	0.648	

Oat straw, ad libitum.

The cows were turned out to pasture about June 19. The owner did not have enough pasturage to feed his herd entirely, so the ration was supplemented with thirty pounds of corn-silage a day. This ration was continued to the completion of the test.

The best cows were fed on an average during the second year approximately as follows:

From October 25, 1902, to February 10, 1903, the best milkers received about the following:

Food-stuffs	Lbs.	Dry Matter	Protein	Carbohydrates	Fat
Bran.....	4	3.54	0.516	1.604	0.168
Oats.....	4	3.56	.368	1.892	.085
Clover hay....	2	1.68	.136	.716	.034
Timothy hay..	3	2.26	.084	1.302	.042
Silage.....	40	8.36	.380	4.520	.280
Corn-stover....	15	8.92	.255	4.890	.105
Total nutrients..	28.80	1.709	14.886	0.765	

From February 10 until the cows were turned out to pasture they received about the following:

Food-stuffs	Lbs.	Dry Matter	Protein	Carbohydrates	Fat
Bran.....	2	1.77	0.258	0.802	0.068
Oats.....	2	1.78	.184	.946	.084

The cows were turned out to pasture with pasture grass the herd received two pounds of bran, two pounds of dried brewers' grain, and 25 pounds of silage a day. In July and August most of the cows went dry and were fed 25 pounds of silage and pasture grass. The majority of the cows calved in September and October, thus beginning their third year's work.

Average Yearly Record of Herd "F" for two years and Average Production for that Period.

Year's work	Number cows.	Milk lbs.	Fat per cent.	Fat lbs.	Butter lbs.	Days in milk.
First.....	14	5,846	3.32	194	227	
Second.....	17	7,171	3.29	236	275	
Av. for 2 years.		6,509	3.30	215	251	

The herd in the second year gave 1,325 pounds more milk and 42 pounds more butter-fat per cow, than it did in the first. This can be accounted for in three ways:

(1) The cows received during the second year's test a better ration.

(2) Many of the poor producing animals were disposed of at the end of the first year's test.

(3) A few new cows were purchased that proved to be good producing animals.

Yearly Record of Joe's Bride for two years and Average Production for that Period.

Year's work	Age yrs.	Breed	Date of calving	Milk lbs.	Fat per cent.	Fat lbs.	Butter lbs.	Days in milk.
First.....	9	Holstein	April 5, 1902	5,136	3.00	145	180	275
Second.....	10	Holstein	Sept. 10, 1903	8,984	2.91	116	185	274
Average for 2 years				4,560	2.96	135	158	274

Joe's Bride, the poorest cow in this herd, produced in two years 9,120 pounds of milk and 270 pounds of butter-fat. There is no reason why a good dairy cow with no adverse periods, should not produce in one year as much as she did in two years.

Yearly Record of Check for two years and Average Production for that Period.

Year's work	Age yrs.	Breed	Date of calving	Milk lbs.	Fat per cent.	Fat lbs.	Butter lbs.	Days in milk.
First.....	15	Holstein	Jan. 25, 1902	6,812	3.18	215	251	252
Second.....	16	Holstein	Mar. 27, 1903	5,475	3.36	184	215	259
Average for 2 years				6,144	3.25	200	233	256

Check's record is not high, but it is fairly good when her age is considered. In her fifteenth year she made 12.2 pounds of butter-fat in seven consecutive days. This record permitted her to enter the Holstein Friesian Advance Registry.

Yearly Record of Alfrida for two years and Average Production for that Period.

Year's work	Age yrs.	Breed	Date of calving	Milk lbs.	Fat per cent.	Fat lbs.	Butter lbs.	Days in milk.
First.....	7	Holstein	Oct. 14, 1901	7,641	3.22	246	287	336
Second.....	8	Holstein	Nov. 8, 1902	11,445	3.40	389	454	365
Average for 2 years.				9,543	3.33	318	371	350

Alfrida, the best cow in herd "F," did considerably better in her second year than she did during the first. At the beginning of her second year she was officially tested but failed to qualify, making only 11.9 pounds of butter-fat in seven consecutive days. Notwithstanding this she gave 11,445 pounds of milk and 389 pounds of butter-fat, which made 454 pounds of butter. While Check the year before was officially tested and qualified, making 12.2 pounds of butter-fat in seven consecutive days, yet, she gave, during that year, only 6,812 pounds of milk and made only 215 pounds of butter-fat, and 251 pounds of butter. In other words, Alfrida failed to enter the Holstein-Friesian Advanced Registry, but produced 4,633 pounds more milk and 174 pounds more butter-fat in one year than Check, that entered the Holstein Friesian Advanced Registry. Moreover, Alfrida's average record for the two years is greater by 3,399 pounds of milk, and 18 pounds of butter-fat. The point is, does one week's record in a whole year give the true value of a dairy cow?

It is plain to every thoughtful man that we must be guided by yearly records and place but little, if any, con-

fidence in the weekly test. But we must not stop with one year's record and base our selections upon one year's work.

While the scales and Babcock test can be of great service in the selection of our dairy animals, they must, however, be used with judgment. Dairy cows have their "off years," and this must be considered when the herd is being culled. If we do not bear this fact in mind, we are apt to sell some of the best cows from our herds. The writer has in mind the cow Sweet Briar, of the Minnesota Experiment Station, that produced for ten years an average of 358.07 pounds of butter a year, while in 1898 she produced only 206.62 pounds of butter, but in 1899 she made 306.53 pounds, and in 1901, 370.53 pounds. If the merits of Sweet Briar had been wholly based on the work she did in 1898 she would have been classed as a very ordinary cow, and perhaps sold. The great value of scales and Babcock test lies in their continued use in the dairy herd, and

not in one year's test. Good heifers usually come from the best dairy cows, but it sometimes happens that a promising heifer may do very poorly for the first year. In such cases the heifer's individuality together with her breeding should be considered before she

is sold. The testing of cows should, however, be carried on in every dairy if a systematic selection is to be made. A good cow seldom has two "off years" in succession.

In closing, let me present a few tables comparing the result of different

cows and herds and also comparing the first and second year's work.

TABLE 1.—Comparing the average performance of the best and the poorest herds; also giving the average performance of all the herds tested.

	Milk lbs.	Fat per cent.	Fat lbs.	Butter lbs.	Days in milk.
Best Herd.....	6,444	4.17	269	313	330
Poorest Herd..	4,613	3.71	171	199	271
Average of Herds.....	5,261	4.06	214	249	300

TABLE 2.—Giving average record of the cow producing the most butterfat of all the cows tested, for two years, and average record of the cow producing the least butter-fat.

Name of Cow	Milk lbs.	Fat per cent.	Fat lbs.	Butter lbs.	Days in milk.
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Pet, best cow..... N 7,190 5.10 367 428 315
Joe's Bride F 4,560 2.96 135 158 274

Pet of herd "N" gave for the two years an average of 2,630 pounds more milk, 232 pounds more butter-fat, and 270 pounds more butter, per year, than Joe's Bride of herd "F."

Pet, of herd "N," has the highest average record of all the cows tested, and Joe's Bride, of herd "F," the lowest.

TABLE 3.—Giving the total amount of milk and butter-fat produced by the ten herds in the first and the second year, also the total number of cows.

Year's Work	No.	Milk lbs.	Fat per cent.	Fat lbs.	Butter lbs.
First.....	160	791,088	4.057	32,099	37,449
Second.....	145	813,586	4.081	33,200	38,733

There were 15 more cows in the first than in the second year, but the 145



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animals produced 22,498 pounds more milk and 1,101 pounds more butter-fat in the second year than the 160 cows gave in the first.

TABLE 4.—Giving the average yearly production for all the herds that have been tested for two years.

Year's Work	Milk, lbs.	Fat, percent.	Fat, lbs.	Butter, lbs.
First.....	4,934	4.06	201	235
Second.....	5,611	4.07	229	267

The percentage of increase in the second year per cow, of the ten herds tested was 13.7 per cent of milk, and 13.9 per cent of butter-fat. In other words, the average increase per cow was: 667 pounds of milk, 28 pounds of butter-fat, and 32 pounds of butter.

The Farmer's Cow.

WILKIE BLAIR, GIRARD, KANS.

We are living in an age of specialists, and this being a dairy meeting, I realize that in presenting this paper I am differing in opinion with men of great ability and much experience. However, I believe that it is possible for a cow to possess a profitable beef form and at the same time to be a profitable performer at the pail. Some claim that there is no such cow; that it is an utter impossibility, according to the laws of nature, to produce such a cow; that there has never been and never will be such a cow. Others say that it is possible to find occasionally a dual-purpose cow, but they are accidents or sports. In many instances this is true. But when we find families of dual-purpose cows reproducing themselves for five or six generations and in each generation the milk- and beef-qualities being increased, we must conclude that good dual-purpose cows are not merely accidents or sports, but that they may be produced with as great a degree of certainty as good cows of the special dairy breeds. The fact should be remembered that among the dairy breeds every cow is not a Mary Marshall, a Loretta D., or a Shadybrook Gerben, but there are many very poor dairy cows—many heifers with all the form and points required to make choice dairy cows, but when they become cows and meet

the actual test, they fall far below the requirements of a first-class dairy animal. Such a cow, if she had more of the beef form, would be more valuable. This raising of special dairy cows, and selecting only those which prove to be very choice, is rather expensive.

After all, the special dairy breeds are dual-purpose to a certain extent. So, also, are the most specialized beef breeds. I admit that if you desire a cow to work at high pressure, with treatment such as no ordinary farmer can give, and make a dairy test record, it may best be done with a special dairy cow. Even then, dual-purpose cows do not fall far behind them many times. To win a trotting or a running race, one must have a trotting-bred or a thoroughbred horse, but of what use would the same animal be to the farmer? During the last half century, the trotting-horse breeders have forgotten size and conformation and have given up all for speed. Speed they have, but only in one horse among a thousand. How much better it would have been for the American trotting-horse had his breeders produced a three-minute horse with size, high action, style and beauty of conformation. How much better it would have been for the Shorthorn breed of cattle, had the silly Cruickshank fad never robbed the old Bates Shorthorn cow of her grandest endowment, which is her ability to rear her calf well. This special beef type can be and sometimes is crowded to such an extent that Dame Nature says "Stop!" The cow not only becomes unable to rear her calf, but actually fails to produce one. On the other hand, by crowding the special dairy cow too far, she is robbed of her constitution and becomes a little, nervous, high-tempered creature, subject to all sorts of diseases, and only fit to be pampered and fed on the choicest of high-priced feeds, thereby rendering her wholly unfit for use by the ordinary farmer.

The cow for the farmer who has plenty of forage such as corn-fodder,

wheat-straw, slightly damaged hay, etc., is the dual-purpose cow and her steer calf, to consume these by-products of the farm and convert them into salable milk, cream, butter and beef.

To show that dual-purpose cows are profitable dairy animals, I will give briefly the record of actual performance of such cows of the Red Polled breed, which is preeminently the dual-purpose breed of cattle. In the Whittingham herd, belonging to Mr. Garrett Taylor, Norwich, England, where there are from eighty to one hundred Red Polled cows kept, the Babcock test is regularly used and tests are made in the summer when the feed is grass alone. The average yield, under these conditions, is between 3.75 and 4 per cent. In 1892, the average of ninety cows was 5,696 pounds of milk. In 1893, the average of ninety-one cows was 5,116 pounds; in 1894, the average of eighty-five cows was 5,877 pounds; in 1895, the average of eighty-six was 5,540 pounds; and in 1896 the average of ninety-eight cows was 5,585 pounds. Thus, during five years, with the number of cows ranging from eighty-five to ninety-eight, the annual average yield of milk per cow varied from 5,166 to 5,877 pounds.

A Red Polled, dual-purpose cow, 6330 Elmham Rosebud 4th, A-1, gave in one year 9,023 pounds of milk, with a test of 4.7 per cent butter fat. Another cow of the same breed, 6199 Blossom 5th A5, has a yearly record of 10,247 pounds of milk, testing 4.4 per cent butter-fat. No. 4807 Carlita 2d A4, has a twelve-months' record of 10,080 pounds of milk, testing 5.2 per cent butter-fat. We have a record of twelve herds including all the cows in these herds, which represents 250 cows of all ages, showing an average yield of 5,785 pounds of milk per cow per year.

The Right Honorable Lord Rothchild of England, maintains herds of both Red Polls and Jerseys, both of which are kept under exactly similar conditions. For the year 1898, the report published in the London Live-

Stock Journal, shows that twenty-nine head of Jersey cows, that were in this herd all the year, have 180,072 pounds of milk, or an average of a little more than 6,209 pounds each. Thirty-six Red Polled cows, in the herd during the same time, gave 271,593 pounds during the year, an average of a little more than 7,544 pounds. The largest yield of a Jersey cow was 11,723 pounds in 347 days, an average of 33.59 per day. The largest yield of a Red Polled cow was 13,126 pounds in 347 days, an average of 37.82 per day. Taking a three-years' record of this herd, the Red Polls produced over 17 per cent more milk than the Jerseys.

I might give the records of many more dual-purpose cows as milkers, but these are sufficient to show that there are really profitable dual-purpose cows for dairy purposes. I might give records of dual-purpose animals as beef-producers, but I believe that almost any one will concede that they are profitable feeders.

Some twenty or thirty years ago, there were, in the Central States, many herds of fine, large, wide-loined red and white cows, in which the Bates and Booth Shorthorn blood predominated. These fine, shapely cows had large udders, capable of giving from 5,000 to 10,000 pounds of 4 per cent milk each year. The free ranch upon the Western plains had caused prices of beef cattle to tumble downward, until there was no profit in feeding and growing them. Dairy products brought a fair price. About this time, the specialists—they are always bobbing up at such times—began to advocate the special dairy cow. Wealthy men down East went over to the Channel Islands and brought to America a lot of Jerseys (they frequently called them Alderneys). These they sold at fabulous prices. The majority of the owners of the fine dual-purpose cows sold them and replaced them with these little yellow, cat-hammed Jerseys, many of which were actually inferior for dairy-purposes to the larger cows. Others bought these little black-nosed, peak-rumped, vicious Jer-

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sey bulls and used them in their herds of nice dual-purpose cows.

Then there were other rich fellows who went over to Holland and brought to this country a lot of black and white cattle called Holsteins. These they then called dual-purpose cattle, but when the feeders refused to buy black and white steers, they dropped off the dual part and now call them special dairy cattle. There was considerable prejudice against them as feeders, for some of them were pretty good dual-purpose cattle. Sires of this breed, like the Jerseys, did their share in blotting out of existence the really dual-purpose cows. As the heifers from such crossing grew up, the old cows were discarded. A few generations of heifers from such sires, and the cattle of the country became practically little, black-nosed, yellow-haired Jerseys, or long-legged, slab-sided Holsteins. In many cases a mingling of the two breeds. Then came the inevitable, as it always does sooner or later. The price of dairy products went down and beef cattle began to soar. What consternation! What lamentation! "If we only had back again, the good old dual-purpose cow!" Beef is high and butter is cheap, and to make matters worse everybody had gone to eating filthy oleomargarine. They said the dairy-bred cattle would never again be worth their feed. Away they go rushing headlong to the special beef-cattle breeders. Over in old Scotland, they say, there is a wise man, a specialist, one of these modern sages, who has done but one thing and mastered that thing thoroughly. Amos Cruickshank is his name, a man far wiser and a greater genius than ever were Thomas Bates or the Booths. To Scotland they went and bought the special beef Shorthorns. Along with the special beef-bred Shorthorns, they bought the special beef-bred Aberdeen Angus, and from England, they brought the special beef-bred white-faced Hereford, who was the king of all the bovine tribes and boasted more beef and less milk than any other. Many of the Hereford cows would not give enough milk to raise a kid, therefore they were the most popular of all. These breeds they crossed with their special dairy-bred grades expecting to raise beef cattle. This, of course, was a failure and they found they had neither beef, dairy nor dual-purpose cattle. As a result of these operations, the average cattle to be found in the Central West at this time are not as good as they were twenty-five or thirty years ago. The man who is to blame for this is the fellow who advocated the cause of the special-purpose cow.

History repeats itself, and at this time beef cattle are cheap while dairy products are relatively high. Although there are but few really good dual-purpose cows now to sacrifice, the people are buying cat-hammed, skinny Guernseys—they are the fad now instead of Jerseys—and lank, bony Holsteins to cross with their heifers from beef-bred sires. I would say to such, think of the past. These ever-recurring changes are coming and going just as the tide flows and ebbs, or as daylight follows darkness. You will no sooner have your cows started on dairy lines than you will want them back to beef. If you have dual-purpose cows, stick to them, and by the use of good dual-purpose sires improve your cattle. Make them better as the years go by. If you have no dual-purpose cows, buy the best dual-purpose bull you can afford to buy, use him in your herd of whatever kind of cows you have, retain the choicest and best heifers and then get another good dual-purpose bull and continue until you have some cows that will make you money when beef is high and butter is low as well as when butter is high and beef is low. Do not switch off after each recurring fad, but stay by the dual-purpose cow.

Alfalfa.

EXCERPTS FROM AN ADDRESS BY COL. J. W. ROBISON, TOWANDA, KANS., PRESIDENT OF THE KANSAS STATE BOARD OF AGRICULTURE.

Alfalfa is one of the oldest plants known to agriculture. Pictures of it have been found among the sculptures of Egypt in the centuries past; it has

been identified among the carvings on the ruined temples of that ancient land. For ages its value has been appreciated by those peoples who have used it and it is becoming one of the most valued of plants in American agriculture as its worth becomes better known and its habits of life and growth more thoroughly understood. It is among richest known plants in protein. It has a feeding value about equal to old-process bran. The old-process bran is much richer than the new. Many farmers who have become interested in alfalfa from the reports made by other farmers who grow and feed it, become discouraged by reason of the difficulties which may be experienced locally in growing it successfully. Among these difficulties may be mentioned that of securing a good catch; the ravages of insect pests; its susceptibility to frost and the necessity, in places, for inoculation of the soil before a good crop can be assured.

The first step necessary to securing a good crop of alfalfa is to get good seed. Avoid seed which is adulterated with sweet-clover seed or any other deleterious plant whatever. Alfalfa sown in the spring must be clipped to kill the weeds. But the farmer must be careful to select the proper time for this mowing. Of course a good crop of hay need not be expected during the first season. The farmer must be careful to select such a time for mowing that he will cut late enough to prevent the weeds growing again and at the same time early enough so that the weeds will not shade the alfalfa too long.

The seed of the alfalfa plant is very small and hence the surface of the ground must be finely pulverized in order that the seed may be in contact with the earth that the moisture will not evaporate too rapidly and that the air will not penetrate the soil too deeply. In preparing the seed-bed it is best to plow deep as the root grows downward three times faster than the top grows upward. Seed may be put in either with the drill or by broadcasting in spring sowing; but for fall sowing the drill should always be used. The use of the drill in the fall serves to protect the seed from the winter, while the little furrows made by it will catch the snow and other moisture.

I began to sow alfalfa twenty-seven years ago and have sown from 100 to 200 acres each year since that time. I began by sowing one-half bushel of seed per acre but experience has taught me to use less seed now. Usually I do not expect to get more than one-half of the area sown at each planting, into a good stand. In my vicinity, in Butler County, Kansas, I find that we do not need to inoculate the soil. In some sections of the country, however, inoculation is necessary, and where this is true it should always be done on the high points where the rains will wash down and spread the bacteria.

For short-term pasture, in my series of crop rotation, I prefer to use red clover and English blue-grass. This is a good mixture because the clover fertilizes the ground and because, when sown in combination, the yield of English blue-grass is larger than when it is seeded by itself. In some parts of our county, we find it difficult to grow alfalfa on the upland. When this is true, we seed to the combination of red clover and English blue-grass just mentioned. However, we find alfalfa is developing as an upland crop and that when grown on second bottom or upland it makes a richer hay though not so abundant as that grown on bottom land.

The harvesting of alfalfa is at times a difficult matter because of its conflict with the wheat harvest and the corn cultivation. Our practice is to put it up in twenty-five ton ricks. It is much better, of course, to put it in the barn, but few farmers have barn-room enough. If the plant is very young, or very green, or very weedy, it should not be put in the rick or the barn, as there would be danger of spontaneous combustion. In stacking such alfalfa it is best to use from six to ten pounds of salt to the ton, according to its greenness. It should always be fed out with some cheap roughness like corn-fodder or prairie

hay, which are poor in protein and which serve to balance the ration.

Alfalfa-seed develops best in a dry season. The year 1901 was the best seed-growing year we ever had. During that season one of our fields yielded fifteen bushels of seed per acre, which is the largest yield known to me. In cutting a crop for the seed it is always best to cut that portion growing upon second-bottom land or on the higher points of the first bottom, as the seed is better developed and much more plentiful. Kansas raises better alfalfa-seed than does California, and seed is now shipped to that State as well as across the ocean to some of the older countries where alfalfa has been grown for hundreds of years. Seed is shipped from Kansas to France because of its superior qualities and because, in that country, it is used for coloring silks and certain fine qualities of leather. If alfalfa-seed is kept dry, there seems to be no limit to the duration of its vitality.

As mentioned awhile ago, I began seeding one-half bushel to the acre, but our practice now is to sow only about sixteen or eighteen pounds to the acre on an ordinary seed-bed. On a good seed-bed I think ten or twelve pounds per acre would be ample. The seed must be covered as lightly as possible though for fall seeding we usually use a press drill. We have had great difficulty in getting rid of crab-grass and noxious weeds in years past but now experience has made it easy for us. The sowing of alfalfa in the spring and the running over it with the mower at the proper time, will destroy cockle-burrs or any of the ordinary weeds, but the only way to get rid of crab-grass is to sow the alfalfa in the fall. For best results our practice is to sow the land to wheat and then plow the stubble under early and work the ground into a fine seed-bed before seeding to alfalfa.

The Helpful Hog.

DAVID G. PAGE, TOPEKA, KANS.

All over this great State many farmers are milking large numbers of cows who ought to cut down their herds and add a number of hogs to their stock. Many hog-breeders ought to sell off some of their stock and buy some good milch cows that will be able to give the full pail every day. The cream should be sold after separation but the skim-milk should never leave the farm. It is only by a perfect balance of hogs and cows that dairying in Kansas will yield its largest returns and that hog-breeding will bring the greatest amount of cash.

Eastern methods of intensive farming are being rapidly but surely transplanted to the fertile prairies of the West, and farmers are beginning more and more to realize the returns from dairy cows. Farmers, who four or five years ago pooh-poohed the idea of their fooling away time with cows, have taken up the work with enthusiasm, due in great part to the aggressive campaign carried on by the creamery interests backed up by the great agricultural press. Farmers are raising less corn and wheat and more alfalfa and dairy cows, but the time is at hand when the good dairyman must understand hog-rearing and combine it with the dairying.

It is only as an accessory to the dairy that I shall mention the hog.

With good cows farmers should be able to keep at least three hogs per cow but this number may be increased if alfalfa is available to carrying the pigs over times when lactation is decreased. The advantage of feeding the milk on the farm is the very great saving of haulage to and from skimming station, and where the whole milk is sold, there is the elimination of middlemen's profits. As to feeding the milk sweet or sour or feeding buttermilk from the creamery, one has to be governed purely by local conditions but as a general rule, if not too much watered in the churning, buttermilk is equal to sweet milk in feeding-value. There seems to be an advantage in feeding the skim-milk after it has been soured but there is, as yet, no good explanation or reason given for this. At any rate, the thing to do is to get milk—either sweet skim-milk, sour

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skim-milk, or buttermilk. They will all make satisfactory returns if fed to hogs.

Many feeders have their various proportions but from careful experiments it is found that a ration consisting of three parts by weight of milk and one part of corn is the most economical. The value of the milk is decreased as the quantity is increased beyond this proportion. Three hundred and thirty pounds of skim-milk will save approximately one hundred pounds of corn. When the proportion of milk is increased it takes more milk to save 100 pounds of corn. When the proportion of milk is 7 pounds to 1 pound of corn it takes 574 pounds of milk to save 100 pounds of corn and with 9-pounds of milk to 1 pound of corn it takes 550 pounds of milk to equal 100 pounds of corn. From this it is seen how important it is to secure the right quantity of milk to feed.

I give here a very valuable table which I take from "Henry's Feeds and Feeding," a very important book for the library of the stockman and feeder, which shows the value of skim-milk when fed with corn as a supplementary food. The corn was fed in the shape of cornmeal.

Value of corn.	Value of 100 pounds of skim-milk.	
	When feeding 1 to 3 lbs. milk for 1 lb. cornmeal	When feeding 7 to 9 lbs. milk for 1 lb. cornmeal
\$10 per ton (28c per bu.)	15c	9c
\$12 per ton (33c per bu.)	18c	11c
\$14 per ton (39c per bu.)	21c	13c
\$16 per ton (44c per bu.)	24c	15c
\$18 per ton (50c per bu.)	28c	16c

The choice of breed is of secondary importance but it is very important to get good individuals to start with. There are good and bad hogs in all breeds and a good pedigree is no guarantee of good individuality.

The manure of pigs is worth keeping on the fields and by all means the farmers should be prepared to spread it evenly. From articles in the KANSAS FARMER it appears that Kansas farmers will be able by careful manuring of their fields to produce an increase of 18 bushels of corn per acre. This is produced by cow-manure, but when the manure from hogs is used, the same weight will produce even greater results on account of the greater amount of valuable constituents.

Experiments in Dairy Management and Feeding.

OSCAR ERF, PROFESSOR OF ANIMAL HUSBANDRY, KANSAS STATE AGRICULTURAL COLLEGE, MANHATTAN, KANS.

There are over sixteen million cows distributed over 4,750,000 farms of three or more acres each, and about one million owned in towns, cities and

other country places, making a total of over seventeen million in all in the United States. In order to conceive of this vast number let us suppose that if they were to be marshalled in a procession, allowing ten feet for each animal, that they would form a column nine lines abreast from New York clear across the country to San Francisco. The milch cows of Kansas would form a single column from New York City to the Mississippi River. While it is true that Kansas has its proportional share compared with other States, yet comparing it with the actual condition and the possibilities, Kansas ought to have a column reaching across the Continent. Gradually as the center of population is traveling toward Kansas, the conditions are becoming more favorable for dairying. Even in the arid region we find that dairying is the one class of farming which always supplies the farmer with a steady revenue. If properly managed, dairying will flourish where stock-raising or grain-raising will make a bare existence for man.

As a matter of fact, dairy farming is known as one of the highest types of ordinary farming that is in vogue at the present time. There are a great many farmers engaged in specialties, such as breeding fancy stock, special lines of poultry, or growing fancy seeds for the market; but this class of farming can not be considered as ordinary farming, such as the great mass of our farmers are obliged to do. There are cases on record where a farmer has received as high as \$5 for an ear of corn. In cattle-raising there are cases on record where a man has received \$7,000 for one animal. On the other hand, in dairying, we have records of individual cows which have netted a profit of \$490 a year besides a calf that is worth \$1,000. But these are extraordinary circumstances and do not fall to the common lot of farmers.

Kansas land has been gradually increasing in value. In many parts of Eastern Kansas we find that farms are selling at the rate of \$75 per acre, in some localities even higher than that. Good land in Central Kansas is selling to-day at a price ranging from \$25 to \$40 per acre. The question arises, What can we do to make good interest on land at that price? Can we afford to keep on raising beef-cattle, or must we go into dairying? While these points depend more or less upon the individual, yet for the sake of comparison for the public in general I have made an approximate estimate of the cost and income of an average dairy cow and an average beef cow. We will first give an approximate cost of the feed of a dairy cow fed on a ration which has proven to give good results.

Corn-silage, at 30 lbs., at \$1.50 per ton.....\$0.0225
Alfalfa hay, 15 lbs., at \$4 per ton..... .08
Bran, 3 lbs., at \$18 per ton..... .027
Cornmeal, 5 lbs., at \$12.50 per ton..... .03125

Total cost of one day's feed.....\$0.11075

If the above ration or a similar one is fed it would cost approximately 11 cents per day. The total amount of ration should vary somewhat according to the period of lactation. A cow eats more at the beginning of the period of lactation than is provided for in this ration. However, she needs to consume decidedly less toward the end of the lactation period. So an average ration given here is what a good cow ought to consume. It is estimated that cows can be pastured in Kansas for five months at a cost of approximately 65 cents to 75 cents per month. However, from the experience of the average dairyman it is thoroughly proven that a cow can not do well on dry pasture, such as is frequently found, without an addition of feed. So, in order to give a cow feed sufficient to supply her needs, either the area of the pasture must be increased or an additional quantity of feed added, which has been averaged as a total of \$1 per month per cow for five months. After pasturing five months there are 215 days left during which time a ration is fed which costs 11 cents per day, or \$23.65 for the feeding period plus the \$5 for pasture equals \$28.65.

Other expenses to keep a cow for one year are as follows:

Labor for one man to attend cow.....	\$12.50
Cow worth \$50 at 6 per cent interest.....	3.00
Deterioration by age, if bought at 5 years, average period of unprofitableness at 13 years.....	4.00
Death of cow by disease or accident, death of calves, average shrinkage.....	4.00
Failure to breed, including maintenance of dry cows.....	2.50
Cow-barn for 20 cows costing \$600, well, tank, windmill and piping.....	2.75
\$300 at 6 per cent.....	.75
Renewal of windmill, pump and tank every ten years.....	.75
General maintenance expense, which includes taxes, fire and storm insurance, ordinary repairs such as pasture fences, water-fittings, paint, roof, etc.....	2.50
Hauling 1,200 pounds cream at 10c.....	1.20
Total.....	\$32.20
Ration and pasture.....	28.65

Total expenditure for one cow for a year.....\$61.85

Income from an average cow such as is estimated from records of the scrub cows as tested at the Kansas State Experiment Station, is as follows:

Butter-fat sold from 6,000 pounds of 4 per cent milk at 22c lb.....	\$52.80
Sale of carcass at the end of the cow's profitableness.....	3.00
5,000 lbs. skim-milk, at 20c cwt.....	10.00
Calf at birth.....	5.00
Total.....	\$70.80

Direct net profit for one cow for one year.....8.95

If a cow yields but 200 pounds of butter-fat, there would be a net direct profit of 15 cents, but a cow yielding 300 pounds of butter-fat would be accredited with a net profit of \$22.15. Observation of the college herd indicates that cows producing large quantities of fat consume but little more feed than the small producers.

A cow voids approximately 29,000 pounds of manure yearly, 10,000 pounds of which is liquid and 9,000 pounds solid manure. Analysis shows that the value of the manure from a cow is as follows:

Water, 75.25; nitrogen, 0.43; phosphoric acid, 0.29; potash, 0.44; value per ton, \$2.02.

Value of manure voided by a cow one year \$29.27. A careful estimate shows that only one-third of the manure produced on the average farm is recovered and can be applied to the soil directly as a fertilizing agent. Hence, as an indirect profit we must add \$10 to the direct net profit of \$18.95.

For the sake of comparison we estimate the approximate profit of a beef cow under similar conditions as follows:

Grain and roughage consumed in 215 days.....	\$14.00
Labor for attendant.....	1.50
Pasture for five months including calf at \$1 month.....	5.00
\$50 cow at 6 per cent interest.....	3.00
Death of cow by disease or accident, loss of calves.....	4.00
Failure to breed, including maintenance of cow.....	2.50
Cow-shed for 20 cows, costing \$200 tank, well, piping at \$300, at 6 per cent interest on investment.....	1.50
Renewal of windmill, pumps, tanks every ten years.....	.75
General maintenance expenses, including taxes, fire and storm insurance, ordinary repairs, pasture fences, paint, roof, etc.....	2.50
Total.....	\$34.75

The direct income of a beef cow is a calf which must be worth \$34.75 to balance the cost. The value of manure from a beef cow as an indirect profit must be considered as in the case of a dairy cow, but owing to the fact that a beef cow is fed little of the nitrogenous feeds during the winter months the value of the manure is less. A conservative estimate proves that such manure is worth approximately \$7.50, which if accredited to the calf would leave the cost of the calf \$27.25. We assume that this calf from the beef cow is dropped in the spring and runs on pasture for the summer with the cow which has been provided for it. No further expense is connected with the raising of the animal if it is to be marketed late in the fall as a feeder. According to the markets, good feeders can be purchased from \$22 to \$27. This proves that a calf from a strictly beef cow under average conditions is raised at a loss. My object in presenting this comparison is not to discourage the production of beef, but rather to prove the unprofitableness of raising beef on high-priced land for ordinary market prices, and that the farmer must either buy feeders at a cheap price or go into the dairy business in order to make a profit.

Whatever line of farming is to be carried on, either intensive or exten-



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sive, if the land is to retain its value, it is necessary to preserve the fertility of the soil. The East affords us some excellent examples where this point of the soil fertility has been neglected. Land worth from \$100 to \$150 per acre years ago can now be bought for \$7 per acre. Crop rotation does not restore the fertility in sufficient quantities to keep the land at this high value. The factor of buying high-priced fertilizers for land which raises market price grains is another impractical problem. The solution of this great economic problem points strongly to the old dairy cow as the redeemer of the soil, that consumes the feed of the farm and leaves the fertilizing constituents in the manure to the extent of at least 90 per cent, which can be hauled out to restore a part of that which was taken off the year before, and from this 10 per cent which has been absorbed by her system she will produce, if she is an average good dairy cow, about 6,000 pounds of milk per year, from which 275 pounds of butter is made. The milk is fed to the dairy calves and pigs and again returned to the farm in the shape of fertilizer. All that is left is butter, which is composed mostly of fat containing only 36 cents worth of fertility per ton. Fat is not taken from the earth but rather from the air by the plant and performs no function in the process of fertilization. For the good of Kansas agriculture I trust that dairying will make rapid strides in the future.

Two years ago the dairy and animal husbandry department of the Kansas Experiment Station undertook to determine the loss that could be attributed to the cow by failure to shelter. The relation of the comfort of the cow and the cash received by her for her products is one that every dairyman should study. Enough good food and pure water, shelter from heat in summer and storms of winter, and kind treatment, are just the conditions man demands for his own comfort and just what is due to every animal from every owner from an economic standpoint. The body of the cow, which is a complicated mechanism is so constructed as to do its work best at a temperature of 101° F. From this particular it might be well to compare her to the steam boiler which requires more fuel and does less work if not properly insulated or protected from the cold. Any marked deviation from the normal temperature of the cow in-

dicates an abnormal or diseased condition of the body. This temperature is maintained by the generation of heat within the body itself, from the food that is eaten. The food serves as fuel to be burned to keep the body warm. The body must be kept warm but not too warm. When the air is warmer or as warm as the body itself, moisture is brought to the surface and the evaporation of this has the necessary cooling effect. It is essential that the body be kept dry and comfortable. The function of food in the body of the cow has a great many important uses; aside from being converted into a product for the market, it keeps the machinery going, and repairs the waste, and lastly maintains the temperature. In following out the familiar law of preservation which is said to be the first law of nature, these functions are preserved first and if need be at the expense even of that product intended for the nurture of the young. If, then, a profitable flow of milk is to be maintained, not only must the feed be supplied for its manufacture but for those other necessities of the body which vary to keep the demands imposed by outside conditions. On several occasions some of the cows were exposed to a temperature ranging from 18° to 50° for several days at a time. A previous record was taken of the cows to get their approximate average daily production when kept in a comfortable stable. The milk was weighed, the test was taken, the amount of food and the weight of the animal was determined. The experiment indicated a loss of 12 per cent on the quantity of milk and 11 per cent on butter-fat. The animals were fed three pounds more of the grain ration but their weight was approximately the same. The loss including feed amounted to four cents per cow per day. During fifty-two days the thermometer registered 18° or below. Accordingly the total loss per cow for the year is \$3.10, or \$62.00 on a herd of twenty cows. This represents 10 per cent interest on a \$488.00 cow stable of twenty cows capacity. This past winter during the coldest spell when the temperature reached a point of 20° below zero, cows stabled in a well-constructed stable and properly bedded decreased 8.9 per cent from their normal milk-flow. No cows were kept outside during this cold weather, but judging from the result obtained in the stable where their temperature was

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EXCERPTS FROM AN
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Alfalfa is one
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never lower during this time than 20°
F., it seemed entirely impractical to
expose a milch cow to such extreme
temperature and storm.

Silage and Silos.

H. B. COWLES, TOPEKA, KANS.

The prejudice against ensilage, first
because it was new and, second, be-
cause inexperience resulted in much
spoiled feed, has now largely disap-
peared. There is no doubt that sound
ensilage is very good feed, or that rot-
ten or mouldy ensilage is as bad as
any other feed in that condition. What
Kansans want to know is whether, considering the value of the
feed, the cost of preserving it in this
form is such as to make the silo pay
in competition with our cheap hay and
stover, cane and alfalfa. On such a
problem the opinion of persons who
have tried it is presumably more val-
uable than that of persons who have
not, and for this reason I have been
asked to give you mine. To state
it briefly, after seven years experience,
I would not think of trying to run a
dairy without a silo.

For Eastern Kansas some experi-
menting is desirable to determine the
feasibility of siloing the first cutting of
alfalfa when weather conditions make
it desirable. For Western Kansas it
may be that Kafir-corn is the silage
crop. But on the whole the silage
question here relates to the harvesting
and preserving of the corn-crop.

The advantages of this method are
many. The corn is taken just when
it is at its best, and stored in a con-
venient place and in a manner to pre-
serve nearly all its feeding value. In
fact, stock relish it better after it has
been in the silo a month than when
it is first cut. A main advantage in
addition to its nutritive value is the
increased thrift that results from its
succulent character. Young stock fed
silage, with a little alfalfa and cane
hay, will make a better growth and
come through the winter in better
shape than they come home from pas-
ture. Stock of all kinds, including
hogs and chickens, eat silage eagerly,
and should have it every day during
winter. For profitable winter dairying
it is almost indispensable; and more
winter dairying is just what you cream-
ery men need in your business.

I consider one acre of corn in a silo
equal in feeding-value to two acres of
similar corn handled any other way.
Corn is about the only crop farmer's
sweat, to raise and then habitually al-
low half of it to go to waste, and if
the conditions ever existed where that
was good management, they are now
past in Kansas.

After a crop is safely stored in a
silo it will keep for any length of time.
I fed silage last spring in perfect con-
dition that was put up three years be-
fore. Another incidental advantage is
that one gets his ground cleared ear-
lier in the season for fall grain or pas-
ture.

So much for the feed. Now a word
as to the building to keep it in. A
silo is a more or less air-tight building
for storing green feed. The general
idea is the same as that involved in
canning. The air mingled with the
succulent cut-feed starts fermentation,
which partially cooks the feed, and in
this condition the pressure forces out
the air so completely as to stop fer-
mentation. The building need not be
absolutely air-tight when empty, or
even when filled full, since the injury
from a minute hole or crack extends
only to a forkful or two.

Since the chief requirement is a
good chance for the silage to settle,
the cylindrical form is best; and the
stave or tank-silo is the easiest to con-
struct and the cheapest. Several man-
ufacturers make a business of furnish-
ing silos of this type ready to set up,
but until increasing demand brings
the factories nearer to us, it is not
likely that they can compete in price
with the home-made product. Since
I have had experience with the stave
silo only, I will confine myself to this
style.

THE KANSAS FARMER.

APRIL 27, 1905.

It Makes the Most Dollars for You.

That's the
Easy Running

EMPIRE cream
separator

Send to-day for proof.

EMPIRE CREAM SEPARATOR CO.,
Bloomfield, N. J. Branch Office, 311 Temple Bldg., Kansas City, Mo.



Modern Conveniences in the Farm
Home.

E. B. COWGILL, EDITOR KANSAS FARMER,

Increasingly frequent inquiries come
from farmers concerning the practica-
bility of providing modern conven-
iences in the farm home. It is but
fair to state that nearly all of these
inquiries come from well-to-do or
wealthy farmers who need not hesi-
tate on account of a reasonable cost.
This last-mentioned fact has led the
writer to remember that something
more than a third of a century ago he
was spending about half of his time in
camp on the prairies of Central Kan-
sas, and that such comforts as he used
were not very costly in their instal-
lation. They presented little advance
over the "conveniences" provided by
nomadic peoples in all ages. A few
blankets, a coffee-pot, a frying-pan, tin
plates and cups, with a mess-box,
made "a pretty good outfit." Some-
times, in case of horseback trips sev-
eral of the "luxuries" here enumerat-
ed were omitted.

When the writer visited the huts of
the Igorrotes at the World's Fair, it
was impossible to avoid the reflection
that the absolute necessities of man-
kind are few and small. A bamboo
hut of about 6 by 8 feet; a broad shelf
made of bamboo across one end mid-
way between the dirt floor and the
roof of bamboo leaves, constituted
about all there was of the home of the

gether, and simply set the door in
place from the inside as you fill.

To stiffen the building and hold the
staves in place when the silo is empty,
I built a wooden hoop around the mid-
dle, on the outside, made of 1/2-inch cy-
press, 12 inches wide, four-ply breaking
joints, and bolted to each stave. Then
I placed a similar hoop at the top, on
the inside; and in addition built a
triangle of 2 by 10 plank inside the
top, well bolted to the silo at the cor-
ners and braced to the wooden hoop.
Run three long and strong wire rope
guys from this top rim to the ground,
and such a silo will stand any gale
without buckling, or wiggling off the
foundation. My wooden hoops are not
ornamental, and can scarcely prove
very durable, but they serve the pur-
pose so far. The silo stands from one
filling to another, and there is no
occasion to do much tightening and
slackening of hoops. One needs only
to recall the condition of the rain-
water barrel in a dry spell to see how
useless it is to build a tank 16 by 30
feet without providing some way to
keep the staves together and also pro-
viding a way to prevent their blowing
in or blowing over.

A roof is a matter of looks and of
comfort and not of necessity, so far as
the keeping of the silage is concerned.
A few inches will mould on top, roof
or no roof; and any ordinary amount
of rain is beneficial rather than other-
wise.

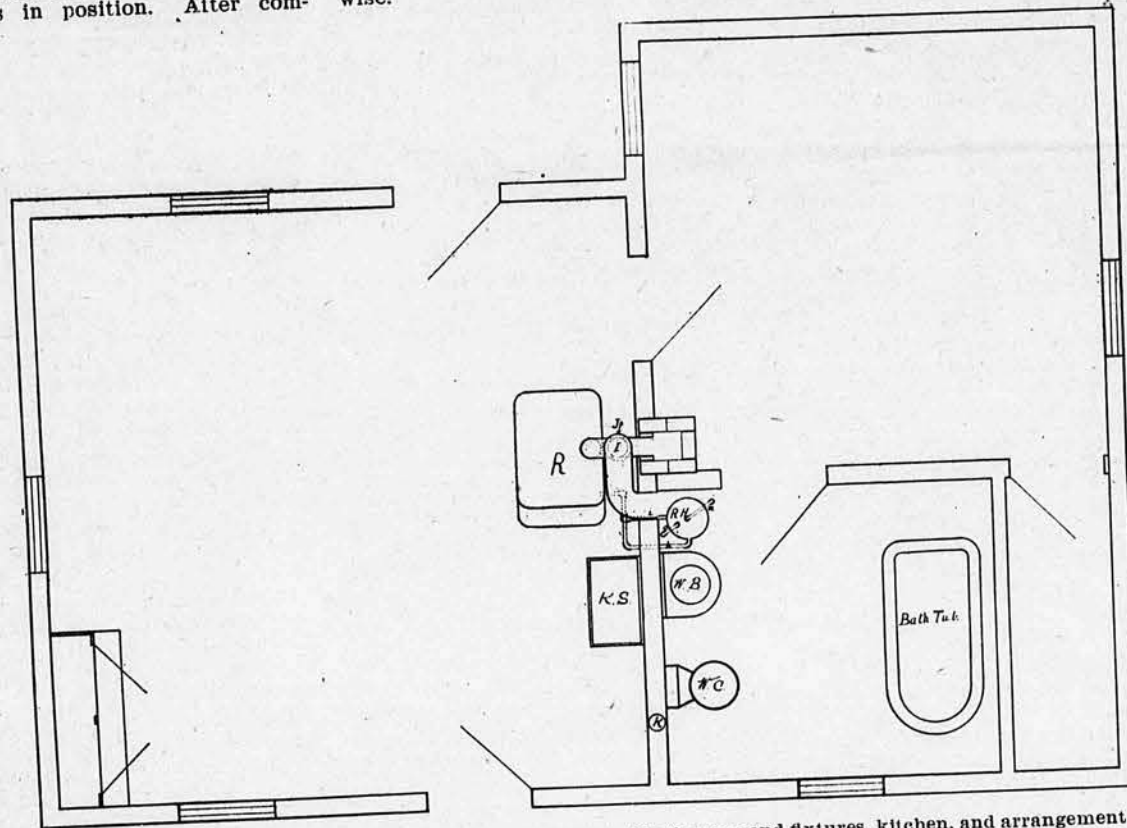


PLATE I.—Ground plan of Cottage, showing arrangement of bath-room and fixtures, kitchen, and arrangement for warming bath-room and water.

pleting the circle, put on two or three
hoops and repeat the operation for the
second story, putting a 14-foot stave
on top of a 16 and a 16 on top of a 14,
thus making a two-foot splice in the
middle. For greater strength and
tightness I covered the ends of the
staves with strap-iron hoops about four
inches wide.

For the rest of the hoops I used
three to six strands of No. 9 galvaniz-
ed wire well twisted into a rope, with
a log-shanked eye-bolt on each end.
For tightening, pass the eye-bolts
through a 12-foot 4 by 4 oak scantling
and turn up the nuts. I used eight
hoops on the first story and four on the
second. Probably two or three less
would do equally as well. Wire hoops
answer the purpose as well as flat or
round iron hoops. They cost about
one-tenth as much, and are much eas-
ier to put on and keep on.

After the hoops are on and drawn
tight, cut out about four doors, one
above the other. They need not be
larger than 18 by 24 inches. Saw on
a bevel all round. Cleat the pieces to-

When one has his silo and his corn-
crop ready, it will cost somewhere
from 30 to 75 cents a ton to put the
green corn in the silo. With a modern
force-feed, large-sized silage-cutter and
a 12 or 15 horse-power engine to run
it, the gang needed to work to the best
advantage would be one engineer, one
water man, one man to feed the cut-
ter, one man in the silo to spread and
tramp, four men with teams and low
down wagons to haul, two men in the
field to help load, and a corn-binder
with horse- and man-power enough to
run it. The binder should have a good
half day's start. Such a gang should
be able to handle a ton of corn every
seven or eight minutes.

There is no necessity for the silage
to go in as rapidly as that unless there
is a hot wind spoiling it in the field.
But it is doubtful whether a smaller
cutter and smaller force can put it
in at as low cost per ton. It is desir-
able that silos become so numerous
and so close together that thrashermen
will provide themselves with cutters
and add silo filling to their business.

ordinary Igorrote family. The fire
was made on the ground under the
bamboo shelf which served as a bed.
Water was obtained from a small
stream which ran among the huts.
Did these people complain? Yes—their
complaint was that they were fur-
nished fresh beef instead of fresh dog-
meat. Everything else was satisfac-
tory.

In the "patch" of every large city,
human beings live in hovels which
show little improvement on the huts
of the Igorrotes.

There is, in this country, a gradation
from these to the comfortable home in
which the conveniences provided by
modern progress are used to the furth-
erances of the health, comfort, and
enjoyment of every member of the
family.

The impression prevails that, now
as formerly, the cost of installing mod-
ern conveniences is such as to place
them beyond the reach of the family
of moderate means. This impression
is rapidly disappearing in the cities,
and I am glad to know that many pro-

gressive people on farms are finding it possible to introduce very modern conveniences in their homes.

This name, "modern conveniences" may include a large number of late inventions as well as some that have been long used. There is, however, a more restricted use of the name, and to this I propose to confine the remarks to follow. In the restricted use the name "modern conveniences" is almost synonymous with "bath-room fixtures."

But can it be true that without city facilities for furnishing water and sewerage, without a furnace and other expensive appliances, and without incurring prohibitive cost, the ordinary farmer may be provided with ready facilities for plunging into a big trough of warm water after his day's work and may have the other accommodations of the modern bath-room? Yes, it is true; and a good many farmers are providing them. They are becoming fashionable in some parts of Kansas. If the promises for the season, which I saw through the Union Pacific car windows in my trip from Topeka to Salina, shall be realized there will be large additions to the number of farmers who stand in need of information about the possibilities of the case and how to best realize them.

Modern bath-room fixtures consist of bath-tub, wash-bowl, and water-closet. With these may well be considered the kitchen sink, which can be easily connected with the water and drainage system of the bath-room.

For the installation of these it is essential that five conditions be provided. These are, first, place to put them; second, a constant supply of water under moderate pressure; third, drainage; fourth, heat; fifth, ventilation. One ought almost to add as the sixth condition, a well-matured plan of arrangement.

In showing how these several conditions are to be met I shall have in view the case of the man of moderate

THE PLACE.

In Plate I, I have shown a plan of a small house in which is provided a place for modern conveniences. The plan shows a kitchen—the first essential in any home. This kitchen will, in this case, be also the dining-room, sitting-room, laundry, library and parlor. I have drawn it sixteen feet square, outside measurement. Give this room plenty of large windows. It contains the cooking-stove, a kitchen sink and a cupboard. Everything else will be movable. The bedroom is twelve feet square. These dimensions may be varied. Since these drawings were made I have consulted my wife about the size of the kitchen and she says make it 14 by 16 instead of 16 by 16. I have also asked Professor Henrietta Calvin, whom you have just had the pleasure of hearing, and she says 14 by 16 is preferable. I now desire to submit the question to Colonel J. W. Robison, who is a man of experience and good judgment. "Colonel Robison, are not the ladies generally right about such matters?"

Colonel Robison: "The ladies are always right."

There you have it on authority. We will make the kitchen 14 by 16. I think I would also make the bedroom and its closet each a foot larger at the expense of the bath-room. The bathroom as here drawn is 8 by 7½. It will not suffer greatly by making it 7 by 6½.

HEATING.

But, one essential feature of the bath-room is its location with reference to the kitchen. This is not so important in a large house warmed with a furnace, but must not be overlooked where the fire that cooks the meals must also warm the bath-room. Let it be duly impressed, then, that the bath-room must be next to the side of the kitchen on which the stove is placed. Do not think for a moment that because it is possible to dispense

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Will make your cows pay more money in actual cash than you can realize by any other system.

It Is Done This Way:

Use one of our separators bought on easy payment plan and deliver your cream to one of our 500 cream receiving stations. In return you get our check two times a month with a complete statement of your account attached.

At each of our stations you can see your cream weighed, sampled and tested. Our butter-fat prices are quoted in advance of delivery and the test of each delivery of cream enables you to know at once the actual cash value of each can delivered. If you need money before checks are due we advance cash on your account. If you can't reach one of our stations you can ship direct. If you have no separator and want one, write us for information about the De Laval and we will tell you how a little cream each month will pay for one.

Ask us any question you please about any phase of the dairy business.

THE CONTINENTAL CREAMERY CO.
TOPEKA, KANSAS.

us enter somewhat into detail. There is nothing new or strange about the accessories here mentioned. The object is to show how the orthodox appliances in use can be arranged in a small house. If the house be larger than here shown, the arrangement of these parts will be found efficient and economical. In plates I and II, R is the cooking-range, R H is the range-

circulation is continuous as long as the fire is kept up. The range-boller gives off sufficient heat to warm the bath-room, especially if, as in the drawing, it have only one side exposed. It is well to take extra precautions to make that one side a good protection against cold.

I have shown in the drawings an additional means of warming the bath-

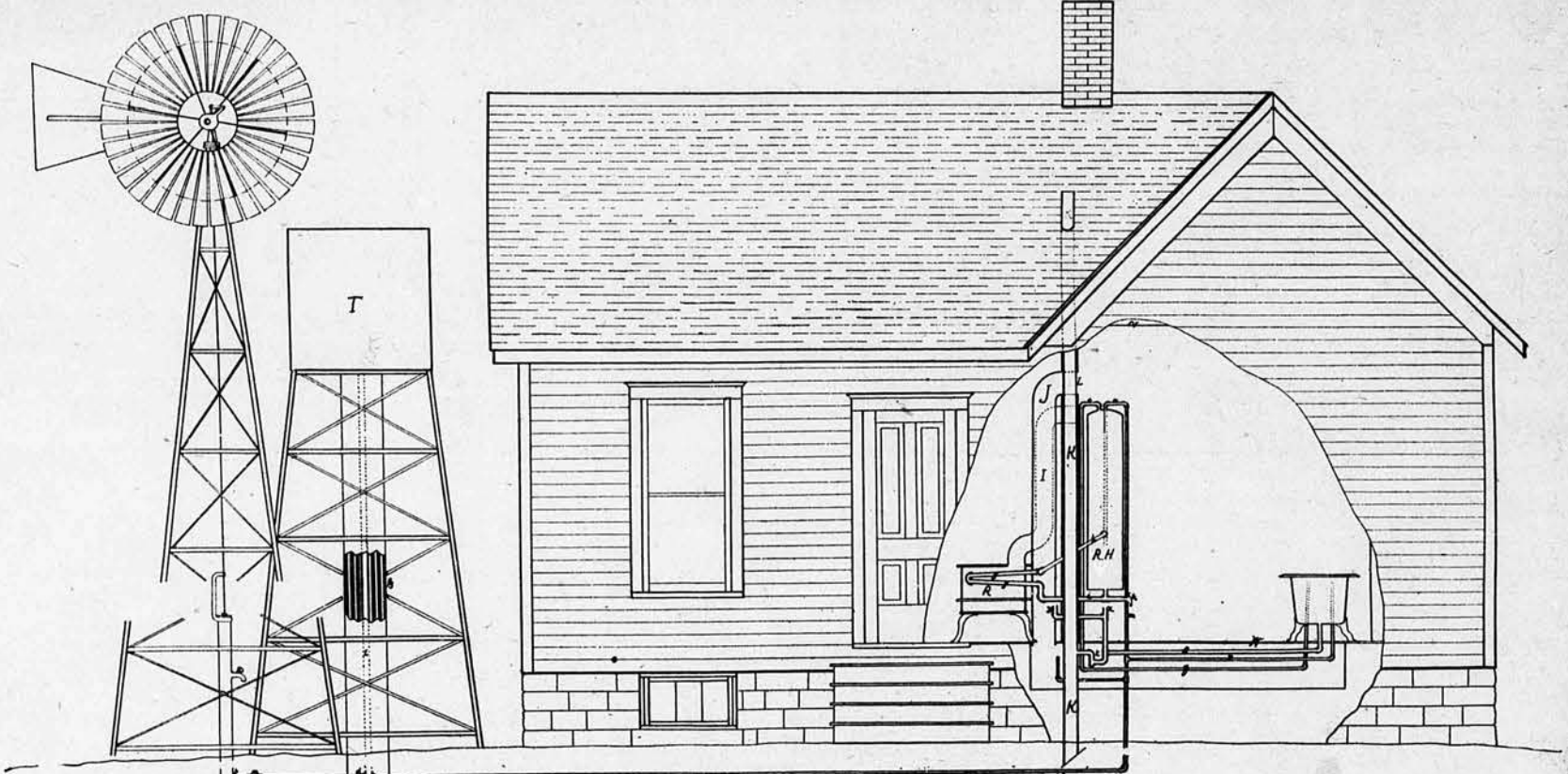


PLATE II.—Rear elevation of Cottage, Windmill and Tank, also Water-Pipes, Cooking-Range, Hot Water Tank, or "Range-Heater," and connections to Bath-Tub. Drain-Pipes are shown for Wash-Bowl and Kitchen-Sink. Drawings of these and of Water-Closet omitted here to avoid complications by overlapping in drawing.

means, the young man who with a young wife is planning a home of modest dimensions, a home which will have to be enlarged as years come and go. The arrangement of conveniences for this young family need not differ in any essential feature from the plans that will be suitable for the family of abundant resources. Nor should we despise the small home of few apartments. Such a home will shelter as much love, fidelity, and happiness as generally dwells in a \$10,000 residence. It will shelter more love, fidelity and happiness than is usually found in a \$100,000 mansion. Those who go out from this modest home will be more useful in their day and generation and will make more creditable marks in the world than will be possible to the sons of multi-millionaires.

with the use of the bath-room in very cold weather—though its use ought never to be suspended—the matter of warming it is not of first importance. Even if you drain your water-pipes so that they may not burst, the traps to the water-closet and the other fixtures are emptied with great difficulty and will take great damage if allowed to freeze.

Since I arrived in Salina, a young man came to me with a diagram of a new four-room cottage with bath-room which he has just completed. He has made the serious mistake of placing his chimney on one side of the kitchen and his bath-room on the opposite side. The only way to mend the matter is to build another chimney on the other side of the kitchen.

While on this subject of heating let

heater. This heater is usually a 30-gallon closed tank so connected with the water system that it is always full of water through the pipe m, which connects with the elevated tank T by means of the pipe E. The water is heated by means of either a "water-back" or a "water-front" placed in the cooking-range as shown at g g. There are other plans for water-backs and water-fronts. Some are quite expensive but none is better and none cheaper than here represented. This heater or boiler is connected to the range-boller by the pipes i and k. As soon as the fire is made in the range the water in the pipes g g is warmed and expanded and rises, passing through k, while it is replaced in g g by cold water from the bottom of the range-boller through the pipe i. The

room on the principles employed in the hot-air plan of warming the entire house. In the drawings, I represent the stove-pipe, and J represents a jacket which surrounds the stove-pipe. This jacket is simply an 8-inch pipe. It extends through the floor behind the stove and through the partition at L. There is a register in the bath-room floor at W. A tight box encloses the various pipes and traps below the floor and the lower end of the jacket J. As the stove-pipe gets hot, the air surrounding it and within the jacket is warmed and rises passing into the bath-room at L. Its place within the jacket is taken by cold air which flows from the floor of the bath-room through the register W. This circulation is continuous as long as the fire burns. The arrangement will be found

admirable as a means of disposing of the heat from the stove-pipe in warm weather. By placing a register in the outlet to the jacket at L and another in the upper part of J in the kitchen and still another in the kitchen floor to communicate with the box under the floor, the circulation of warm air may be made through the kitchen instead of through the bath-room. This arrangement will be found admirable for removing the layer of cold air which inhabits most kitchen floors and for removing the head-ache heat from the upper part of the room.

Yes, it will be necessary to put in a little coal before going to bed in the

er-pipe should be carried underground to a distance of, say, 100 feet in a direction away from the well. It may terminate below frost in a "catch-basin" or excavation. If walled without mortar, covered and provided with a shallow drain the catch-basin should require little further attention. It will be noticed that the drainage-pipe from the bath-tub is provided with a trap at t. This is to prevent any unpleasant gases from coming into the house through the drainage. As drawn, this trap serves also for the drainage of the wash-bowl and for the kitchen-sink. It will be observed that the stack extends upward through the room. This

tend to the calls of nature. But the wife, who is necessarily confined much within doors, especially in winter, dreads the ordeal. Often the baby is fretful and can scarcely be left. The calls of nature are postponed, almost per force. Consequences detrimental to health follow in a train of evils which last through life. * * * By all means have a water-closet in your bath-room. If you omit all other modern conveniences, have this one. It is provided with a supply of water for flushing and is joined through a trap with the stack. Properly used it is entirely inoffensive. Once enjoyed, it will never be dispensed with.

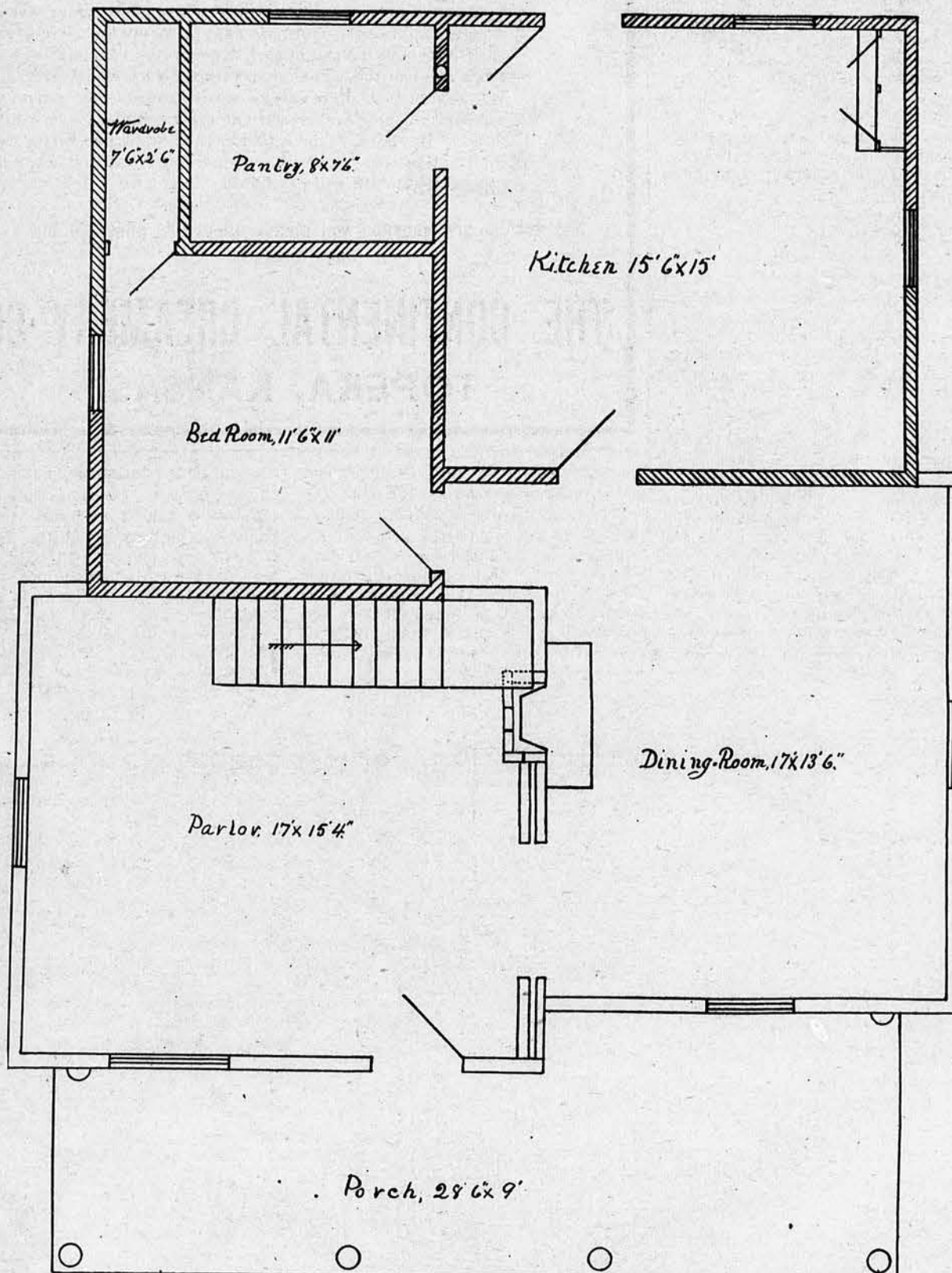


PLATE III.—Plan of first floor of enlarged house.

very coldest weather. One freeze-up of such a plant is too many.

Aside from the question of warming the bath-room the problem of installing modern conveniences in a small cottage in the country is simpler and less expensive than in the larger house or in the city. Other details will be traced later.

THE BATH-TUB.

The most satisfactory bath-tub is made of cast iron and lined with porcelain. It is 5 feet or 5 1/2 feet long and wide enough and deep enough for a large person to lie in. It is served with both hot and cold water by the pipes q and r in Plate II.

DRAINAGE.

The tub is connected with the drainage through the pipe s and the "stack" R. This stack is shown as cut off just below the surface of the ground in the drawing. It should be connected with a 4-inch vitrified sewer-pipe. This sew-

arrangement furnishes an outlet for all sewer gases and is found to be an effective means of preventing the difficulty formerly experienced from the gases forcing the traps.

THE LAVATORY.

The wash-bowl is the one of the modern conveniences which may be omitted to save cost. It is, however, not necessarily very expensive and will many times repay its cost. It is served with hot and cold water.

THE WATER-CLOSET.

Now, you men, I want to talk privately with you for a minute. You are rugged and may not care for going out in cold, stormy weather to at-

THE KITCHEN-SINK.

The kitchen-sink is so cheaply installed on the opposite side of the wall from the wash-bowl and is so easily provided with hot and cold water and connection with the drainage that it should never be omitted. It will soon save its cost by obviating the necessity of opening the door every time a little waste water is to be thrown out. As a labor-saver it is great.

THE WATER SUPPLY.

The discussion thus far has assumed a constant supply of water under pressure. Without it the most important of the modern conveniences, viz., the water-closet and the hot water, are impossible. Plate II shows how this water supply may be delivered by means of a windmill, pump, and elevated tank. A few words of explanation may be needed. The pump must be a force-pump. A cut-off in the spout will cause the water from

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of charge and postage paid by us, full particulars of our wonderful money-saving offers. You will also receive beautiful mounted pictures of the organs and large catalogues of the pianos. We will tell you all about our credit plan—how we give you over TWO YEARS to pay us for the piano you select and over ONE YEAR to pay us for any of the organs.



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and don't forget to tell us whether you want a piano or an organ. That is all we want to know. The above is a small picture of one of the beautiful pianos that we are offering in our proposition on terms of only \$8 per month until paid for. The organs we offer can be secured for only \$3 a month. But write to us to-day so we can explain everything to you in our letters, and remember that we are the greatest sellers of pianos and organs in the Northwestern States.

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Gentlemen: Please send to me, FREE of charge, full particulars of your proposition.

I WANT.....
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the pump to seek an outlet through the underground pipe leading to the house. A check-valve at c will prevent the water from returning. A two-inch pipe connected at d will carry the water to the elevated tank T. This tank is better placed twice as high as shown in the drawing. As long as the pump is in action or there is water in the tank, water will be supplied in the house just as it is furnished from city water works and at less price. If the tank is large enough, there will be water in store for the stock on days when there is no wind.

The elevated tank is sometimes replaced by a compression tank placed under ground or in the cellar. Such arrangement is free from danger of freezing and works well, but is more expensive than the elevated tank. Trouble on account of freezing is, in this latitude, usually confined to the pipe leading from the ground to the tank. At the Agricultural College, at Manhattan, this is protected by using a large pipe and by boxing it in with

Painkiller PERRY DAVIS'
The world-known household remedy for cuts, burns, bruises—croup, diarrhoea and all bowel complaints

three concentric boxes having intervening air spaces. I have tried to show this at G where a portion of one side of the boxes is cut away. The boxes are made of inch boards. The spaces between the boxes are each one inch. The boxes must be made as nearly air-tight as possible. In very cold weather it may be advisable to keep a little water moving through the pipe by leaving a faucet partly open at the kitchen-sink.

VENTILATION.

Means for quickly changing the air in a bath-room without making it cold should always be provided. For this purpose a trap-door, operated by a cord, may be placed in the ceiling at v. On opening v and arranging so that the circulation of air through the stove-pipe jacket passes through the bath-room, the air will be changed in a few minutes if there is a good fire in the stove.

Kitchen sink, 18 by 30, porcelain-lined, with cocks.....	2.70
	\$ 52.06
APPROXIMATE PIPE AND FITTINGS IN HOUSE.	
60 ft. 1/4-inch galvanized pipe.....	2.40
20 ft. 3/4-inch galvanized pipe.....	1.00
20 ft. 1 1/4-inch galvanized pipe.....	2.00
1 return bend, 3/4-in.....	.12
12 elbows, 3/4-in.....	.96
6 tees, 3/4-in.....	.48
2 unions, 3/4-in.....	.30
1 faucet, 3/4-in.....	.55
12 elbows, 1/2-in.....	.72
12 tees, 1/2-in.....	.84
4 caps, 1/2-in.....	.16
12 unions, 1/2-in.....	1.44
1 plug, 1-in.....	.04
12 elbows, 1 1/4-in., black.....	1.20
12 tees, 1 1/4-in., black.....	1.44
6 plugs, 1 1/4-in.....	.30
6 unions, 1 1/4-in.....	.90
20 ft. 4-in. soil-pipe, for stack.....	4.00
1 soil-pipe elbow, 4-in.....	1.00
2 soil-pipe tees, 4-in.....	2.00
	\$21.85
DRAINAGE PIPE.	
100-ft. 4-in. vitrified sewer pipe and trap.....	10.00
WINDMILL, PUMP, TANK AND PIPE TO HOUSE.	
8-ft. steel mill and 30-ft. steel tower.....	\$ 42.50

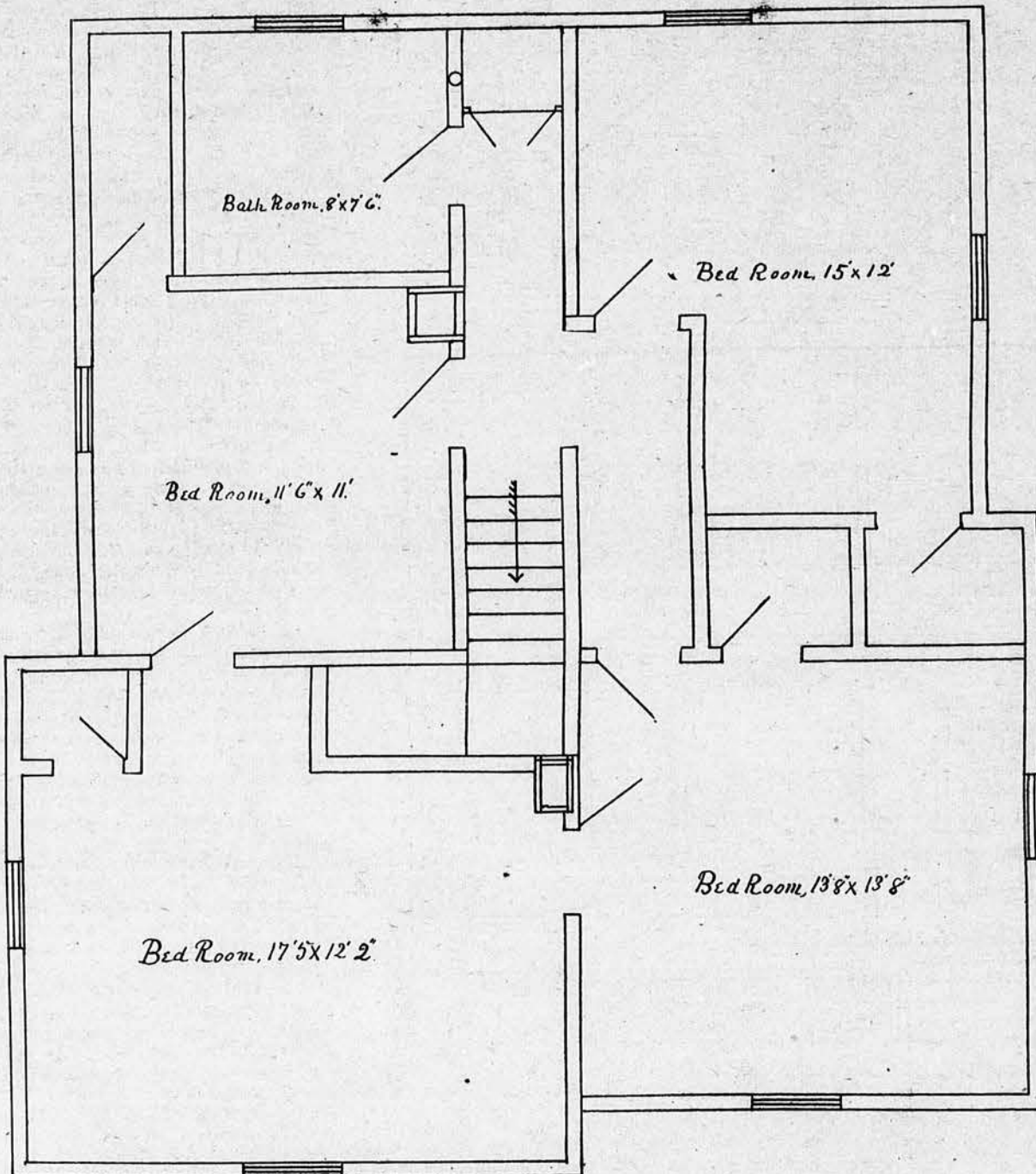


PLATE IV.—Plan of second floor.

THE COST.

The all-important question of cost will interest the male members of the audience. I have written about twenty letters of inquiry in preparation for answering this question. For valuable information I am indebted to the Mood Plumbing Company, Topeka; Montgomery Ward & Co., Chicago and Kansas City; and Fairbanks, Morse & Co., Kansas City and other important points. The last-named firm had the goodness to send their field man, Mr. C. D. Shane, of Winfield, Kans., to furnish such information as I might desire. In compiling the following lists I have not followed strictly the prices of any one house, but it is safe to say that the goods may be had f. o. b., Kansas City, at prices as low as those named.

APPROXIMATE PRICES.

BATH-ROOM FIXTURES.	
Bath-tub, cast iron, porcelain-lined, 6 feet.....	\$ 20.00
Range boiler, 30 gallon.....	5.50
Wash-bowl, cast iron, porcelain-lined, with cocks.....	3.88
Water-closet.....	20.00

Pump and cylinder.....	5.30
25-ft. 1 1/4-in. pipe.....	2.75
1 tee, 1 1/4-in.....	.20
1 check valve, 1 1/4 by 1 by 2.....	.90
23 ft. 2-in. galvanized pipe.....	3.20
Lock nuts.....	.20
100 feet 1-in. galvanized pipe.....	8.00
Steel tank, 4 ft. by 4 ft.....	8.52
Wooden tower for tank.....	?
	(?)\$71.57

APPROXIMATE SUMMARY.

The mill, pump, tower tank and all connections to bring water to the house.....	\$ 75.00
Bath-room fixtures.....	55.00
Pipes and fittings in the house.....	25.00
Sewer pipe, etc.....	10.00
	\$165.00

ERECTION.

The Mood Plumbing Company estimates that with the material delivered on the ground a plumber would set up the house fixtures and join them in five days. For this service he would receive five dollars a day, traveling expenses and board. In drawing the plans, all connections are indicated to be made of iron. The traps are made of standard pipe-fittings. By thus avoiding the necessity of lead joints, except in the stack, the handy man on the farm, the genius who can operate

a self-binder and other complicated farm machines should be able to erect and connect these modern conveniences, requiring only tools that will cost less than ten dollars—tools that will be good for all of this kind of work for the neighborhood.

It is hoped that this hasty description may clear the way for increasing numbers of Kansas farmers to at once provide modern conveniences which will ere long be reckoned as necessities instead of luxuries; that the time may be hastened when the man in moderate circumstances will remove the day's sweat and dust from his person before going to bed by a plunge into a nice, warm bath in cold or cool weather or into a cold bath in hot weather; when the women folks will be spared harmful exposure and will have their work lightened by modern conveniences and can treat themselves and the little ones to a refresh-

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General Agent,

WICHITA, KANS.

ground plan of the cottage. Let us build to it a dining-room with an open fire in it, a parlor with an open stairs in it, and a big wide porch in front. It will be well to have a porch in the rear also. No considerable change is made in the arrangement of the cottage except to remove the bath-room fixtures upstairs, and to convert the bath-room into a pantry and storage room. Perhaps it will be well to make an inside cellar-way, appropriating most of the wardrobe for this purpose.

In Plate IV we have a plan for the second story of this house. The rooms may be arranged in various ways, only so that the bath-room be placed immediately above its former location, so that it can be warmed from the kitchen range and the fixtures can be connected without much expense. The arrangement is easily understood from the drawing.

Plate V shows the front elevation of this enlarged home. It may be made

sider at least the prose part of the question.

I myself am unluckily not able to spout poetry by the yard. Yet I will say that if there is any poetic vein in you, it is apt to break forth on the 20th (our pay-day) when in making up the accounts you find your hired man paid, your store bills all settled, \$10 towards that riding lister you had figured on for the last four years, and satisfaction and good will all around. All this prose and poetry is based on the cow—a very variable quantity, a creature about which we read very much, but of which we learn mostly by daily contact.

man who has a few acres, but when it comes to four pieces, aggregating fifty acres, which is all ready to cut at nearly the same time—help impossible to hire, and but two men and a boy as a working force—the faster you get into the swath, windrow and stack, the better.

I could write pages on this wonder-plant of the western plains, as it seemingly gets on your mind, in the long summer days, when you barely have one crop cared for before the first field is again ready to cut. And coming back to the poetry, neither Shakespeare, Wordsworth, or any of the poets can produce the pleasure that you feel when cutting swath after swath of rich, sweetly smelling alfalfa. Yea, verily! doth life then seem worth living and the farm work more than a drudgery. But lo! the prose of it a few days after, with the field full of windrows ready for the stack, and a soaking rain over night. Scatter the

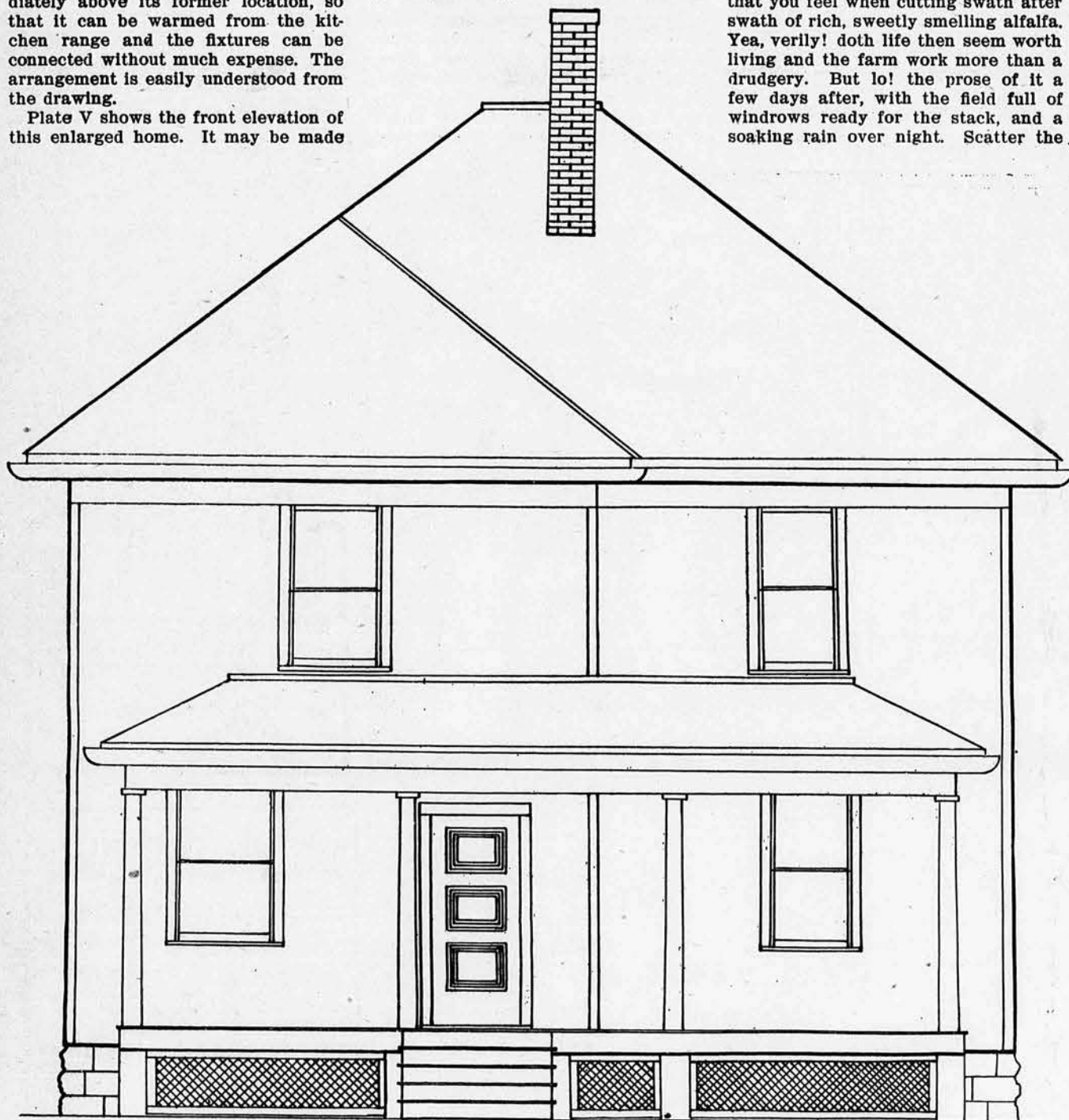


PLATE V.—Front Elevation of enlarged Home.

plain and pretty or the other way.

This will be a nice place for social functions. The county horticultural society will like to meet here. It may suggest that shrubbery and trees would improve the place. But the thrifty Kansas people who have made this home have not neglected these, even if the draughtsman has. The grange, the ladies' club, the missionary society, not to mention various functions of the young people's pleasure seeking will gladden the spacious rooms. But through it all the chief makers of the place will never forget the comradeship and happiness enjoyed in the little cottage which cost so much planning and occasioned such severe questioning of the cost.

The Prose and Poetry of Dairy Farming.

F. W. MEUNCH, GYPSUM, KANS.

This is rather a high-sounding name for such a commonplace thing as milking cows, but there is poetry as well as prose in it. We are so prosaic nowadays that the money in anything interests us more than the poetry that could be written about it. We who sit under the old cow twice a day and have the skim-milk calf bespatter us with milk, surely are qualified to con-

sider at least the prose part of the question. My first rule concerning the cow is, you must feed or you cannot expect a full milk-pail. By this I mean feed her—not only enough to keep her alive, but a surplus that will cause her to give milk. Her maintenance comes first—out of the surplus comes the milk. In my feeding experience I have found alfalfa the best, and if there is anything better it is more alfalfa. It is alfalfa pastured for spring feed and alfalfa pastured for late fall feed, and it is the hay for winter. But anyway, it is alfalfa all the time that makes dairying a success with me. Of course we have plenty of prairie-grass pasture in summer; and with the abundant rains we have had the last few years, it is no trouble to keep the cows well fed during this time. But if we should have a dry spell in July or August, alfalfa again comes to the front as the feed that will keep the cows up to their full flow of milk.

I have 50 acres of the "stuff" on the place and have found it no more trouble to start it than any other crop, such as wheat, oats, or corn. I have, in fact, found it more trouble to thoroughly cure and stack my alfalfa, than to procure a good stand. This method of putting it in cocks—canvas covers for the cocks, etc., sounds very nice, and undoubtedly is practicable for the

rows—another rain; and the wind-up will consist in hauling the mass of soggy stuff to some out-of-the-way corner to be dumped there, too wet to burn and only fit to decay and turn to humus again. This veritably is the bitter prose of it.

It has been said that if a man can make two blades of grass grow where but one grew before, he is a benefactor to the human race and has not lived in vain. Now I believe that we can take an ordinary cow and by careful attention to the main facts—good feed, warm shelter in winter, and above all, careful and strict attention in milking, we are also benefiting mankind, especially that portion who make a specialty of the dairy business. And here let me add, too much can not be said about this last, careful milking. It oftentimes means profit or loss in that most lucrative adjunct of the farm, dairying.

A relative of mine who had a large family of children had a good-sized herd of excellent dairy cows, about forty in number. And of course, he, not liking to milk, the wife and the children are supposed to do it. Well, to-night there is a spelling-match at the schoolhouse, and it will not make any difference any way if he don't strip the fresh milkers so long or let

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some of the older milkers go until morning, just so he is in time for the "doins." Probably, the day after, the creek is high and he can't very well get the cows. No matter; it will not kill them to go once without milking. The outcome is he sells the herd and says "There is no money in milking cows." It is regularity and thoroughness in milking, in which you must persist, or it is useless to have the best cows. One of the very prosy things about this work is regularity which must be persisted in. It has all such things as evening entertainments, sickness, and attendance at this dairy meeting. To-night, instead of being at home, helping to do the milking, I am obliged to be in the city on account of irregular train service. Hire a substitute? This is usually impossible. I have tried it several times, but always with regrettable results. So instead of your having the cows they have you. And yet, in spite of all this, I do not see the day ahead when I shall not milk cows; for all the investments on the farm, the dairy herd is the surest to bring good results. In fact, my experience has been that no matter how adverse the season for farming crops—and I have seen a number of them very adverse—the end of the year always sees us ahead, expenses paid by the milk cows, and the income of the field crops to go towards the home.

Again, on the other side, imagine yourself sitting under a sweating cow on a sultry hot August evening. It is, but not cool. At such times I have almost been convinced that there is no hell in the hereafter but we have considerable of it here. Perhaps a cow has come fresh, and in her foolishness she disregards the barbed-wire fence and consequently has a scratched bag. You leave her active side with a battered milk-pail and a skinned shin bone. All these things come in the course of dairying on the farm, and I have no doubt there are many here who know by actual experience that my statements are not overdrawn.

So, taking into consideration the poetry as well as the prose of farm dairying, it is the best and surest thing to put our capital and labor into, for the returns are certain; which is more than can be said of anything else we may consider on the farm. May the dairy cow live long and produce many skim-milk calves which will be good ones if properly cared for and continue to teach us the prose and poetry of dairy farming.

Practical Hints for Dairymen.

PROF. E. W. CURTIS, HAND SEPARATOR DEPARTMENT, JOHN DEERE PLOW CO., KANSAS CITY, MO.

In assigning me the subject, "Practical Hints for Dairymen" your secretary, Professor Graham, was slightly misinformed as to the subject of my talk here at this time. Matters that would properly come under this head have been discussed before you by Professor Erf, Mr. Glover, Mr. Stone, and others. It is my purpose at this time to talk on an entirely different subject; one that seems to me to be more vital. I am at this time employed in directing the efforts of six or eight travelers, who reach all parts of the State. I am also handling four hundred dealers in dairy implements throughout the State, which gives me an excellent opportunity to observe the progress of dairying among our people. There can be no doubt whatever but there is less dairying in Kansas this year than there was last, and there was less dairying in 1904 than in 1903.

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AGENCY FOR DE LAVAL SEPARATORS.

ABILENE, KANSAS.

It is a little humiliating to state this, but sometimes it is well for us to consider matters that may in a measure hurt our feelings.

There was held, a few weeks ago, at Independence, a meeting of the oil producers of Kansas. The oil products last year in Kansas amounted to between \$3,000,000 and \$4,000,000. There were present, at this meeting, over three thousand people. There was also present the Governor of the State; the Lieutenant Governor; the Treasurer; two or three Congressmen; several members of the Legislature; and prominent men from other States. These people discussed the ways and means for cheapening the cost of production, and the better handling of their product. The dairy products of Kansas were valued last year by Secretary Coburn, at \$8,000,000. I feel confident that these figures are low, and that the value of dairy products last year would reach between \$12,000,000 and \$15,000,000. There are probably one hundred dairy farmers in attendance at this meeting; whereas, if we took as much interest in our business as do the oil producers of Kansas, there would be several thousand of the farmers of Kansas present here to-day. The Governor of the State would be here; the Lieutenant Governor; the Treasurer; our Congressmen would be here to-day, as well as prominent men from other States. We have here in Kansas an ideal State for dairy purposes. We have comparatively short and mild winters; here can be grown feed cheaper than in any other State in the Union; and here is the home of alfalfa, the greatest food for dairy stock there is. Yet our people do not seem to be living up to their possibilities. Large quantities of land in Kansas, worth from \$8 to \$50 per acre, can be used for dairying, whereas in other States, as Northern Illinois, Southern Wisconsin, New York and Pennsylvania, the farmers are dairying on land worth \$75 to \$150 per acre, and are making it pay. We are in session here as representatives of the dairymen of Kansas. Does it not seem that we

ought to do something that would stimulate dairying in this State?

There is maintained at Topeka, Kans., in the State Capitol, what is known as the State Horticultural Department. It is in charge of that affable gentleman, Hon. W. H. Barnes, Secretary of the State Horticultural Society. Mr. Barnes has his salary paid by the State of Kansas; he has his expenses while going over the State in the interest of the Horticultural Department paid by the State of Kansas. They not only do this, but Mr. Barnes receives his salary and expenses while visiting other States in the interest of his department. His duties are to promote development along horticultural lines throughout the State. What was the value of the horticultural products last year? Answer: \$3,000,000. What was the value of the dairy products of the State of Kansas last year? Answer: Estimated at from \$8,000,000 to \$15,000,000. What is the matter with the dairymen of Kansas?

Colorado, with probably not one-fourth of the dairying in Kansas, has a State Dairy Commissioner. Nebraska has a State Dairy Commissioner, and practically all of the States east and north of here have the same official. In some States the Dairy Commissioner has as high as seventeen inspectors and assistants. It is the duty of the State Dairy Commissioner to collect and publish dairy statistics and items that would be of interest to the dairymen of his State. It is the duty of his assistants and inspectors to travel from place to place in the State, encouraging dairymen to more economically manufacture their product, and encouraging and instructing the dairymen as to how they can make a cow that produces only 100 pounds of butter-fat produce 300 pounds, and in various other ways they are performing valuable services for the commonwealth that employs them. Is the Dairy Commissioner of Kansas present? And if not, why not?

It goes without saying that all of the dairy States in the Union have a

dairy association. In fact, a good many States that have less dairying than Kansas have these associations. In practically all of the leading dairy States, the association receives from \$500 to \$5,000 annually, to assist in their work. In other words, the Legislature of the respective States recognize the value of dairying to the State, and are willing to spend that much annually to encourage dairy work. How much did the Dairy Association of Kansas receive from the last Legislature?

In addition to the organization of a State Dairy Department, our association can be of benefit to the dairymen of the State by more aggressively encouraging the Department of Dairy Husbandry at the Kansas State Agricultural College. This department is doing valuable work for the dairymen of the State, and is very much hampered by the lack of encouragement, assistance and means for carrying on the work.

You may feel that all this is in the nature of a scolding. As stated before, I believe it important, I believe it vital, to the interests of the dairymen, that we perfect our organization, and in a more aggressive manner encourage the average farmer to dairy more. There is no branch of farming that will pay our people so well as dairying, and there is no branch of farming that so effectively keeps up the fertility of the soil. The matter of fertility is not considered as much as it should be. If I could take the dairymen present to New York and Pennsylvania, and show you the farmers in that country using twenty dollars' worth of fertilizer per year on each acre, it would interest our people more in the matter. The soil here in Kansas has been forming for four thousand years, and our people have been farming it for less than forty years. We are very prone to think because we can raise bumper corn and wheat crops, that we can continue to do so. We are certain, however, in a few years, to see our fertile farms diminished in value, and our people will then be asking, "How

can we recover the lost fertility?" It behooves us, at this time, to earnestly consider this point. There is no method of farming that will so effectively maintain the fertility of the soil as dairying, and growing crops that make us the best dairy feed.

The Pure-Bred Dairy Cow—Her Management.

C. F. STONE, PEABODY, KANS.

The care and management of dairy cows is something that the average farmer has yet to learn. In the first place the dairyman must have a cow that is a producer of quality and quantity; and in order to obtain the best results her owner must provide her with a comfortable stable where the thermometer will not drop below freezing point. The next thing is to prepare her food, and what shall it be? While I was attending the Iowa State Fair last fall, I went down on the market to buy some hay. There I found several loads of nice, bright timothy hay. I asked them if they had any alfalfa hay, they said "No" and did not think there was any in the market. Then they inquired what I wanted alfalfa for. I told them I wanted it for some milch cows that I had brought to their fair. They thought they had just the hay I wanted as nearly all the farmers there fed their milch cows timothy hay. I prefer alfalfa. Why? Because there is more than double the amount of protein in a ton of alfalfa hay than there is in a ton of timothy hay. The average yield of butter to the cow in Kansas is a little less than a hundred and twenty pounds per year, and if the farmer knew how to feed his cattle properly he could bring this average up to three hundred pounds per year. Most farmers who have never investigated or studied the matter imagine that all that is necessary to feed a cow is about what he thinks she ought to eat. The fact is that every cow must first have enough food for body maintenance, then whatever she eats over and above that goes into milk if she is of the dairy type and form. If her sire

(Continued on page 452)

MISSOURI STATE DAIRY ASSOCIATION MEETING

On February 15-17, 1905, the Missouri State Dairy Association held its fifteenth annual meeting in the city of Brookfield. This beautiful city is located in the north central portion of the State, and numbers about ten thousand inhabitants, each one of whom seemed glad to welcome the members of the association and to do his part toward their entertainment. Although the weather conditions of the preceding weeks had been of the worst, the attendance was large and the meeting enthusiastic. The Brookfield Commercial Club had provided a large hall for the sessions of the association and adjacent to it another hall for the display of dairy implements, machinery and supplies. A number of noted dairy specialists from outside the State were present and added much to the value and interest of the meeting. President W. W. Marple, who is also general manager of the Blue Valley Creamery Company at St. Joseph, Mo., and Secretary C. H. Smalley, who is president of the Meriden Creamery Company at Kansas City, Mo., deserve special commendation for the success of this meeting. Their labors in preparation for it were enormous, and the elaborate program which they were able to present to the assembled farmers and creamerymen was undoubtedly the best ever presented at a meeting of this association.

Prizes were offered for the highest-scoring creamery butter, dairy butter, cheese and cream. Also for the best test with the Babcock tester made in public by dairymen. In addition to these cash prizes a silver cup, which had been presented to the association by Hon. Levi Chubbick, was hung up for an open competition on the highest scoring butter.

The address of welcome was made by C. W. Green, editor of the Brookfield Argus, and the response by L. G. Humbarger, of the Blue Valley Creamery Company. A pleasant feature of the meetings was the music furnished by Thurldum's Orchestra, of Brookfield.

Prominent among the speakers were Hon. A. J. Glover, associate editor of Hoard's Dairyman, Fort Atkinson, Wis.; Prof. T. L. Haecker, chief of the dairy department of the Agricultural College, St. Anthony Park, Minn., who is recognized as one of the most prominent dairy authorities in the United States to-day; Hon. H. B. Gurler, DeKalb, Ill. Mr. Gurler is the man who had the distinction of being able to ship milk from his Illinois dairy farm to the Paris Exposition where it arrived perfectly clean and sweet, with the aid of no preservatives except cleanliness and cold. He was called upon to make several speeches. Mrs. Nellie Kedzie Jones, Kalamazoo, Mich., who was formerly at the head of the domestic science department of the State Agricultural College at Manhattan, is a very forceful and pleasing speaker and the large audience at Brookfield was completely captivated. Mrs. Jones is a pioneer teacher of domestic science and her work at Manhattan made the domestic science departments of other institutions possible. Prof. U. S. Bear, Assistant Dairy Commissioner of Wisconsin, gave a very valuable lecture on "Cheese and Cheese-Making." Prof. C. B. Lane, Chief of the Dairy Division of the United States Department of Agriculture at Washington, discussed the subject, "What the Dairy Department at Washington Is Doing for the Dairy Interests of Missouri and the Country at Large." Among the other speakers present were Prof. R. M. Washburn, of the department of animal husbandry of the Missouri State University; Hon. Geo. B. Ellis, secretary of the State Board of Agriculture, Columbia, Mo.; Hon. R. H. Pethebridge, milk inspector of St. Louis.

On Thursday, at noon, the farmers of Linn County, Missouri, gave a banquet to the association, and on Friday

evening the Brookfield Merchants' Association gave another banquet, both of which were enjoyed to the full. On Friday evening the three-days' session was closed with a stereopticon entertainment given by Prof. R. M. Washburn, showing the various departments of the State University at Columbia.

We shall not take space here to give the results of the various contests, further than to say that the silver cup was won this year by the Corder Creamery Company, of Corder, Mo., who will hold it for one year.

Following will be found a number of the papers that were read at this meeting, which we consider of special interest to our readers.

Extracts from President Marple's Address.

For five consecutive years it has been my privilege to address this organization on the occasion of its annual meeting. For the second time, it becomes my duty and is no less a pleasure to discharge an obligation that is assumed along with the high honor of the position in which you have seen fit to place me, and if it were possible for me to-night to verify to the fullest extent that declaration "out of the abundance of the heart, the mouth speaketh," long after the wee small hours, even when the bright rays of sunlight had heralded the birth of another day, I might be found standing here delivering to you the annual address of the president of the greatest of all dairy association. The little girl who kneeled to say her evening prayer and commenced saying, "God bless papa and mamma," and then realizing that it was late and thinking of a long string of names of people she desired to be remembered, said, "God bless the whole shooting match," expressed a sentiment that on account of its brevity fits my case exactly to-night. If I could, I would in one short sentence embrace the entire scope of territory there is to cover; I would convey to you a message that fully contemplates the breadth and depth and importance of the one great question that will occupy our minds, and that is the foundation of our deliberations during the meeting of this most importance convention. Of all the stars that represent the galaxy there are none so bright to me as is Missouri. Of all the names designating locality, there are none so full of meaning, so suggestive of possibilities and so reassuring of happy, prosperous conditions as is the name of the dear old State in the interest of which this convention is held. To me every foot of ground within its border is sacred. To me the name is musical and sweet because it is synonymous with that most beautiful of all names, the one around which clusters the most sacred memories of all that is good and holy—Home. I hope I may be pardoned for suggesting that this spot is particularly sacred to me because of its nearness to the home of my childhood, and I am deeply moved because of the reminders that present to me a panoramic view of the most stirring and interesting incidents of my life, as well as the faces and forms of a legion of loved ones who have long since surrendered their lives to the grim Destroyer and have joined the silent majority beyond the river. While I come to you as members of the Missouri Dairy Association with a message from over three million Missourians and a legion of dairymen from everywhere in which they would send their most cordial greeting and from the very choicest words would weave garlands of praise to crown you for your efforts and your success, in their names I would ask that this occasion be made one of social enjoyment and the cultivation of a closer relationship as well as preparation for the very highest attainments in that profession which is represented here.

With all of the pleasure and enjoyment and relaxation from duty that comes with this assemblage, I would impress you with the seriousness of this meeting because of the unusual amount of work to be done incident to the urgent demands made upon us from the great multiplicity of interests represented in this department, each one of which comes to us for relief from burdens either real or imaginary that are not only interfering with their particular branch, but burdens which are a menace to and an interference with the triumphant success of the most profitable department of agriculture in Missouri. Among those who demand recognition and consideration before this tribunal and whose cause I am more than pleased to present, first of all is the patient, demure, sensitive and noble silent partner of the Missouri dairyman. The advance guard of civilization, I ask you in the name of 750,000 mortgage-lifters and all that is right to carefully consider the cause of the Missouri cow. The animal (on account of the way her product has been handled) has been maligned and abused and falsified and held up to ridicule because it had to be reported that the product only brought \$15 a year. If you are worthy the name of a Missourian and are loyal to your trust as a member of this association, you will be interested at this time in assisting to remove forever the stigma on her fair name for which you are largely responsible, and you will prepare for her a crown set with gems, the brilliancy of which may be seen all over the world, and you will place her on a throne of supremacy and at the head of the great army of progress. She will lead the conquering hosts and drive forever from the face of our fair land ignorance and superstition and indolence and crime and poverty and distress and turmoil and dissatisfaction and unrest and leave in their stead, learning and reverence and energy and philanthropy and wealth and comfort and happiness and satisfaction and rest and joy supreme.

Next to this worthy subject, who has suffered from time immemorial unnumbered indignities in silence, I would present the claims of her financial partner, the treasurer, the man who handles the money and imagines he does the work. He comes with a long list of grievances. Some of these are just, others are without foundation. However this may be, I demand in his behalf recognition at the hands of this distinguished body and I ask in all sincerity and earnestness that you let the bright light of your experience reflect on his pathway and make the future look attractive to him. If there are real obstacles in his pathway, if he has real difficulties to contend with, if his path is full of thorns, I would have you remove those obstacles, teach him how to overcome those difficulties and strew his pathway with beautiful flowers. He comes to you with a look of disappointment and distress as he relates his experience, telling you that his cows only give milk a short time, that they don't give much milk during that time, that they are hard to milk, that they lose their calves, that they eat a great deal, that this feed is high, that he can't go visiting because he has to be at home at milking time. He tells you with a look of despair that butter-fat is too cheap and when you say "what else?" his eyes snap and he draws his upper lip down tight as he tells you that they swindle him on the test. He says his test is not regular, although he leaves the separator screw in the same place. He doesn't get any higher test when he feeds good rich food than when his cows are eating straw. From the same cows eating the same food, milked by the same person, the milk run through the same separator with the screw set at the same place, he finds a difference of 5 or 6 points in his test and he knows he has been intentionally swindled or the test is a farce. He is suspicious because his recollection is that as the price went up the test went down. He is at peace with the world except with the man who buys his cream. He feeds his calves two or three times as much



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skim-milk as he did new milk because it is thinner and yet his calves die and he imagines they starved. His separator is hard to turn, so his wife and children can't turn it; it's out of repair, it's difficult to keep clean. He is subject to constant annoyance. When his cream is ready to ship, he gets it frozen, he loses his can and sometimes he almost wishes he was dead. How much of all this is necessary? Does everybody have this trouble? You are the jury and to you we look for a verdict. If you have disposed of this case, there is more to follow.

The hand-separator man is entitled to a hearing before this tribunal; he has troubles that must be smoothed out, and I am anxious that his case should be heard and the proper credit given him, and I say with pleasure whatever may be the shortcomings or sins of omission and commission of the man who stands between you and the inventor, I know whereof I speak when I say that the man who conceived the idea and made effective the appliance of the principle involved in the separation of milk through the medium of the centrifugal hand-separator for farm use immortalized himself by revolutionizing dairying and converting it from a losing to a profitable business, and the man who is instrumental in getting a good substantial farm-separator onto a farmer has done his country a service and the farmer a personal benefit.

Gentlemen of the jury and the judge of this court of inquiry, members of this board of equalization, there is yet another case for your disposition. It is the case of one who stands nearer to the producer than anybody else and one whose relationship with the producer should be as of one family. He comes to you with grievances galore. He has traveled a pathway full of thorns and foot-sore and weary he comes to you for the application of a balm by removing these thorns and smoothing the path. He has borne the burden in the heat of the day and he comes to you for refreshing assurances of a lighter burden through a better understanding and a closer relationship with the producer of the raw material. This man is the creameryman and his case is important because he is indispensable. He is the link between the producer and the consumer. He manufactures the goods and finds the market. He gets cussed by the producer for not finding a better market and by the consumer for not finding raw material for less money. He is abused by the shipper because the railroad agent where he took his cream to be shipped was not as courteous as he should be. He is abused by the agent for encouraging the shipment of an article that was liable to spill on his clothes when loading it. He is abused by the train baggageman for having his car mugged up. He is abused by the conductor and engineer for delaying trains to load the stuff. When it reaches its destination he is abused by the baggagemaster be-

cause it takes room that belongs to trunks. He is abused by the drayman because he had to wait until 11.30 for the 10 o'clock train. Sometimes it reaches the creamery very sour or laden with the perfume of some foreign substance and must necessarily be graded No. 2. Then the next day, about the time the shipper receives the report, the creameryman's hand begins to itch. He is abused for a low price. He is abused for a low test. He is abused for a high price of butter and he is abused for a poor quality. He is abused for lost cans. He is abused for delayed cans. He is abused for separators that are not good, and he is abused for the price of them. He is a much-abused man. How much of it is he entitled to? It doesn't make any difference what he does, he is severely censured and he certainly catches it from every quarter.

Many of the complaints that are made in this business are unjust. Many of the ailments are imaginary. If this patient "dairying in Missouri" is sick or dwarfed or unhealthy, I want it treated by this society as the medical fraternity would treat a patient at a clinic by each specialist taking up the ailment that affected that part of the body about which they knew the most, and together restoring each diseased organ, and making a perfect and healthy body. I would have you impressed seriously and realize as truth that this organization is the heart of the dairy industry in Missouri, and I would have you perform faithfully the functions of that organ in the human body. As the blood of the human system collects the impurities and rushes through the veins to the heart to be purified and thrown back through the arteries to supply heat and power to sustain the body, and enable it to carry on its work, so would I have the blood of this organization pick up the impurities of the system, ignorance, suspicion, dishonesty, unreasonableness, and many other poisons, and have it carried through the veins (which are the people who represent the different interests and the source of our information) to this association, and I would have it purified and sent back through the arteries (which are the deeper connections) to build up a perfect body, sufficiently strong to resist the effect of any bacteria epidemic or contagion. It remains for you to make this a strong, healthy body, an instrument for good and the admiration of the world, and you will not have done your duty until you have discussed all those questions that are a source of annoyance to some one. Let me admonish you to do your duty.

A darky preacher who appeared for the first time before a certain congregation said: "Brethren, I have a five-dollar sermon, a two-dollar sermon and a one-dollar sermon. If the officers of the church will take up a collection we will be able to decide which one you want." In preparing for this meeting the question was submitted to those interested whether this should be a five-dollar meeting, a two-dollar meeting, or a one-dollar meeting; and the decision or verdict was unanimous in favor of the best, and I wish I had the time to express to each one of the generous contributors (who made it possible for us to hold this meeting) the heartfelt gratitude of a million people.

This meeting is important because of what we owe the cordial citizens of this beautiful city of Brookfield.

This meeting is important because of the array of talent that comes to us to give us the benefit of experience, the result of experiment and investigation. A year ago or a little more, at the time of our last annual meeting, we had an important meeting because it was just before the opening of the great World's Fair. Missouri dairymen met to tell you what they were going to do. This meeting is much more important because it is just after the close of the great World's Fair, and Missouri dairymen have met to tell you what they have done.

Fellow citizens and brother dairymen, I ask you to-night in all seriousness, after having published to the world our success in capturing the grand prize on our butter exhibit at

St. Louis, shall we be satisfied with second place among dairy States?

In the arrangement for this meeting, so far as it pertains to the program a feast has been prepared of the most extravagant luxuries and, in the language of the hospitable Missourian, I am authorized to say to you, "Help yourself."

Wisconsin reports the revenue from their dairy products last year \$50,000,000. With three-fourths as many cows, I am only able to report to you between \$15,000,000 and \$20,000,000. An estimated loss of \$20,000,000 as compared with Wisconsin. This means a loss of \$26 for each cow. A loss of \$65 for each family on a farm in Missouri, or \$13 apiece for each man, woman and child on the farms of this great State. Wisconsin claims that the high state of efficiency and wonderful success in dairying in their State is due to the influence of their State Dairy Association. In the light of this information, can we afford to jeopardize this great interest by neglecting to use the instruments at our hand to make up this deficiency. As a representative of these 300,000 families to whom the Missouri cows owe \$65 each annually, as a representative of the 1,500,000 people to whom the cows of Missouri owe \$13 each annually, and whose only hope of getting it is through your assistance, and as a representative of 750,000 faithful Missouri cows who are anxious to pay what they owe and whose only hope is through a plan instituted by you, I say this organization deserves to die an ignominious death if it fails to guard carefully the sacred trust placed in its hand.

The Legislature of our State makes liberal appropriations for State institutions and State enterprises and out of these appropriations the agricultural, horticultural and stock interests are provided for and I believe it is our duty as an organized body, and in the name of the dairy interests and of the interests of 15,000,000 people that we represent, to demand of them financial recognition.

While I would impress you with what there is yet to accomplish, I would not lose sight of the fact, nor have you forget, what has been accomplished in the last two or three years. In this country, where three years ago there were less than a hundred separators, to-day there are over ten thousand, and every man who has one is an active, progressive dairyman. In this country, where three years ago there were only a few dairymen and very little interest taken, to-day there is an army of up-to-date, active, intelligent cream-producers. In this country, where a few years ago it was predicted a creamery could never exist, there are now a number of large ones, and those fellows who made the most fun of us are establishing themselves across the line in Iowa and coming down into Missouri for the raw material to increase the average production of Iowa cows, and yet with all this change we are the same people.

In conclusion, may our association with each other for the next three days not only extend our acquaintance, but bring about a closer relationship, a better understanding, and a deeper consideration for each other's interest. May we learn our duty to ourselves and to our State as well as to this association; may the deliberations of this organization enable us to go to our homes better prepared to carry out our purposes in whatever branch of the work we are engaged.

May each man receive his reward in proportion to the interest he has taken and the work he has done. May every farmer be a scientist and our people the highest type of culture and refinement. May our country be so strongly fortified and entrenched that the seeds of discord and discontent and poverty and crime will shrivel and die for want of soil. May the dawn of this beautiful millennial picture be the climax of the gentle and refining influence of the dairy business and the completion of a monument (Missouri's pride) erected by the united effort of the greatest organization in the country, Missouri's State Dairy Association.

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THE COLUMBUS CARRIAGE AND HARNESS CO., Columbus, Ohio.

What the Dairy Department at Washington is Doing for the Dairy Interests of Missouri and the Country at Large.

PROF. C. B. LANE, CHIEF OF DAIRY DIVISION OF THE DEPARTMENT OF AGRICULTURE.

The Dairy Division was organized July 1, 1895. The act creating it stated that its object and purpose should be "To collect and disseminate information relating to the dairy industry in the United States in such manner and to such extent as may be deemed most expedient and beneficial." With this object in view, the division began at once to collect facts of all kinds relating to dairying. These were secured from publications, by correspondence, through special agents, and by investigations of the division officials in various States. The information thus secured included statistics of production and trade, markets and improvements in the manner of producing and handling dairy products.

Among the early dairy bulletins issued were "Facts About Milk," intended specially for milk-consumers and those who produce and have the care of milk in small quantities. It treats of the composition, changes and care of milk and cream, the difficulties of obtaining pure milk; changes of milk by adulteration and preservatives, the detection of impure milk by various methods and the handling of milk for town and city supply.

"The Dairy Herd, Its Formation and Management," is the subject of another bulletin which should be of practical value to all dairymen. Some of the most important things to be observed in the formation of a dairy herd are given and the cow best adapted to the dairy is described.

The bulletin, "Butter-Making on the Farm," has had a wide distribution for the reason that more than two-thirds of the butter of this country is made on farms. Another bulletin, "The Care of Milk on the Farm," was prepared in answer to many requests for a publication on the production of milk and its care on the farm. I might continue to mention bulletins which are of interest and value to the dairymen of Missouri. The number of publications has now reached fifty-eight.

Original scientific investigations bearing on dairy subjects could not be taken up during the first few years on account of lack of facilities and funds. We now have, however, a dairy chemist and dairy bacteriologist, the latter of which has prepared bulletins on the "Keeping Quality of Butter," the "Relation of Bacteria to the Flavors of Cheddar Cheese," and other lines of work are now in progress.

The correspondence relating to dairy matters is large and constantly increasing. Inquiries come from nearly every State and from persons bearing various relations to dairy work regarding every conceivable phase of the subject. It is therefore necessary to keep the office records well up-to-date as to the progress of dairying in all parts of the world and to have the facts so indexed for ready reference as to be at once available for this very extensive and varied correspondence.

Among letters received, new and interesting cases are presented of difficulties encountered by dairymen, such as problems in breeding and feeding, the occurrence of abnormal or peculiar milk, the appearance of mold on butter, of rust in cheese and the development of unusual flavors. All such cases are as carefully investigated as circumstances will permit, for the purpose of accurately determining facts and causes and giving practical advice as to remedies and of avoiding future trouble.

The creameries and cheese-factories in the United States are more than ten thousand in number, every one in

the center of active dairy interest effecting in some cases over twelve thousand farms. As complete a list as possible is kept of those establishments and reports are gathered from them at intervals regarding their work which may be of general interest. Consequently the office is constantly in communication with factories of this character located in all parts of the Union.

The mechanical aids to dairying have become so general and varied and have so developed in recent years from simple utensils to elaborate and complicated machinery, that it is a useful task and at the same time a laborious one for the Dairy Division to keep informed as to the many new devices in dairy implements and machinery and the actual value to the industry. It is our aim to obtain definite information descriptive of all these appliances and their practical use for the benefit of correspondence.

The Dairy Division has made experimental exports of butter from time to time. Special agents from the Department have visited Great Britain, France, Germany, China, Japan and the Philippine Islands and made arrangements for experimental exports to places in all these sections of the globe. Trial shipments to Germany and France demonstrated that the markets for choice dairy products from America were by no means as good in those countries as in Great Britain. The difficulties in transportation and the import duties imposed added to the disadvantages experienced. A series of weekly experimental exports of selected creamery butter to Manchester, England, in 1899, was highly satisfactory. A group of retail merchants in the north of England was thus supplied regularly with this grade of butter from the United States, so that they had it regularly on hand for their customers. The result was, a good reputation was well established for American butter in that district and the merchants during the latter part of the trials urged larger shipments. This butter was eminently satisfactory to the merchants and consumers and replaced Danish butter of first quality which had been previously used. Experimental shipments last year were not a financial success owing to the high price of best grade butter in this country. Butter from the United States can find a place in British markets at almost any time in successful competition with the best products from other countries, provided our surplus production affords a regular supply and the prices offered become a sufficient inducement to exporters. Occasionally American butter can be sold to advantage at Hamburg and at Paris but no other market has developed on the continent of Europe favorable for butter from the United States.

An additional duty was assigned to the Dairy Division July 1, 1902, in connection with the administration of those parts of the act of Congress approved May 9, 1902, under which certain duties devolved upon the Secretary of Agriculture concerning the manufacture, interstate commerce and export of renovated butter. Regulations were adopted for the proper enforcement of the provisions and manifest purposes of the law and provided for the sanitary inspection of materials, factories and processes necessary to insure a sound and wholesome product and methods of packing and marking the same to preserve its commercial identity and make renovated butter known to all buyers as distinct from other kinds and grades of butter. This work of inspecting renovated butter factories and markets is assigned to nine inspectors located in the large commercial centers of the country. These inspectors constitute a body of

men of rare experience in the production, testing, grading and handling of dairy products, of all kinds, the detection of adulterations, imitations and frauds and the execution of dairy laws.

A close estimate of the manufacture of renovated butter for the fiscal year 1901-1902, being the year previous to the one in which a tax was placed upon the product, showed the output to have been about 50,000,000 pounds. The total quantity of renovated butter made at licensed factories the first year the tax went into effect (1902-1903) was 54,656,800 pounds. It is shown by this comparison, as well as by other facts on record, that the law in question has not been obstructive and has proved no hindrance to manufacturers who have cheerfully complied with its provisions and energetically conducted their business. The total quantity of renovated butter made at the 76 bonded factories during the fiscal year 1903-1904 was 54,171,183 pounds. This is a little less than the year previous, due to discontinuance of several small factories and decrease in business of several others. But the larger factories nearly all report an output greater than the preceding year. The average production for the two years during which the law has been in force has been eight to ten per cent greater than the estimated product of the factories in operation during 1901-1902.

The prediction that the law referred to would be determined to the interests of makers of country butter of the poorer grades, which goes to make up the bulk of the "packing stock," reducing its price and consequent income of farmers from this source, has not proved true. Since the operations of the law have become generally understood and its effect appreciated, the market for renovated butter has become relatively steady and prices for packing stock have been relatively as high as two and three years ago, and higher than several years just preceding the introduction of the renovating process.

During the year the Dairy Division has repeatedly inspected all the renovated butter factories in operation, and in addition to this the markets in 274 cities and towns located in 44 different States and Territories. The market inspections have been for the purpose of ascertaining the extent to which renovated butter is commonly distributed and the conditions under which it is sold. Advice has been given to many distributors and dealers as to maintaining the commercial identity of the article, questionable practices have been corrected, and inspectors have cooperated with the United States Treasury officials in enforcing the observance of the revenue features of the law.

During the past year 367 lots including 3,118,000 pounds of renovated butter have been inspected and certified for export. This amount being more than double the quantity of this commodity exported the previous year.

The average quality of renovated butter is constantly improving. The difference in general character, between the product of the last year and the same commodity two years ago is very marked. This is due in part to improved machinery and processes but largely to the better average quality and condition of the "packing stock" or raw material used. Although there is still opportunity for great improvement, manufacturers are endeavoring, as a rule, to improve conditions at all points and are ambitious to win a reputation for producing an article of high quality.

For several years the Dairy Division has assisted in procuring butter for the use of the United States Navy by perfecting specifications for manufacture and supervising the execution of contracts. Under this system, which includes inspection by officers of the Dairy Division, over 700,000 pounds of butter have been purchased during the year by the Navy Department.

Time will permit me to mention but briefly the work of the Dairy Division relative to the refrigeration of dairy products. In 1902-1903 cooperative experiments were carried on with the

New York and Wisconsin Stations in the cold curing of cheese. The object being to study on a commercial scale and under commercial conditions the influence of different temperatures upon the cheese during the curing process. About five and one-half tons were used in the experiment. All types of American cheese were obtained, ranging from the firm, typical Cheddars suitable for export, to the soft, open-bodied, moist cheese intended for early consumption. Cheese of different sizes were also included, their weight varying from 12½ to 70 pounds. Three temperatures, namely, 40°, 50°, and 60° were used. The commercial quality of the product was determined by a jury of experts who were thoroughly in touch with the demands of the market. The advantages of curing cheeses at low temperatures and also of covering them with paraffin, were very apparent. Full description of the experiment and the results are published in a bulletin of the Dairy Division entitled "The Cold Curing of Cheese."

Last winter we conducted an experiment in the cold storing of cheese as distinct from curing. This work was entirely new, and as the results have never been published, I shall simply discuss them in a general way. The points tested were of more interest to the merchant, the purchaser and the holder of cheese, while the experiments previously made in the curing of cheese were more for the benefit of the maker. With this object in view, 150 cheeses were collected in New York weighing in the neighborhood of three tons and distributed in rooms especially fitted and placed at our disposal for this purpose at temperatures of 40°, 34°, and 28° F., and a few at 50° F. The results in many respects were quite similar to those obtained in the cold-curing experiment. Low temperatures and coating the cheese with paraffin resulted in the greatest economy.

The best temperature at which to hold butter in storage has been an open question with other merchants and cold-storage men for some time. The point was believed to be worthy of investigation by the Department and arrangements were perfected in Chicago for an extensive experiment. The object of the experiment was to study the influence of a range of temperature upon the quality of butter as determined by flavor and texture. The temperatures of the different rooms were 30°, 20° and 10° above zero, and 5° below. Arrangement was made with a large creamery plant to supply the butter, 10,494 pounds of cream were gathered by rail in the usual way from nineteen stations, thoroughly mixed and placed in six vats where it was pasteurized and churned. The butter secured amounted to something over one and three-fourths tons; this was packed in sixty-pound tubs and shipped to the storage plant. To give the result in a few words it may be said that the butter stored 5° below zero scored better than that stored at other temperatures, having lost only four points in flavor in eight months, and being still sweet and clean. The zero lot was noticeably aged at the second test and lost with each succeeding score, or 12 points in all. A fishy and bitter flavor developed after five months. The butter at 10° finished with a score of 83, that at 20°, 73. It was not expected that the 30°-F. lot would keep well, this being used simply as a check temperature. The loss in quality was excessive and showed that a much lower temperature is needed for storage of butter for long periods. A modern cold-storage house using mechanical refrigeration where a temperature of zero to 10° below can be maintained, affords a minimum loss of quality. Butter of clean, pleasant flavor, good, firm body, carefully packed in bright, clean parchment-lined tubs and stored at a temperature below zero is almost certain to retain its good qualities even for a period approaching a year.

One of the most interesting experiments in progress at the present time is with soft cheeses, such as Brie, Camembert, common in Western Europe, but not manufactured in any

great extent in this country. These experiments are being conducted in cooperation with the Agricultural Experiment Station at Storrs, Conn. The object of these experiments is to discover the scientific principles upon which the success of this industry are based and to instruct the small farmer so that he can make these cheeses on his own farm. The total importation of soft cheese to the United States (largely from France) is about one million pounds per year, having a value of \$140,000 to \$150,000. One aim is to assist the farmers in this country to make these cheeses so they can get the profits. The outlook at present is very encouraging.

In considering the future of the Dairy Division it may be said that after nearly ten years' existence the opportunities for usefulness are much greater than can be accomplished by the original organization. The dairy industry is one of the most important and most extensive branches of American agriculture. Four-fifths of all the farms in the country keep cows for milk, 17,000,000 in number, and 1,000,000 are reported not on farms. The annual product of these 18,000,000 dairy cows has a value of about \$600,000. The opportunities for improvement are manifest at many points. If the average cost of maintaining a cow could be lessened by intelligent economy, or the average quality of dairy products raised a little by improved methods of practice, or the average dairy product slightly increased in quantity, the additional profit would be very great. For example: If the milk produced by the 18,000,000 cows could be increased one pound daily for each cow, the additional income at \$1 per 100 pounds of milk would amount to \$65,000,000. Again, one-third of all the butter produced in the United States is made in creameries and two-thirds on farms. The former by means of higher average quality has a value of at least three cents per pound greater than the latter. If one-half the butter now made on the farm could be made in creameries, or in any way to make it as good as average creamery butter, the increased income to this third (only) of our butter-producers would amount to \$15,000,000 a year. If the average municipal milk-supply could be but slightly improved in quality and sanitary conditions and the service correspondingly improved, the gain in the comfort and health of millions of people would be beyond measurement in dollars. Such improvements are entirely practicable and in a large measure comparatively easy of accomplishment. In the accomplishment of them the Dairy Division strives to assist and sometimes to lead, doing those parts of the work which are impossible to individuals or even associations. Efforts along such lines are frequently urged upon the Dairy Division, and opportunities for great usefulness offered which it is impossible to even seriously consider with the present organization of the Division and its inadequate funds and force of workers. The time seems to have come for a strong forward movement and a development similar to that which has been recently successfully inaugurated in other branches of the Agricultural Department.

The Dairy Division hopes soon to take up, in addition to the work already in hand, the feeding and care of dairy cattle, municipal milk-supply, butter-making and creamery-management, the production of cheese, extensive experiments on a commercial scale in the storage of butter and cheese under various conditions, and in the transportation of dairy products.

The Division desires especially to establish dairy demonstration farms so that its work and that of the experiment stations may be brought direct to the farmers by object lessons. There is no disguising the wide gap that now exists between the farm and the experiment station. The work proposed would bridge this gap between science and practice. A similar work is already in practical operation by the Bureau of Plant Industry in the Department. Twenty-four farms are at present

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MACBETH, Pittsburgh.

ent under the management, one of which I understand is in Missouri. On those farms they are only studying crop-productions and the Dairy Division proposes to assist in the work where dairymen are interested by aiding in a wise feeding for these crops, in a wise selection of dairy herds, and give such assistance as may be necessary in the manufacture and disposition of dairy products; virtually, making these farms an object lesson in the community in which they are located and forming a nucleus for disseminating the information gained in conducting them. The South needs this work perhaps as much as any section of the country, but the abandoned farm districts of New England and New York, the worn-out corn-fields of Illinois, Iowa, and Missouri, and the exclusive wheat sections of the Dakotas and Minnesota, could all profit by a systematic work of this kind. This plan would bring the work of the Dairy Division right to the farmer, thus filling a place which neither the experiment stations nor the agricultural colleges are filling to-day. The plan is to secure a dairyman, familiar with the practical working of a dairy farm and with the experimental work done along the line of dairying, a man capable of converting the knowledge gained by the experimental work into practical working knowledge adapted to the locality in which he may be working. He would make arrangements to have all records carefully kept, furnish the farmer with scales, Babcock test and other small necessary utensils to carry on the work.

We can not accomplish all this work without money, and it remains partly with you dairymen of Missouri whether the Dairy Division will study the various problems proposed. You can assist by writing your Congressmen to vote for the bills which will be presented to that body and by passing resolutions to support the work. We need \$100,000 this year to properly carry on the lines of work necessary for the best development of the dairy interests of the United States. What are the dairymen of Missouri going to do to support this work?

Care of Milk from a Bacteriological Standpoint.

I. E. CLINE, UNIVERSITY OF MISSOURI.

The ultimate purpose of all milk is for food, and if for any reason it becomes unwholesome, it not only is able no longer to fulfill its mission as a food, but it may prove an absolute injury to the consumer. If milk becomes unwholesome after it is drawn from the cows, the subsequent handling of it is directly responsible for the condition. Milk does not develop bad flavors or foul odors by itself nor can it of its own accord communicate disease to its consumers, but when filled with germs of all kinds it does act as an excellent cause by means of which hundreds of people meet their death. But I desire to call your attention more especially to conditions about our dairies and creameries, with which we are confronted every day, and that have a direct influence upon the market price of our products. It is the same old story of clean-

liness that is preached to us from a hundred different sources, and still some of us continue to ship cream to the city creameries that must always be graded as number two and paid for accordingly; and to deliver milk to our cheese-factories that the cheese-maker is unable to make into anything but four- or five-cent cheese, when with extra precaution on our part he might make ten-cent cheese out of the same milk; or we retail milk to our city customers that will not stay sweet off of ice twenty-four hours.

Well, why is it? Because many of us haven't yet had the meaning of cleanliness thoroughly impressed upon our minds. It is absolutely necessary for us to understand the universal distribution of bacteria and their relation to milk and milk-products before we can appreciate the significance of the term uncleanliness, because bacteria and uncleanliness are synonyms in the dairy and creamery vocabulary. All changes in milk must come about through the agency of some outside influence. If milk could be obtained from the cow's udder free from living organisms of any kind, it would remain sweet and unchanged indefinitely. Now, I suppose most of us here have formed some sort of an opinion as to what bacteria are, but for any who have not, and for any who may have any misconception about the matter, I will say that bacteria are microscopic plants of the lowest order; they are composed of one cell only while higher plants are composed of many, and in this one cell all the functions of life are carried on. They reproduce very rapidly by simple division, the product cell dividing to produce two individuals like the original, so that when I say the fifth generation removed from the original is produced, the progeny have increased to 32, and at the sixth generation, we have 64 instead of the one we started with.

Bacteria have a very wide distribution in nature; they are found in innumerable numbers in the air, water and soil. They are many different forms—some are spherical, some rod-shaped and still others resemble a corkscrew in form—some have the power to move about and some do not. All bacteria must live upon prepared food because they possess no green coloring matter and hence cannot manufacture any food for their own use, as do the common plants of our gardens. Since they must have prepared food, they must live as parasites in man or animals, producing such diseases as typhoid fever, diphtheria or tuberculosis, or producing in plants the various blights. They also live as saprophytes in dead organic matter, causing the decomposition of meat, fruit, grain, milk, and etc., and in many instances as saprophytes they are very beneficial. Were it not for the agency of bacteria, all animals and plants that die would leave their dead bodies to encumber the earth, for it is largely through the activities of these tiny organisms that the bodies decay and complex organic matter is broken down into their original elements, carbon dioxide and water and mineral elements, and returned to the soil and air from which it came, thus completing the life-cycle of matter.

I wish, however, to speak of the relation of bacteria to milk and milk-products. Because of the conditions under which milk is drawn, it is subjected to many chances for bacterial contamination, because the barn and the surface of the body of the cow is covered with countless forms of bacteria and unless very special precautions are taken in way of cleanliness, the milk exposed in such an environment must necessarily get large numbers of bacteria in it. The extent of the original contamination is very important. The hair of the udder and main surface of the body of the cow being covered with bacteria, with every movement of the udder in milking countless numbers come shattering down into the milk. This source of contamination could be largely obviated if the udder be dampened before milking, so that the bacteria would adhere to the hair during the process. After the milk has been drawn with as much care as possible into the

clean milk-pails, it should be strained through a close wire gauze and cloth or absorbent cotton, into clean cans; and by this I do not mean cans that have been washed and rinsed in cold water or warm water, nor that were washed in hot water and wiped dry with a cloth. These methods never did make a clean milk-vessel. To secure clean milk-vessels, the finishing touches must be made with boiling water or live steam and nothing less is permissible. The boiling water or steam must be applied for considerable time to be very effective and even then many bacteria that will be in the fore or seed stage will be unharmed but under more favorable conditions will germinate into the active stage, and proceed to multiply and produce bad effects, as before.

In order to show the importance of thorough sterilization of milk-cans I will cite this experiment as reported by Conn of Connecticut: Two covered cans were taken, one which had been cleaned in the ordinary way and the other sterilized for one-half hour in live steam. A quantity of milk was obtained as free from bacteria as possible by washing the udder and rejecting the first milk and the same amount of milk placed in each can. Upon later investigation the milk in the sterilized can contained 15 germs per cubic centimeter while the milk in the unsterilized can contained 4,265 germs per cubic centimeter. The milk in the last can soured in 23 hours, while that in the first can remained sweet 5½ hours longer. Clean milk-cans are absolutely essential if milk is to be kept clean and sweet for any length of time without refrigeration. In this connection it might be well to say a few words about the methods in use at some of the whole-milk creameries and cheese-factories and about the question of returning the whey and skim-milk to the patron in the milk-cans. In general it is a very bad practice, because the milk and whey as it is returned is thoroughly filled with bacterial life because of the favorable conditions of temperature for bacterial growth, to which the milk and whey are subjected at the factory or creamery. If any undesirable contamination appears in any one patron's dairy, it will be carried to the creamery, mixed with the whole supply of skim-milk or whey, and if the patrons take this back in their milk cans, in all probability the cans will not be properly sterilized before fresh milk is put into them again; and as a result, the original contamination will be spread from the patron's dairy to many, and the combined trouble will all be heaped upon the factoryman. Another source of infection and one that can be very easily gotten rid of is the contamination that is due to the bacteria that is contained in the first milk that is drawn from the udder.

The bacteria that come from this source are not often recognized, but are of very great importance. As previously stated, milk as it is secreted in the udder is free from germs of any kind, but because of the bacteria that gain access to the interior of the udder through the teat, especially the lower part at the base of the teat and the milk that collects in these parts, may be teeming with bacterial life. If this part of the milk is discarded, we will get rid of a very important source of contamination. Schulz found in fresh milk received under careful conditions, the following numbers of bacteria from the following parts of the milk. In one case, the milk first drawn contained 50,800 bacteria per cubic centimeter, while the last milk contained none. In another case 97,200 per cubic centimeter was found in the first milk and 500 per cubic centimeter for the last milk. The bacteria that are already in the milk in the udder will be largely expelled in the first 4 or 5 streams from each teat, and if this is not allowed to enter the vessel, the keeping properties of the milk will be largely benefited.

The straining of milk may be made to be very effective in decreasing the amount of contamination. If the milk is properly strained, the particles of dirt and the hair will be largely eliminated, together with the bacteria that

cover the same. Thorough straining is one of the essentials for producing clean milk. Bacteriologists consider milk to be one of the best mediums obtained for the growth of bacteria, hence the importance of keeping it as clean and pure as possible, especially since the purity and the market value are so intimately connected. All the time that the bacteria are growing and multiplying, they are by their life processes bringing about radical changes in the milk, some causing the decomposition of the albuminoids giving rise to foul odors, others converting the sugar of the milk into the lactic acid which we recognize in properly ripened cream, and still others may be present in ever so large numbers and seem to have no apparent effect upon the condition of the milk.

Fortunately for us, the lactic bacteria seem to be able to gain the ascendancy over many of the other forms and often overcome their bad effects. Were it not for this fact, it would be practically impossible to keep milk any time at all under ordinary conditions of temperature, or make butter or cheese out of it that would be at all presentable.

After we have drawn the milk under as sanitary conditions as possible by washing and wiping the udder, rejecting the first milk, using a clean pail and after we have stored the milk in a sterile milk-can with a tight cover, we still have one of the most important conditions in all milk-handling to fulfill, namely that of the temperature. The greatest controlling factor in the development of bacteria in milk is the temperature at which it is kept. If we are ever so cautious about the original contamination, and secure milk with the original bacterial content very low, but pay little attention to the subsequent temperature, all previous precautions will be of little avail; while if, on the other hand, the original contamination is large, the bad effects may be largely overcome by low temperatures; but if low temperatures are relied upon too much to make up for uncleanliness, the results may sometimes be very disappointing, because the original contamination may contain bacteria that are able to develop at moderately low temperatures and usually in such cases these bacteria render the milk very unwholesome. It isn't enough to be clean about the dairy nor will cold storage atone for dirty milk-vessels; but cold storage and cleanliness must go hand in hand if we are to have milk of high quality. However, if I had my choice, of low temperatures or practical conditions of cleanliness I would prefer the former because so far as the keeping property of milk is concerned, more depends upon the temperature than upon the original contamination.

Milk drawn under ordinary sanitary conditions is sure to contain bacteria in greater or less numbers. The presence alone of these bacteria will not cause any change in the milk, but it is because of their life process, growth and multiplication that the milk becomes changed; hence the longer the growth may be delayed, the longer the milk will retain its normal condition. Within a certain limit the rate of the multiplication of bacteria arises with the increase of temperature and decreases with the decrease in temperature. Frozen milk will keep indefinitely. This has been practiced by the Danes to some extent in shipping milk long distances. At a temperature of 115° F. or 120° F., most bacteria find conditions unfavorable for their growth, and at temperatures above this, many cease to grow at all; and a temperature of 140° to 150° F. for any length of time will kill most bacteria. To illustrate the importance of temperature upon the growth of bacteria, I wish to call attention to another experiment reported by Conn, in which he took two samples of the same milk, placed one at a temperature of 50° F. and the other at 70° F. At the end of 24 hours, the bacteria of sample that had been kept at 50° F. had increased five-fold, while that kept at a temperature of 70° F. had increased 750-fold. This illustration only shows what a decided influence the dairyman can exert upon the keeping-qualities

PURE WHITE LEAD

For the benefit of those people who do not know how to tell PURE White Lead from the adulterated, we have printed a booklet, "What Paint and Why." It tells why no other house-paint is as good or as cheap as PURE White Lead and names the brands of White Lead that are purest and best.

This is valuable information for every house-owner because, while all White Lead sells at within a cent or two, per pound, of the same price, there is great difference in the value of different brands.

We will send this booklet, free, to anyone asking any of our offices for it. Architects and painters are invited to send names of customers interested in house painting. "What Paint and Why" will be valuable to them.

NATIONAL LEAD COMPANY

Largest makers of White Lead in the world

New York, Boston, Buffalo, Cincinnati, Cleveland, Chicago, St. Louis

National Lead & Oil Co., Pittsburgh
John T. Lewis & Bros. Co., Philadelphia

of this milk by lowering the temperature 20°.

The number of bacteria in a sample of milk will depend more upon its temperature than upon the original contamination; but as I have previously said, do not depend too much upon temperatures to remedy all the defect of uncleanliness, because milk kept at moderately low temperatures for a long time, although sweet to the taste, may be very unwholesome, due to the retarding of the lactic-acid-producing bacteria, which if left to develop normally would overcome to a large extent the action of the more objectionable kinds.

In this connection, it might be well to mention the methods of reduction of temperature. Milk confined in bottles or cans and immediately cooled by the application of ice to the outside is to me the most satisfactory. Some, however, recommend cold aeration for immediate cooling. If ideal sanitary conditions could be insured, then that process would be very well, but it is a very bad practice unless such conditions can be had. Aeration does not in any way lessen the original number of bacteria in the milk nor change the germicidal action in the least, but on the other hand exposes it to the contaminating influences of the air, so that aeration may be a positive detriment instead of a benefit. The only benefit that could be derived from aeration over confined cooling under the strictest sanitary condition is the removal of bad odors, which should never be there in the first place, and the supplying of the milk with more oxygen, thereby rendering the formation of toxic or poisonous products less abundant. Much may be said and should be said about the preventive measures as regards to the original contamination of milk because a little prevention in this regard will often obviate trouble that no aeration-measures can ever hope to overcome. But when a sample of milk has once become well filled with bacteria, the only thing to do is to kill them by heat, so that they may not go on multiplying and producing their bad effects in the butter or cheese into which the milk is to be subsequently made.

To kill the bacterial content of milk to any considerable extent the milk must be heated to a temperature of from 140° to 170° F. This temperature will kill about 95 to 98 per cent of the bacteria. In the fore or seed stage they will resist these temperatures and come through unharmed and be ready to revive and go on and restock the milk with active bacteria. Milk properly pasteurized will, if stored at 58°, remain in good condition for from 50 to 70 hours longer than raw milk.

I would not have you believe that pasteurization is a cure-all for all un-

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EIGHTEENTH ANNUAL MEETING KANSAS STATE DAIRY AS- SOCIATION.

(Continued from page 447.)

and dam is by full-blooded dairy animals, she will have the usual tendency to convert her food into milk, and if fed and milked regularly and made comfortable, kept quiet and contented, the more feed she gets the more milk she will give, and her owner will get the profit in return. There is a good deal in keeping the dairy cow comfortable, contented and happy, especially if she is a good milker. In feeding dairy cows a certain quantity of food is required for the maintaining of bodily functions and the excess over the amount required for this purpose is utilized for milk-production. Hence the folly of light feeding where a profitable production of milk is expected. The idea that a cow can be profitable on half rations is often entertained by farmers and dairymen, but it is erroneous to the last degree. Twenty cows fed liberally with a suitable ration will give more profit to the farmer than thirty cows on the same rations. For instance, if a farmer pays \$75 for a good cow, in a year she produces 10,500 pounds of milk, which at the average price prevailing in our locality, \$1.20 per 100 pounds, amounts to \$126, \$51 more than the cow cost. Putting the cost of her feed at \$40 you have a net profit of \$80 in one year from your purchase, to say nothing of the calf born to her credit. And how shall we feed the cow's calf and what shall we feed it? Bran with us is worth \$20 per ton, and we find in a ton of bran we have only 240 pounds of protein. In a ton of gluten meal we get 500 pounds of protein, and pay \$26 per ton. In a ton of dried brewers' meal we have 600 hundred pounds of protein at \$24 per ton. Which of the three feeds is the cheapest for the farmer to feed for profit? Farmers should keep a less number of cows and feed better, and produce more cream, get a better quality of cream and the creameries will give a better price for it. Farmers should read more papers and get better posted. Every farmer in Kansas should need the KANSAS FARMER. Every farmer in Nebraska should read the Nebraska Farmer or the Twentieth Century. Every farmer and dairyman in the United States should be a reader of Hoard's Dairyman. Dairymen should be kind to the dairy cow, be gentle with her, keep her comfortable, keep her quiet, and she will return you one hundred fold for your kindness. And I believe that the average dairyman can get better returns by keeping his cows in the stable in the summer time, and feeding them alfalfa cut in the morning and at noon than he can to let them run in the pasture. One acre of alfalfa fed in this way will furnish more feed than four acres of pasture. Here is a chance for discussion. Kansas is one of the best dairy States in the Union. Kansas can produce a pound of butter cheaper than any State in the United States. And Kansas has some of the best cows in the world.

Dairy Experience in Western Kansas.

D. B. LONG, ELLSWORTH, KANS.

On May 8, 1868, I arrived at Fort Harker, Kans., with my family and household goods, including all the necessary apparatus for manufacturing cheese. The claim I had selected was located about two miles south of Fort Harker (now known as Kanopolis), the center of the United States, and was without a team, house or any improvements. I commenced business, and as I was supposed to be a "tenderfoot" from the Western Reserve in Ohio, I was of course an object for the benevolent consideration of those who had preceded me to scalp, as the fact became known that I had a few thousand dollars that I intended to invest in developing a new industry in the "wild and woolly West" of Ellsworth County, Kansas, at that time the only organized county west of Saline County in the State.

It soon became known that I was going to put up buildings, buy cows and manufacture cheese. The first fellow that caught me was a red-headed Missourian as slick as Chinese silk. He

came along on his way to Ellsworth, was out of money, but he wanted to buy a breaking plow for \$20. Said he had a fine milch cow for sale, and understood that I wanted to buy some cows. Yes, I said, I intended to buy 40 or 50 cows, and if he had as good a cow as he represented I would give him \$40 for her, if he would deliver the cow. All right—he would do so. But he wanted the money that day as he had to have a plow and a number of other things. So I thought as he was a neighbor, I would just advance the money as I had it for that purpose. Well I was a long time in getting that fine cow, and when I did get her she was a little black heifer of a pure Arkansas breed and dry at that. It was my first lesson and I profited by it.

Major Steinberg and myself went to Saline County and Dickinson County to buy cows. I picked up 44 cows at an average cost of a little over \$40 per head. I was gone about a week. In crossing the Solomon River which was high we had to ford it, as we could not drive the cows over the pontoon bridge, so we drove them in above and of course the current swept them down against the bridge. I thought at one time I would lose them all by drowning. But they went under the bridge and all got out safe but one, and that was drowned. We cut her throat and I gave her to a man who assisted me to get them over. She was fat and no doubt made good eating.

At Salina I bought eleven head from a dairyman; they were the only good, well-broke cows I bought. The others I had a time with—kicking and smashing—well, I think a man that can break a lot of kicking cows without losing his temper, ought to have a pretty good record to present to St. Peter.

On June 4, a little over three weeks from the time I landed in Fort Harker, I had built my house, 18 by 28, story and a half, a corral, bought my cows, and made my first cheese. I also put up a cheesehouse. The manufacturing room was logs and had a dirt roof. The curing-room was made of lumber. I shipped all my lumber from Kansas City, and the freight was just immense. The railroad fare was 8 cents per mile.

I kept a record of my work, and notwithstanding the drawbacks, the hard work, and the late beginning, on January 1, 1869, my books showed that I made over \$1,600 that year; but had I known as much then as I found out afterwards, and instead of buying mature cows, at \$40 a head, if I had invested in Texas cows at \$10 a head as I did the year after, with a free range open to the Arkansas River covered with the rich grasses, I could have made thousands of dollars where I made hundreds, and with less hard work, too.

I continued to manufacture cheese and butter for six years, and made good, honest money. I then rented out my cows to a couple of dairymen from New York who made cheese at Wilson, Kans., and they, too, did well. I then sold my apparatus and cows and for a while I quit the business, but could not stay "quit." I went in with a partner at Wilson to manufacture butter. We bought cream and ran a milk route, gathering up cream in Ellsworth, Russell, and Barton Counties. If we had been supplied with separators and milk-testers, we might have made it pay. But some people would skim their cream so close that in the bottom of the vessel would be water or whey. We made just enough to pay for the cream, and our income was just the glory of building up an enterprise in which those who came after could profit by our experience.

The next undertaking was the building of a creamery in Ellsworth for manufacturing butter and cheese, a stock institution. Of course I took stock, and applied my summer's milk to pay for my stock. No returns from the milk or stock were ever received. Then the Belle Springs Creamery Company, of Abilene, bought the building and machinery for a small price and commenced business in a scientific and businesslike way they made money for themselves, as well as their patrons. The company has

The Famous Split Hickory Special



We present to our readers a cut of one of the new WORLD FAMOUS BUGGIES. It is the SPLIT HICKORY SPECIAL, manufactured and sold direct to the user on thirty days free trial by the Ohio Carriage Manufacturing Co., of Cincinnati, Ohio.

Every reader of our paper is acquainted with the advertising by this Company, which for years has run in all the leading papers and magazines of the country.

Mr. H. C. Phelps, President of the Company writes us that many of his customers speak of their Fifty Dollar Split Hickory Special as the "President Roosevelt Buggy"—They say it is a "Square deal for every man."

Mr. Phelps also writes that many of our subscribers seem to get the impression that their Split Hickory Special is the only buggy they make. This impression is created by the fact that most of their advertising has been on this one special buggy.

In addition to this special vehicle they manufacture a full and complete line of all kinds of

buggies for all purposes, and also, a complete line of harness.

Their \$35.00 Marvel top buggy carries the Split Hickory name plate and it has a guarantee for two years. This member of the Split Hickory family is also sold on thirty days free trial, and for a low priced buggy, stands without a peer. Mr. Phelps also writes that they are having a big run on their \$52.50 guaranteed solid Rubber Tire Split Hickory Hummer. This indicates that the farmers throughout the country appreciate all of the late improvements in pleasure vehicles.

The 192 page catalogue of The Ohio Carriage Manufacturing Company is a work of art. It tells of over one hundred styles of vehicles all Split Hickory and gives a complete line of Harness.

We advise our readers to send for this Catalogue, as it is free and contains much worth knowing about Standard Trade Mark vehicles.

In writing, address The Ohio Carriage Manufacturing Co., Station 251, Cincinnati, Ohio, H. C. PHELPS, President.

the confidence of its patrons, and the pay-checks every month are as regular as the rising and setting of the sun, which is one of the pleasant features of dairying in Western Kansas.

There have been great improvements in every branch of the dairy industry in the last few years, and I believe we are only beginning to understand the value of it, the value of the dairy cow, and how to feed and handle her for the best results. It is a matter of vital importance and more attention should be given to the breeding for dairy purposes.

I will close this paper by giving a few little incidents that happened the first year of my cheesemaking in Kansas. We had several Indian scares, and everybody went armed. Major Steinberg was my nearest neighbor, and he and a citizen of the Fort went over to the Little River in Rice County, south of Ellsworth, to locate claims. They took with them a lunch and I gave them a good piece of cheese for part of their lunch. But when they got over among the breaks on the head of Little River they saw a party of Indians making for them. They were in a buggy and they started for the Fort and the Indians gained on them so fast that they cut the horses loose from the buggy and each one took a horse, leaving the buggy, harness, and lunch, and made the best record of bareback riding that was ever known in that part of the country. The Indians followed only a few miles and then returned to where the buggy and harness were left, and when a party from the Fort went out to investigate, everything was missing excepting the buggy and the cheese. I never found out whether it was a compliment or not to my cheese; but there was one thing certain it maintained its keeping qualities.

I had a few buffalo in my herd, and I bought a pet buffalo. This buffalo got to be a great nuisance. She was as mischievous as a monkey and would chase the children and frighten the women, but she was too much of a pet to go with the herd, and would not leave the yard. If I shut her up she would not eat, but would walk back and forth for hours and grunt at every step. To get into trouble or mischief was her great delight. One day I forgot to close the cheesehouse door and when I returned she was stepping about putting her nose into everything she could find. When she saw me standing in the doorway she made through the curing-room and out of the window, taking sash and glass with her. She got to be such a nuisance that I had to kill her to keep

peace in the family and safety to the neighbors.

In the fall of 1868, one bright morning I was milking the cows. I heard a noise like the tinkling of bells. On looking around I discovered about one hundred Indians with all the necessary war paint, guns, feathers, red blankets, brass rings in their ears and noses—making a display of savage warfare, that I had had some experience with on the plains in 1866 and 1867. To say I was frightened would be putting it very mildly. The Smoky River was on the south and the Indians between me and the house on the north and my gun in the house. I was surrounded. I called to a negro boy who was also milking and said, "Andy, look at those Indians!" The boy was so frightened that he turned white. I pretended that I was brave, but I would have given a cow to have been back in Ohio with my mother. I went up to the fence where the chief had stopped and said "How!" and he said "How!" I said, "Kiowa." He said, "Me no Kiowa. Me white man's friend."

I was very much relieved.

They were the "Kaws," and were going out to fight the Pawnees or some other tribe. I had bought about 100 wagon covers at a sale at Fort Harker and the Indians were so friendly that they took every one that was good for anything. They wanted sugar and coffee and everything they saw. I at last got to the house where they crowded in to warm. I got my "needle gun" and told the chief that if they wanted anything more to go to the Fort, as I had nothing more to give them. They went into camp on my place and remained there for several days, but did me no harm. While I may have wandered from my subject it is a part of my experience in making cheese in Western Kansas in the early days.

Seeding Grasses and Alfalfa.

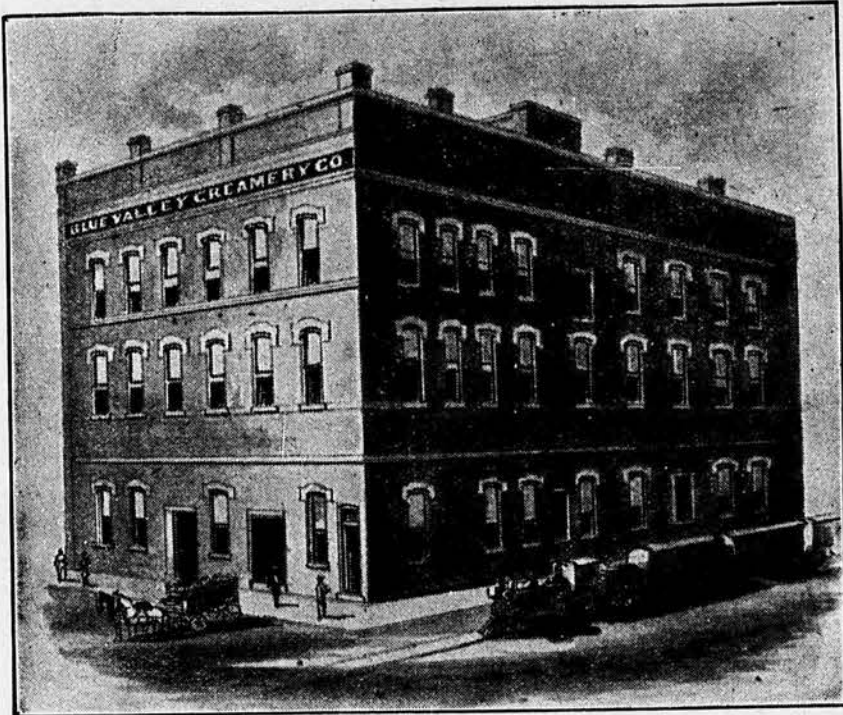
A. M. TENEYCK, KANSAS STATE AGRICULTURAL COLLEGE.

I do not expect to say anything new on the subject. The factors which control the successful seeding of grasses and alfalfa are well known to all good farmers; but in agriculture, as in other professions, it seems necessary to discuss over and over again the principles and facts related to successful agriculture, in order that the average farmer may even partially put them into practice on the farm.

I have said in regard to alfalfa, and I repeat the statement, including grasses also, that with good seed, a proper seed-bed, and land adapted for

(Continued on page 456.)

Largest Exclusive Creamery Butter Factory in the World



6,000 intelligent, up-to-date, progressive dairymen co-operating with the management of this creamery has made it a monument of fame in the creamery and dairy world. The long list of individual shippers secured in 3½ years, together with the steady growth at the rate of 150 to 200 a month, is sufficient evidence of its prominence and popularity in the hearts of the Western dairymen. It's a production of the twentieth century. It's the creation of thought, experience, ability and capital. It's clean and pure and wholesome, and its popularity, its strength, its success is all due to the system on which it was inaugurated and the plan on which it is operated. It has had for its motto, "In Union There Is Strength," and its watchword has ever been Cooperation and Economy.

OUR SYSTEM.

The strength of this system lies in the union of interest, union of purpose and union of effort on the part of every patron (in connection with the manufacturer) to attain the greatest result and elevate the business. This institution (which we want every Western dairyman to feel is his home) is operated on a system that has for its foundation the fundamental principles of success. A foundation composed of material that will resist for all ages even the poor, weak, mistaken system that attempts to strengthen its own rotten structure by an effort to get some of this

material. Its strength lies in its being absolutely free from entanglements of any kind. It is carrying no dead weight. Its capital on which is expected a moderate dividend is only what is necessary to carry on the business. It contemplates no investment in creameries or skimming stations to be closed up or operated for a while at a loss simply to shut out competition. It provides for no representatives on the payroll whose interest is to be entirely a silent one and who draws a salary simply as an inducement not to do business for themselves or strengthen competition.

It is in opposition to the policy of an exorbitant price when there is very little cream in the country and making it back a hundred fold when everybody has plenty. It discountenances the appearance of giving a man something and charging him four prices for it when he isn't watching and continuing to collect pay for it every time the opportunity is presented. In short, its policy throughout is to conduct its business as an open book, ready at all times for the inspection of its patrons. Endeavoring to please them and in their interest the consumer. Courting their friendship and scrupulously protecting their rights.

Among very many burdens being carried by the dairyman we believed a heavy one to be his furnishing capital for the creamery to carry on its business. We believed it an injustice, unfair and wrong. We see no possible reason why he should wait six weeks for his pay for an article that is cash. We could see no reason why we should buy your cream to-day and churn it to-morrow, selling the butter and getting the money the same day and use it six weeks speculating before we sent it to you. We realized it was yours. We had no right to it. Suppose we lost it. We acted immediately on our conviction and were glad once more to avail ourselves of the opportunity to show our appreciation of the dairyman's patronage by pledging him that ever after we would pay *spot cash for cream when received*.

COOPERATION.—Two men preparing for a journey had but one horse. One man proposed to the other that they would ride and tie. To make it plain, he said he would ride. The other fellow could tie. That was his idea of cooperation. It isn't ours.

The idea of cooperation with some creameries is to let the dairymen do the work and give them the profit. That isn't our understanding of cooperation. We mean by cooperation an interchange of ideas by which we are both benefited, an exchange of information that brings better results to both of us and finally a fair and equitable division of what is realized by this combination of effort. If our patron has information that will assist us in getting more cream and making more butter, it reduces the cost of making and we believe he is entitled to the benefit. If he can assist, by suggesting or otherwise, in improving the quality of cream from his locality, we can make better butter and get a higher price and we believe justice as well as good business demands that he be substantially recognized for this service. We are in partnership with our patrons and we know of no rule or custom where partners are not all benefited by increased profits that come to them through the efforts of one or more of their own number. Our system contemplates success for everybody and the results in cash.

ECONOMY vs. EXTRAVAGANCE.—The old plan or system of doing a creamery business had for its foundation extravagance. The reckless expenditure of the dairymen's money is what closed so many creameries and skimming stations and put so many farmers out of the dairy business. In addition to this enormous expense, the poor quality of the butter made (on account of the system) paralyzed the butter market and drove the masses to eating oleomargarine and other substitutes in preference. With the diminished demand for butter the price went down. With a heavy expense and a low price (all due to the nefarious system) the dairyman couldn't stand the pressure and many of them quit while those who continued lost money.

Is it any wonder the Western dairymen hailed with delight and appreciation our system of economy and showed this appreciation by enrolling their names on our family record until now there are 6,000 shipping their cream direct to us? Under this system of direct shipping every useless expense is removed, and the quality and condition of the raw material enables us to make a much higher grade of butter. The cream is taken from new sweet milk. Is well cared for and shipped in clean cans (when a poor can comes in it can be thrown out). On account of the improved quality the consumption has increased, the demand is much stronger. The price is higher and millions of dollars goes direct to the producer that before was lost entirely.

We pledge our further effort in the direction of still greater results. We promise you we will not be instrumental in loading down this business with a mountain of unnecessary weight for you and your family to carry. We do not propose to be the instruments of destruction to the best business in this country by putting on a load it can not bear.

We solicit your shipment of cream direct because it is the most economical way of getting it to the market. Tie the tag on your own can. You can't afford to hire it done because you can do it cheaper and the expense is not justified. We solicit your cream direct because we get better cream and we can make better butter, and we can pay you a better price and you will be better pleased and your business will increase and our business will grow. If we make good butter all the time (and we can from the direct shipper's cream) when we secure a customer for it we can hold that customer. We don't have to go to the expense of continually hunting up new trade. On the other hand the customers we have are constantly finding new ones and as our make increases the market is ready. This is economy. This not only saves us money but it saves you money by reducing the expense between you and the consumer and your interests are subserved by the individual direct shippers' system.

We solicit your cream direct because we can economize in handling it, and more than all we can assist you in getting the best results. If your cream is too thin or too thick or too sour or too old, we can write you making such suggestions as are necessary to remedy this. You are in constant touch with headquarters and by a frequent interchange of ideas the interests of the business will be advanced.

With a reassurance that under this system we will be able to pay the highest price for butter-fat of any market, and again pledging our greatest effort during 1905 in defense of those principles so prominent in our plan and the perpetuation of which means continued success and prosperity, we ask in return your valued assistance by always seeing that the tag on your can of cream is marked,

BLUE VALLEY CREAMERY CO., St. Joseph, Mo.

Pioneers of Progress in their Line, and Awake to the Producers' Interest.

MAIN PIPE LINE

...To Navigable Waters of the Missouri...

The Great Kansas Independent Refinery Will Not Be Robbed by Criminal Rebates, but Will Occupy Independent Ground by Piping to a Great Waterway and Owning Steamboats and Steel Barges.

STOCK NOW SELLING FOR \$80 PER 1,000 SHARES CERTAIN TO ADVANCE TO \$750 PER 1,000 SHARES IN NEXT SIX MONTHS

THIS great enterprise will immediately install Refinery No. 2 on the banks of navigable water close to Kansas City. Will own steamboats and barges and what oil it does not market to the millions of inhabitants in the two Kansas cities, Omaha, Council Bluffs, St. Joseph, Leavenworth and other large cities close at hand, they will ship by water to the big cities from St. Paul to New Orleans and from St. Louis to Pittsburgh.

WHEN you join our band, now nearly two thousand strong, you practically secure an interest in two great refineries, over three hundred miles of pipe lines, thousands of barrels of tankage, dozens of tank cars, over twelve thousand acres of oil lands and hundreds of producing wells, and steamboats and oil barges to carry the refined oil to the markets of the world.

REMITTANCES are coming in on every mail from California to North Carolina, from Mexico to Ontario, and from Florida to New York. Popular approval is backing the Uncle Sam Company, men are working for it, papers are talking for it and, in fact, it is growing to a mountain of strength. It is the only formidable foe to Standard Oil oppression west of the Alleghenies. Money invested is not only sure to increase ten-fold in solid values, but at the same time you will strike a blow for justice in the oil fields.



This picture is one of the views secured of the refinery grounds at Cherryvale, April 19. To-day there are over ninety men working on the refinery proper and on the first big 40,000 barrel steel storage tank which arrived this week. The Uncle Sam Company will build large tankage to store the oil that is now in abundance in the oil fields. Some day it will be more valuable. Now is the time to buy and hold it. The Cherryvale plant will be ready to ship refined oil in less than seventy days, and work will commence in less than ten days on plant No. 2, which will be built on the banks of navigable waters close to Kansas City. When you buy stock in the Uncle Sam Company you secure stock that is growing in value while you sleep, and in less than six months will be worth at least 75 cents per share, or nearly ten times the present price. Men are coming into Cherryvale on every train and people drive from miles around to witness the work on the great refinery. Work will be pushed steadily forward with a vim. If you have money to invest it will pay you to consider well before you delay many hours, for the Uncle Sam stock is selling and selling fast, because business men realize it can go at par and that the company is pursuing safe methods and is on a practicable basis. If you do not have money enough to pay all cash for stock read over the installment offer made in this announcement. \$800 will now buy ten thousand shares.

Secures Four Thousand Additional Acres of Rich Oil and Gas Lands.

Within the last 24 hours four thousand acres of the choicest oil and gas properties in the Cherryvale and the Coffeyville oil fields have passed into the control of the Uncle Sam. These lands give the Uncle Sam control of nearly seven thousand acres and 74 producing wells. Two drilling rigs are now steadily at work. The Uncle Sam Company is selling at every bend in the road. It will take the oil from a thousand feet underground and carry it through the different stages until it will be burning in your lamp or under your furnaces. By owning its own oil wells and with a pipeline and refinery on the banks of the navigable water of the great Mississippi system every man must admit that it is following along the lines of safe business methods and that profitable results are certain under these conditions. When you buy the stock you not only further the ends of justice in the oil fields, but invest where the investment is sure to pay tenfold. Can you afford to let down an investment like this? If you delay long the stock will cost you more money, as there are nearly two thousand men directly interested in the final grand success of this great company and they are working with their friends and also doubling up their holdings. The very minute the pipeline reaches the refinery near Kansas City this stock will be in demand at close to par or \$1 per share. No investment in the world offers what this company offers, and there are men enough back of the company to guarantee a square deal, and that is all that is necessary to make money in the refining of oil for the profits are great or the Standard oppressors could not divide millions yearly in dividends as in their history.

Standard Oil Stock Sold One Time for \$40 Per Share. Now It Is Selling for \$660 Per Share and Is Paying Enormous Dividends.

The Uncle Sam Company is the only refinery company in the West to-day that offers protection to its stockholders by following certain methods that will bring great returns. The Standard Oil oppressors are like a Comanche Indian. They will shoot a fellow to pieces after he is down and can not help himself, but the enterprise that reaches out and secures a leverage in the markets of the world it leaves alone, for like any other coward, it does not care to criminally fight a competitor, unless it knows before it goes after its scalp that it can secure it. How can any organized band of plunderers do anything to hinder the onward march to grand success of the great Kansas independent refiners, when, within a radius of one hundred miles, it will have a friend by market for more oil than it can refine. On the other hand it can, through its own steamboats, ship by water at very

small expense refined oil to any point on the Mississippi or its tributary river fronts. Remember the men who are behind the guns in the Uncle Sam Company are Kansans and the kind of men who have grown up with gophers and grasshoppers and have met hardships before, and they will come pretty near taking care of themselves, even though they are up against a crafty, underhanded set. When you invest your money with this company you not only get on the right side of the oil troubles, but you are in line to realize big profits. Standard Oil stock one time sold for less than one-fifth of the present value or selling price. Take a lesson from the great advances on that stock and secure a good-sized block of stock in the Uncle Sam Company before it goes to ten times the present price.

Money Talks—Best Proof That Refinery Stock Is in Good Demand.

There never was a company that investors rushed in their money for stock with such confidence of success. Never has a record been maintained in the Central West where the subscriptions for stock were equal to the demand for the Uncle Sam stock. For the benefit of those who may think they will have all summer to join this great company, we will say that the net sales of stock for Thursday, April 20, were \$5,400; paid in cash, \$3,166. On Friday, net sales equal \$5,970; cash paid in, \$3,166.40. Now the company is just thoroughly advertised. Men are working for it all over the United States. The sales on Thursday and Friday are not one-half of what they will be during some of the days in the next month. The man who thinks the Uncle Sam Company will not build the pipe line to the water front, and another refinery, simply shows that he is off in the upper story. People have confidence in the Uncle Sam Company. Money talks. Work will be crowded ahead with vim. Stock that is now selling for 8 cents per share will be in great demand at 15 cents per share in six weeks than it is now at 8 cents. When you line up with this company you join a winner and you also join a band of determined men who are working for a square deal in the oil fields, and what is more, they are going to get it. The remittances mentioned did not come from one or two men, they represent sales on stock from 500 to 5,000 shares. These men will all sell stock to their friends, and they to their friends, and like the endless chain letter, the Uncle Sam Company will grow until the stock is all placed and the great work is accomplished. Better join our band to-day, before it is too late, for if you delay others will secure what you want. \$400 will buy 5,000 \$1 shares.

Financial Condition of the Company.

Authorized capitalization, \$10,000,000. Par value of the stock is \$1 per share. Every share of stock draws the same amount of dividends as any other share.

The company has in cash in its treasury and in gilt-edged installments, payments and lands, oil wells, machinery, buildings and other assets, on a conservative basis, \$390,000, free of DEBT. There is in the treasury at this writing 6,775,000 shares which will be sold at 8 cents per share or higher. The chances are 10 to 1 that the last stock will bring close to 90 cents per share; at any rate, you can depend on close to \$1,500,000 back of this company in cash before the treasury stock is all sold. Now, just figure a moment for yourself. The company has no dead-end stock. Every share sold has been cash to the treasury. One refinery is as good as built. Nearly 7,000 acres of oil lands, with close to 100 oil wells, are now owned or controlled by the company, and they have room for over 3,000 more wells. Money is pouring in at the above rate per day, and will increase. We can prove our statements as to remittances by our bank books. You will never be able to buy the stock cheaper than 8 cents, and any man knows, as the work nears completion the value increases and the price must advance. Better secure some of this stock while you can and reap a great reward by so doing. You can invest from \$80 to \$4,000 safely. The stock is non-assessable and there is no liability.

Company Would Be Justified in Advancing the Stock to 20 Cents Per Share Right Now.

There are deals enough pending in the United States right now to sell all the balance of the stock of this company twice over. The very minute the pipe line to Kansas City is even over half way completed the stock will sell readily at 50 cents per share. The assets back of this stock and the bright future ahead would justify the company now in advancing the stock to at least 20 cents per share. When you secure the stock at 8 cents you secure value received and then some.

When You Buy This Stock You Are Securing an Interest in Practically Two Great Refineries, Over 12,000 Acres of Oil Lands, 300 Miles of Pipe Lines, Thousands of Barrels of Storage and Tank Cars and Steamboats.

When you buy the stock of this company you really secure an interest in a great deal more than is represented now. Every day additional machinery is being secured. To-day men and teams have worked all day unloading part of the first big steel tank. It's just a question of weeks until men will be laying the pipe line to Kansas City and every day additional lands are going into the control of the Uncle Sam. Another fact you must bear in mind when you figure on buying this stock is that this company is well advertised, and through the best

Refinery No. 2 on the Banks of Navigable Waters.

The most important move of a refinery company is to locate refineries and build pipe lines so that it can market oil without being held up by criminal rebates which are so hard to prove. The Uncle Sam Company is guarding against just

such underhanded knockouts as these, and work will soon be under way to lay the pipe line to navigable water. The plant will be located some time next week at some point between Holiday, Kans., and Kansas City. Our attorney is now negotiating for the right of way for the pipe line, and as soon as the first thirty miles are secured the company will at once commence laying pipe. The man who thinks the Uncle Sam Company will not build Refinery No. 2 and connect it with a main pipe line over 150 miles long will spite his own pocketbook. The Uncle Sam Company does things. Some six days ago it advertised it would build

a refinery at Cherryvale. Well, come down and you can see for yourself that it is fast completing what it started. There are thousands upon thousands of dollars back of the Uncle Sam Company, and few people really realize its great strength. And it is growing stronger every hour. If you want to help strike a blow for justice in the oil fields and at the same time tenfold your investment, send check or draft to-day for stock, before it advances to 15 cents per share. Things are moving down here, the Uncle Sam Company is the company of the hour and the stock you can buy now will not be offered long at 8 cents per share.



Topeka in twenty-four hours if the interest of the company demanded it. This is another good reason why your money is safe in this company. Four or five capitalists could be downed by the Wall Street plunderers, but when you do up two or three thousand little fellows there will be something doing. No legislator will sell out his constituency if there are even twenty-five determined men at his home, in the Sunflower State, to hold him in line when they go at matters as they usually do and as the independent refinery stockholders will. Drastic measures will be necessary to down Standard Oil's hold, but that is what the Kansans know they will have to overcome.

Cherryvale Refinery Will Supply the South and Southwest—Large Storage Stations Will Be Maintained at Winfield, Wichita and Topeka.

Three barrels of fuel oil are equal to one ton of coal, which cost the thrashers and the farmers in Western Kansas over \$5 per ton, while the big millers and the manufacturers of Wichita, Topeka and Winfield pay very high prices for coal. The Uncle Sam Company from its Cherryvale plant, will establish large stations for both refined and fuel oil over the South and Southwest and especially in Winfield and Wichita. The company already has stockholders scattered all over the southern part of Kansas and the territories. These men, as well as the citizens of Kansas, will be loyal to the oil from the great Kansas independent refinery. There will be stockholders enough to protect the market and there is an anti-discrimination law, with heavy penalties, that will also afford protection. These conditions every man must admit offer great advantages to the independent refiners. Now, take into consideration that Refinery No. 2, on the banks of the river, can reach the North and the Northwest with steamboat connections with all the big cities of the Mississippi system. Don't look like the Uncle Sam Company meant business and that it will be a factor for years to come in the oil fields? A few dollars invested now will continue to grow in value and pay your children dividends after you are gone. Just think this matter over seriously, and do it now. The company wants you with them; wants every man who desires to help himself and help this company secure grand success. Safe methods will be pursued at all times and if you buy stock now you get in at a price that will be more than doubled in the next sixty days. Now is the time to act.

We Can Not Write Many Personal Letters.

This week we have had from two to four men answering letters of inquiry. Tuesday, 110 inquiries came in. Now, we would like to write every man a personal letter, and we appreciate the words of encouragement meant, but our office force is working more than sixteen hours a day to get out the stock that is remitted for. After you read this advertisement we would advise you to mail checks or drafts without delay and also let your friends know of the great opportunity the Uncle Sam is offering. The stock may be advanced any day, and if you remit promptly you will secure yours at 8 cents, and if you wait to receive an answer to your inquiries you may be too late to secure stock at that price. The company is in telegraphic communication with over 200 men, and reaches over 1,600 investors every two or three days by special reports. The line-up of this company's organization is something that few people realize. It is strong and is growing stronger every day, hour and minute. Remember the day that the Uncle Sam pipe line reaches Kansas City the stock of this company is almost sure to be worth par, and at any rate, ten times the present price. The investment is safe. What more can any reasonable man expect?

ANOTHER GREAT OILER.

Our Farmers' Field a Nine Time Winner.

Since setting this advertisement, and just as the page was ready for press, Secretary Tucker sends the following: "The Uncle Sam folks are surely in luck: 'Cherryvale, Kans., April 22.—Undoubtedly the largest oil well ever secured in Cherryvale field was drilled in and completed this afternoon on the Nick Veeder farm near the refinery. 'This is Uncle Sam Refinery Farmers' Well No. 76. The well starts off at 150 barrels the first twenty-four hours, is high-grade oil, has forty-seven feet rich pay oil sand and proves up over sixty additional sure locations in the Drum Creek holdings of the Uncle Sam Refinery Company, and increased the value of refinery proved oil properties at least 50 per cent. 'Fete, the Pennsylvania driller, who has drilled in over thirty wells in the Cherryvale and other Kansas oil fields, says this well has the most pay oil sand of any producer he has ever completed, and he is a conservative, reliable driller and knows what he is talking about.'"

Every Banker, Every Leading Merchant, Doctor, and in Fact All Cherryvale, Is Backing the Uncle Sam Company With Their Cash.

When you buy stock in this great refinery company you pay no more for it than hundreds of other investors. In Cherryvale almost every leading man in the city owns stock in the company and is working for its grand success. They paid money for the stock, too. It was not given to them like some hot-air concerns do for the use of influential names. Another fact that speaks volumes for this company is that in the last three weeks over ten different bank presidents in Kansas have taken from five to ten thousand shares each. This company never publishes the names of investors, but only mentions this as a key to investors that men of money and experience in the financial world consider this stock high grade. This company will state further that it will back all the advertised statements of the company, so if you are a friend of the company and hear some one ridicule some statement in this ad, just tell him to put up some money and come to Cherryvale and the company will take pleasure in proving every advertised claim or statement.

Maximum Freight Rate Law Passed in Kansas Is a Clincher in Favor of Both the Producer and Consumer of Oil. Other States Will Follow Soon.

It is no longer possible for railroads to go into combines in Kansas with the standard oppressor and make the independent companies pay the oppressor's freight, as they have sandbagged people in other States and are still doing. In Kansas to-day there is a maximum freight rate on oil which although reasonable will be made still lower when the next Legislature meets if not in a special session before two more years roll around. This same law in time will be passed in Missouri, Nebraska, and Oklahoma and other States, for this law enables the people to secure their refined oil at reasonable prices. Why should the taxpayers of Missouri, Oklahoma and Nebraska be held up by the Wall Street plunderers when it lies within their power to help themselves? However, the Uncle Sam Company is banking only on what it is sure of. It has the great domain of Kansas to distribute its refined oil and with a pipe line to the water front can reach millions of inhabitants along the river cities, even though the interests of the adjoining States are not protected by maximum freight rates. The Uncle Sam Company now has stockholders enough in the adjoining States to bring strong influence to bear in legislative halls. When you buy stock in this company you line up with a company that is strong enough to protect your interest.

Pumping Station on the Kansas City Pipe Line Will Be Near Garnett, Kansas.

Long before the pipe line is completed to Kansas City, and in fact, by the time it reaches the pumping station that will be located near Garnett, Kans., you will see investors rustling to secure this stock at even 30 cents per share. Why not get in on practically the ground floor now at 8 cents per share and secure the advantage of the great and increasing value that is sure to come?

Personnel of the Company.

James Ingersoll, President.
J. H. Ritchie, Vice President.
H. H. Tucker, Jr., Secretary and Treasurer.
The above men promoted and placed on a dividend-paying basis the great Publishers' Oil Company of Cherryvale. The great bulk of the stock of the Publishers' Company was sold from 8 to 12 cents per share. This stock steadily advanced until it reached 35 cents per share and was taken off the market, and you can not buy out a single one of the above men to-day even at \$1.25 per share.

HOW TO SEND MONEY.

Make your checks, drafts or money orders payable to The Uncle Sam Company or to H. H. Tucker, Jr., Secretary. Write your name plainly, tell us how, or to whom you want the stock issued, and we will forward stock by return mail, and also send you weekly report thereafter, thus keeping you fully posted. Address H. H. TUCKER, Jr., Sec'y., Cherryvale, Kansas.

NOW IS THE TIME TO BUY YOUR STOCK

For a few more days the Uncle Sam Company will sell Treasury Stock as follows:

500 Shares,	\$40.00	2,500 Shares,	\$200.00
1,000 Shares,	\$80.00	5,000 Shares,	\$400.00
1,500 Shares,	\$120.00	10,000 Shares,	\$800.00
2,000 Shares,	\$160.00		

The Stock is Non-Assessable, and the par value is \$1.00 per Share.

The time to invest in a company is when that company is selling its ground floor stock. When you buy stock in the Uncle Sam Company at \$80 per 1,000 shares, you pay no more than hundreds of other investors. The company is strong now, and is hourly growing stronger. By September 1st you will see this stock up close to the dollar mark. Why not help yourself, and also this company, by remitting to-day for at least 1,000 shares of stock?

INSTALLMENT OFFER GIVES EVERY MAN A CHANCE

The Uncle Sam Company would rather have ten men go together and take one thousand shares each than to have a few men take a large amount of the stock. The company wants men who have a vote and who will stand by the company when it has criminal discrimination to contend with. Better see your friends and raise a club and take ten, fifteen or twenty thousand shares right now. Subject to raise without notice the company will sell stock as follows on installments:

500 shares \$5 cash, with 5 monthly payments of \$8.	4,000 shares \$40 cash, with 5 monthly payments of \$64.
1,000 shares \$10 cash, with 5 monthly payments of \$16.	5,000 shares \$50 cash, with 5 monthly payments of \$80.
2,000 shares \$20 cash, with 5 monthly payments of \$32.	10,000 shares \$100 cash, with 5 monthly payments of \$160.
3,000 shares \$30 cash, with 5 monthly payments of \$48.	20,000 shares \$200 cash, with 5 monthly payments of \$320.

EIGHTEENTH ANNUAL MEETING KANSAS STATE DAIRY ASSO- CIATION.

(Continued from page 452.)

growing the crop, a careful farmer should be almost as sure of establishing a successful stand of grasses or alfalfa as the average farmer is of getting a stand of wheat or oats. Many may not agree with me in this statement, since failure to get a good stand of grasses or alfalfa has often been the experience of many farmers. It is my judgment, however, that these failures are often due either to poor seed or to carelessness on the part of the farmer in not preparing a proper seed-bed.

Good Seed.—In order to grow any crop successfully it is necessary to plant good seed, and this is especially true of grasses and alfalfa. Of all seeds, grass-seed is perhaps more apt to be poor in quality and low in vitality and more mixed with impurities than the seeds of any other crop grown by the farmer. It seems hardly necessary to discuss this, point since every farmer knows that it is necessary to sow viable seed if he would get a catch of grass or alfalfa; but many are careless; much poor seed is sold and sown, and costly failures result. Sometimes it is not possible to purchase first-quality seed of some kinds of grasses, but usually reliable seedsmen sell different grades of grass-seeds or alfalfa and clover, making a lower price for an inferior grade of seed which they will not guarantee.

In order to save a few dollars the farmer purchases a poor quality of seed, with the result that not only does he lose the money invested in seed, but the work and expense of planting the seed is a complete loss when he fails to get a catch or stand.

It is often difficult to judge grass-seed or alfalfa as to its vitality. Bright, clean, heavy seed, however, may usually be safely sown; but the only reliable way to determine its vitality is to test its germination. This can be done by planting the seed in soil, or a simple and handy method is to use a small box, place several folds of wet paper in the bottom of the box, over it sprinkle the seed, and cover again with several folds of wet paper; close the box and set it in a favorably warm place. Examine the seed in about three days, and remoisten the paper if necessary. At the end of five to seven days the viable seed should have germinated, and the percentage of germination may be calculated. A large percentage of germination during the first three to five days indicates a strong, vigorous seed, while a slow, weak germination indicates seed low in vitality which may not germinate when planted except under the most favorable soil conditions. A low percentage of germination but fairly quick and strong indicates a mixture of good and poor seed; and such seed may be sown, but more seed will be required per acre to insure a stand.

Grass-seed, alfalfa and clover should be carefully examined for impurities, and if foul weed-seeds are present they should be removed before seeding. The parasite dodder is now appearing quite extensively in alfalfa-fields. This is a dangerous pest and it is usually considered unsafe to sow clover- or alfalfa-seed infected with dodder; but by careful cleaning, using a dodder sieve, the dodder, which is only about one-half as large as good plump alfalfa-seed, may be removed, leaving only the choice, clean, plump, alfalfa-seed.

Do not sow poor alfalfa or grass-seed. Purchase the very best grade of seed which the seedsmen offer for sale, even at an advanced price. It is usually better to delay sowing a year rather than to run the risk of loss by sowing an inferior grade of seed.

Time of Seeding.—Grasses or alfalfa may be seeded either in the spring or early in the fall. Perhaps as a general rule spring-seeding is the safer, although fall-seeding has its advantages. If foul land is seeded in the spring, the weeds are apt to grow in such abundance as to smother out the young grass- or alfalfa-plants; but if such land is sown in the fall, the weeds will do little injury, merely

serving as a cover during the winter, and if the grass or alfalfa makes a good start the crop readily outgrows the weeds the next spring. Again, by spring-seeding practically a season is lost in which no crop is produced by the land; while if a successful catch is secured in the fall, several crops of alfalfa or a good crop of hay may be harvested the succeeding year, thus giving no loss of crop.

If the fall is unfavorable for starting the seed then it is unsafe to sow, and this is one of the reasons why spring-seeding may be preferable to fall-seeding; the spring usually offers a favorable time to germinate the seed and start the young plants. I prefer to sow all grass-seeds as early in the spring as the ground can be put into good seed-bed condition. None of the common grasses are injured by frost, and the earlier the seed can be sown in favorable seed-bed, the more likely the grass is to start and make a good stand. With alfalfa there is some danger of the earliest seeding being destroyed by frost; although, as a rule, I prefer to take the chances of frost by early seeding rather than the chances of dry weather, hard rains, and hot winds, which are apt to destroy the later seedings.

Seed-Bed.—Next to good seed, the seed-bed is the most important factor in establishing a good stand of grasses and alfalfa. An ideal seed-bed for grasses should not be too deep and mellow; rather, the soil should be mellow but finely pulverized only about as deep as the seed is sown, while below the seed the soil should be firm (but not too hard and compact) making a good connection with the deeper subsoil. This offers the most favorable conditions for the germination of the seed and the growth of the young grass or alfalfa plants. The firm soil below the seed allows the capillary moisture to be drawn up to the seed, while the mellow soil above the seed offers the most favorable condition for the warming of the soil and for the oxygen of the air to reach the seed; and these three factors, moisture, heat and oxygen, are essential for the germination of all seeds. Meanwhile the mulch of mellow soil acts as a blanket to keep the moisture from escaping, and at the same time gives the most favorable conditions for the delicate little plant to unfold and push upward into the air and sunshine. Also, the firm subsoil gives the proper root hold and environment which conduces to a rapid and strong growth of the young roots. Grasses and alfalfa are not only much more likely to start poorly in a deep, loose seed-bed, but even after starting the young plants are much more likely to "freeze out" in winter or "burn out" in summer than will be the case in the shallow firm seed-bed as described above.

I can not here go into detail regarding methods of preparing the seed-bed for spring seeding. An inexpensive and yet practically ideal seed-bed may be prepared by simply disking and harrowing corn-stubble land; and even cane, Kafir-corn, or grain-stubble land may be prepared by simply disking and harrowing—this method being preferable to plowing, where the plowing must precede shortly the seeding of the grass or alfalfa. A piece of early fall plowing may be prepared for spring seeding by disking or harrowing. For fall seeding a proper seed-bed may often be prepared by disking wheat stubble; or grain stubble may be plowed immediately after harvest, and the land cultivated at intervals in order to firm it and clear it of weeds, seeding the land about the last of August or the first of September.

Cow-peas or soy-beans are excellent crops with which to precede the fall seeding of grass or alfalfa. In a favorably moist fall grasses or alfalfa may be seeded on corn-stubble land from which the crop has been cut and removed sufficiently early in the season so that a seed-bed may be prepared by the first of September.

Some very compact, heavy soils inclining to gumbo or hardpan may require deep loosening of the soil previous to seeding down to grass or alfalfa, in order to produce the most successful crops; but if such deep loosening is necessary, it should precede

the sowing of the alfalfa or grass at least several months, in order that the soil may settle and get into good seed-bed condition before seeding.

Amount of Seed, Methods of Seeding, Etc.—The amount of seed of grasses and alfalfa which it has usually been customary to sow are much larger than should really be required to secure a good stand, provided the seed is of good quality and sown in a favorable seed-bed. It is not now considered necessary to sow from 20 to 30 pounds of alfalfa-seed per acre. Several of the large alfalfa-growers in the State are now seeding only 10 to 12 pounds of alfalfa per acre. At this station we secured an excellent stand of alfalfa in the spring of 1904 by sowing 12 pounds of seed per acre. Mr. C. B. Daughters, Manhattan, Kans., secured a splendid stand of alfalfa on his Blue Valley farm near Manhattan, in the spring of 1903, by sowing 8 pounds of seed per acre.

At the 1904 meeting of the Kansas Improved Live Stock Association, Mr. C. E. Sutton, of Russell County, stated during a discussion on this subject that he had secured a good stand of alfalfa by sowing only 6 pounds of seed per acre. Col. J. W. Robison, Towanda, Kans., who grows more than 2,000 acres of alfalfa on his large farms in Marion County, stated at the same meeting that he was then seeding 15 pounds of alfalfa per acre, but that he intended to reduce this amount to not more than 10 or 12 pounds of good seed per acre. And so throughout the State I have found other farmers who practice seeding from 12 to 15 pounds of seed per acre, while formerly they used 20 to 30 pounds.

As to how much grass-seed should be sown depends somewhat upon whether the grass is to be used for seed-production, for pasture, or for meadow. If the purpose is the production of seed, the grass should be sown thinner than for pasture or meadow; while for immediate use as pasture a larger amount of seed is required than if the purpose is the production of a meadow. For seed-production some recommend to sow only 12 to 15 pounds of meadow fescue per acre; the usual amount recommended for seeding is 25 pounds per acre. At this station it is our practice to sow 14 to 18 pounds of good *Bromus inermis* seed per acre.

The amount of seed which it is best to sow may also vary with the season. A good old Scotch neighbor and relative who resided near my boyhood home in Wisconsin, when asked how much clover-seed to sow to get a good stand, answered: "We'll, in a gude season a very little will do, and in a bad season it don't make much difference." It is probably true that in a dry or unfavorable season more seed should be sown; but it is possible, as I have stated above, by sowing an average amount of good seed, at the right time, in a properly prepared seed-bed to secure a successful stand of alfalfa, clover, or almost any kind of common domestic grass even in a season which is considerable unfavorable for starting these crops.

At this station we usually practice the broadcast method of seeding grasses and alfalfa, and with good success, using the little wheelbarrow seeder. In fair weather a practiced hand may do nice work in sowing broadcast by hand. If the seeding is done with the drill, care should be taken not to plant the seed too deep. Grass-seed sown early in the spring will often start best when it is only barely covered with soil; and when seeded with the drill, common grasses and alfalfa-seed should not be covered with more than one to one and one-half inches of mellow soil; and if the soil is pressed over the seed, a covering of one-half inch is ample.

After Treatment.—After seeding, little more can be done for the new crop the first season than to mow the weeds two or three times to keep them from smothering out the young grass or alfalfa plants. It is best, especially in the early part of the season, not to mow too low; raise the sickle bar four to six inches high and clip the weeds but leave the larger part of the foliage of the grass or alfalfa uncut. If

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the young alfalfa or grass plants are cut back severely in the early part of their growth, before the plants have become well rooted, many of the young plants may be injured or destroyed. When alfalfa has become well established, rather frequent, close cutting seems to favor its rapid and rank growth, but this is not true when the plants are starting.

Nurse-Crops.—In the above discussion no reference has been made to the use of nurse-crops in seeding grasses. In the Middle and Eastern States, and even in Eastern Kansas, it is the practice to sow certain grasses and clover with different kinds of grain as nurse-crops. This is often a safe and practicable method in regions of plentiful rainfall, but generally throughout Kansas the surer method is to seed alone, or without a nurse-crop, both alfalfa and all the common grasses adapted for growing in this State.

Farm Dairying Conditions.

E. S. ENGLE, ABILENE, KANS.

Had we among us more active men as workers we would not speak of present dairy conditions in alluding to Kansas dairymen, but instead, would look with pride upon the strides and advancement on our dairy farms. It affords us pleasure to see among us the active, enthused, commercial end representing this association; but for every commercial man there ought to be 50 or 100 active or practical dairymen to do justice to the great cause we try to represent.

It takes a good judge of a horse about two minutes or less to decide on the value of a horse. So with the present dairy conditions—one can know them the moment he opens the doors to the cow's apartments—almost invariably before he gets to the farm-separator room and can-washing department—he will make no mistake. In judging the present conditions of our dairy business, you will, I trust, allow us to apply this matter personally.

A lover of fine horses at one time felt the unsafe financial condition of his business, having slighted the dairy business; so he set to work to improve the situation, and gave the important part of the horse-section to a trustworthy hired man, and himself assumed supervision of the dairy department. And, getting along very nicely, his devotion and enthusiasm soon turned largely in favor of the dairy cow. And by enthusiasm in our dairy conditions so that they will bear inspection and help to swell the bank account, rest assured they will not become a drudgery, but an elevating, stimulating feature in the happy, Kansas dairy home. We all know that there is needed more stimulant to the rising generation of the rural homes. Allow me to say that unless dairy conditions move upward to more systematic and modern measures, many of our boys and girls will look for other stations in life, and you would not for a moment blame them. Many of them have been taught to do a long day's work on the farm, and tired and worn, the dairy work comes in with its extra weariness and drudgery—shame to those conditions when they come as a steady diet. Show me a district where dairying has been practiced for ten or fifteen years with some enthusiasm and I will show you a locality in which will be found many attractive homes, fine cattle, intelligent and industrious young people, proud of their business.

The day is fast approaching when the renter of a farm will be under disadvantage owing to the fact that he can not maintain the fertility of the soil without dairying. To me the vital question is, what are we doing to properly provide for the development of our dairies? With our great natural advantages we surely ought to be able to produce butter-fat at an immense profit. Many of us are doing it. But some are not awake, or lack enthusiasm. With one-half the push and business tact that our commercial men show in their lines, we as dairymen would stand much higher in this great cause, and our boys and girls would be looking around for a location near

us where they could follow our steps. President Roosevelt, at the head of our great Nation, is presenting the most successful machinery for the dairy farming, and that is, more boys and girls in our homes, under good influence, educated along practical lines, from Christian as well as from industrial standpoints. This will in a few years bring a marked change that will surprise us who shall live ten to fifteen years; so let us not borrow any trouble but try to develop and improve conditions with more enthusiasm along the lines of a higher state of feeding.

Thirteen years ago, feeling the need of a good, succulent winter feed for my dairy cows and calves and for the baby-beef—corn not fully up, and sometimes a failure—I put in a 180-ton silo—not a modern tank-silo, but it was the strongest stimulant in my livestock industry, especially the coming baby-beef and the coming dairy heifer. I found much more gratification, satisfaction, and ease in producing a monthly income of \$75 to \$100 with 15 to 20 cows, at a time when the hard work was practically all done on the farm, only to care for the dairy and general farm chores than to produce \$50 to \$60 under former conditions. In those days alfalfa was not fairly tried only on a small scale.

Does the alfalfa supplant the silo? I say, no—emphatically, no! Because we have found it only puts us on a safer plane. By the use of ensilage with good alfalfa hay and no or very little grain-ration, it puts the dairy cow to her best, other conditions being equal. After using silage for two years, I became venturesome enough to write to the Creamery Package Mfg. Company in regard to a baby separator; upon which, our kind friend, Mr. Ed. Davis, was glad to visit me, and of course encourage me, as he will all of you, in way of buying supplies. He only made one mistake—he should have carried the silage proposition on his heart and urged it upon the farmers and dairymen with the hand-separator cause. Then the great lull in the present dairy conditions would not have come upon us. But why should one thought of discouragement touch us? With the present natural advantages of our great State—with the facilities brought about by our Kansas creamerymen, which could not have developed in any other way, we dare not think of discouragement.

Professor Curtis has touched upon a most vital point of interest to all dairymen as well as creamerymen, and that is, direct legislation in the interest of the State. We all remember what has been done in the past by a unanimous effort. The present dairy conditions require standing together on the part of the dairymen and standing shoulder to shoulder with the creamerymen. Then we will become a vast army of social and commercial interest second to no other in our State.

Feeding Test With Silage.

OSCAR ERF, PROFESSOR OF ANIMAL HUSBANDRY, KANSAS STATE AGRICULTURAL COLLEGE, MANHATTAN, KANS.

A feeding test with silage has been made the past winters. Its object was to answer the question as to how essential and to what extent it is necessary to feed concentrates to dairy cows if a good quality of silage could be fed in connection with alfalfa or clover hay. Many practical feeders are claiming that with this character of roughage very little grain is needed.

The high price of most concentrates has really made the production of milk less profitable than heretofore if the usual method of feeding is employed. The following experiment was planned and carried out to determine the real value of the above statement and to show whether the results claimed for unrecorded work were really true.

The plan of the experiment was as follows. The cows used were divided into four lots. Lot 1 was fed corn silage, alfalfa hay, and the usual grain ration of corn-and-cob-meal and wheat bran for six weeks beginning December 7, 1903, and ending January 18, 1904. Lot 2 was fed corn silage and

alfalfa hay, getting no grain for the same period. At the end of the period the two lots exchanged rations, lot 1, which had received grain in addition to the silage and alfalfa hay getting no grain for the remaining six weeks, and lot 2 receiving the normal ration of grain for the second six weeks. Lot 3 was fed the usual ration of grain with alfalfa hay and corn silage for roughage through the whole twelve weeks. Lot 4 was fed corn silage and alfalfa hay with no grain for the whole twelve weeks.

The aim of the first two lots was to determine the immediate effect and the comparative value of the two rations. Lots 3 and 4 act as checks and give us an opportunity to observe whether the milk-flow can be maintained for an extended period without grain and also whether the cows of lot 4 show equal vigor with lot 3, which received the normal ration through the whole period.

The lots were composed of six cows each at the beginning of the experiment and were divided as nearly equal as possible taking all condition into consideration. It became apparent early in the test that two cows were included which would not continue in milk through the whole period. They were accordingly dropped and lots 2 and 4 were continued with only five cows. This made it necessary to calculate all results on the basis of averages per cow.

TABLE I.

Lot.	Ration	Cow number.	Grade
1. Normal ration first six weeks. No grain second six weeks.		70.....	Grade Shorthorn.
		242.....	Grade Jersey.
		901.....	Red Polled.
		202.....	Ayrshire.
2. Alfalfa hay and ensilage. No grain first six weeks. Normal ration second six weeks.		50.....	Grade Guernsey.
		77.....	Grade Guernsey.
		20.....	Grade or scrub.
		902.....	Red Polled.
3. Normal ration through whole twelve weeks.		201.....	Ayrshire.
		131.....	Grade or scrub.
		66.....	Grade or scrub.
		130.....	Grade or scrub.
4. Alfalfa hay, ensilage and no grain through whole twelve weeks.		241.....	Grade Shorthorn.
		1002.....	Shorthorn.
		246.....	Grade Jersey.
		168.....	Grade or scrub.
		129.....	Grade or scrub.
		601.....	Holstein.
		47.....	Grade Guernsey.
		161.....	Scrub.
		23.....	Scrub.
		86.....	Grade Jersey.

In order to make any comparison as to the shrinkage in the flow of milk which took place as the experiment progressed it was necessary to determine the average daily yield of milk per cow of the different lots at the beginning of the experiment, at the end of the first six weeks and at the end of the second six weeks. To overcome any abnormal fluctuation which might occur an average of six days' yield is taken in each case. The average daily yield per cow for the first six days of December is taken as the normal yield at the beginning. In like manner the average daily yield per cow for the six days ending the first six weeks and a like period at the end of the second six weeks is taken as the normal yield per cow at those two periods. The figures obtained are as follows:

TABLE II.

No. of Lot.	Dec. 1, 6, inclusive, lbs.	Jan. 12, 17, '04, inclusive, lbs.	Percent increase.	Feb. 24, 29, inclusive, lbs.	Percent decrease.
1.....	27.935	24.63	11.9	18.35	25.5
2.....	28.03	20.886	25.5	20.11	3.69
3.....	21.71	19.616	9.6	17.358	11.51
4.....	19.56	18.472	5.57	17.866	19.4

While the four lots are not equal as

to milk yield it will be noticed that the lots which are directly in comparison, viz., one and two and three and four are very nearly equal in average yield at the beginning. The remainder of the table shows the average daily yield at the end of the first six weeks for each lot and for the end of the second six weeks. The table also shows the per cent decrease.

At the end of the first six weeks it will be seen that lots 1 and 3 which were receiving grain in addition to the roughage of alfalfa hay and ensilage decreased 11.9 per cent and 9.6 per cent respectively, while the no-grain lots two and four, decreased 25.5 per cent and 5.57 per cent respectively. Lot 4 is an exception to the rule as observed in the other three lots, showing the least decrease of all. In comparing lots 1 and 2 the lot on roughage alone shows a percentage shrink in flow of over double that of the lot receiving grain in addition. With lots three and four the lot without grain shows a very small decrease, in fact is much smaller than the normal decrease due to advance in the lactation period. With these cows at least, cutting off the grain and requiring them to gather the nutrients required from roughage alone did not seem to effect the yield of milk.

The end of the second six weeks shows lot 1 with a decrease of 25.5 per cent and lot 2 with only 3.69 per cent. This indicates an increase really for

lot 2 as the normal monthly decrease due to advance in lactation period is about 9 per cent. The percentage decrease for lot 1 of 25.5 per cent plainly indicates the effect of taking the grain away from the cows. Lot 3 shows a normal percentage decrease, while lot 4 shows a percentage decrease of more than the normal amount. The milk-flow in lot 4 was kept up remarkably well considering that the cows received no grain for the whole twelve weeks. A ration of good corn silage and alfalfa hay undoubtedly supplies sufficient nutrients to produce a fair quantity of milk and will maintain the milk-flow through the lactation period remarkably well. It was evident, however, that more milk could be produced by the addition of some concentrates to the ration. This was especially noticeable in the highest producing cows of the herd. Cows of moderate capacity for converting feed into milk were not seriously affected by the withdrawal of the usual concentrates from their rations. The cows having large capacity (Continued on page 462.)

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MISSOURI STATE DAIRY ASSOCIATION.

(Continued from page 451.)

cleanliness about the dairy any more than is cold storage. Ordinary pasteurization may be effective in killing a large percentage of the bacteria present, but it can not eliminate the bad effects that have already been brought about previous to pasteurization. Furthermore, unless great care be taken in the process of pasteurization, it may lead to very disappointing results. In the first place, the temperature must be sufficiently high to kill the bacteria, but not so high as to materially change the physical properties of the milk, otherwise the milk may have a cooked or scalded flavor. A temperature of 158° F. will sometimes produce this condition, if it has access to the milk during heating.

The practice of centrifugal separation is thought by some to be effective in purifying milk and thereby delaying the souring process. This subject has been worked on by Professor Eckels at the Iowa Station, and he found that from 37 to 55 per cent of the total number of bacteria of the milk was thrown out with the slime by the centrifugal force, but with only one generation of offspring the number of bacteria was brought back to what it was originally and his conclusions were that the centrifugal separation did very little in improving the keeping properties of milk.

Cheese-Making.

U. S. BAER, MADISON, WIS.

Less than a generation ago the southern and southwestern portions of my native State were given over to an industry, which in its glittering prospects of wealth, lured the venturesome spirit from all portions of the globe; and the click of the drill, the boom of the blast, and the hustling activity of a mining town all told of the feverish industry that permeated the time. Fortunes were made and unmade in an incredibly short length of time, by a lucky or unlucky stroke, as the case might be. But the years have slipped by and the ever-changing hand of destiny has transformed the scene. Instead of the jigs, smelters, and refineries, we have the factories and farms, the cheese-vats and the churns, which are producing the revenues of the country, and the Babcock test instead of the assay is determining the wealth of the products.

Yet a little while with the same devastation of the magnificent forests of Wisconsin, and our lumber kings will be no more, and left behind all through the northern and central portion of Wisconsin will be a pathway strewn with a range of stumps, left bleaching in the summer sun, to be transformed into meadow and pasture lands teeming with flocks and herds, all the landscape to be dotted with creameries and cheese-factories; and from abandoned lumber-camps and former timber-districts are to abound prosperous farms and homes with the advantages of education and lecture and social life, such as you now enjoy, fitting the people for the highest offices of American citizenship.

Wisconsin to-day produces more than one-fourth of all the cheese made in the United States. Our 1,800 cheese-factories made over 100,000,000 pounds of cheese last year of which about 70,000,000 was American Cheddar and 30,000,000 was the Swiss, brick, Limburger, and other varieties.

The State of Missouri is not only fitted for the production of one kind of cheese, but from its variety of soil and differences in elevation, it affords great opportunities for making a number of varieties, and in consequence of those advantages they may be made of a good quality. Different varieties of cheese have their origin because of the surroundings in which they originated. For instance, in the low, flat meadows of Holland, the Limburger cheese had its birth. And when they came to make Limburger cheese in America, they found the same kind of locations especially fitted for the production of this cheese—low valleys, abundance of rich grass, plenty of water—the same as in Holland.

Take it on the other hand. The Swiss cheese is a product of a higher elevation; it became what it is because of its circumstances and surroundings, high mountains, no highways, no railroads. In order to dispose of the milk-product it became a necessity to make it into a kind of cheese that would bear transportation, have long-keeping qualities, keeping for years in good condition. When they came to transfer that industry to America, they found the same surroundings that are not so well fitted for general farming; where the fields are not cultivated or plowed at all; where the hillsides are so steep that the soil will wash away; and where there is plenty of rock near the surface, especially limestone rock, and where good springs of water abound—they found these to be especially favorable to the production of fancy Swiss cheese. There are a number of such places in the States but the greatest body of land lies in Southwestern Wisconsin. That tract of country never has been covered by the so-called drift formation. The hills rise in great waves and billows, with narrow valleys between, underlaid hundreds of feet, with layers of limestone, frail and crumbling, affording the best kind of soil; and that is the home of the Swiss cheese industry of America.

Now our Wisconsin people make lots of brick cheese, and when they want something especially excellent for favored customers they send to Dodge and adjoining counties for it. There is something in the soil, the spring water and the grasses in that particular section that is especially favorable to the making of brick cheese. Edam and other varieties also require special conditions. Therefore, it is wise when a certain kind of cheese has been successful in one locality not to try to change.

It is a good thing for people to devote themselves to the manufacture of the kind of cheese that their natural conditions and their experience favor. For instance, it would be almost impossible to produce a good quality of Swiss cheese in the lake regions where we produce such excellent Cheddar cheese. It is a matter of soil and water, the kind of milk and other circumstances.

There are many branches of science which are intricate and very difficult to acquire and understand, and, if there is one more difficult than another, the manufacture of cheese seems to surpass them all. When we consider the effect of fermentation and bacterial influences, the unknown conditions of milk as received at the factories, the hidden power of rennet action, and the intricate combinations which any or all of these form to effect the final result, any attempt to fully describe and attach the proper importance to all the facts and principles which underly cheese-making is an undertaking beyond the knowledge and experience of the author of this paper.

I shall, therefore, describe an ideal American Cheddar cheese for the home or domestic market and then proceed to describe briefly how it can be best produced.

The recognized peculiar and varied tastes of cheese-consumers call for many different characters of cheese; but the cheese that commands the highest price in the markets of to-day is one of a clean, nutty flavor, flinty and close in texture, with a firm, meaty, solid, rich and buttery body. Cheese of such a character will keep a long time in prime condition, and if cured under the most favorable temperature will improve in quality up to twelve or more months.

Fancy cheese can not be made from filthy sour milk. In the handling of pure sweet milk the whole mass collected in the vat is gradually warmed up to 85° F., when the milk is tested (by means of the rennet test) for ripeness, and if sufficiently ripe the color and rennet is added at once. If the milk is sufficiently ripe, 1 per cent starter (commercial pasturized) is then added, and the milk allowed to stand at this temperature until in it a sufficient amount of acid has developed so that the curds will show one-eighth

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of an inch of acid when applied to the hot iron within two hours from the time of adding the rennet, at which time the whey should be removed.

The color should be thoroughly incorporated with the milk before the addition of the rennet. The rennet should be added in sufficient quantities to cause the milk to coagulate ready for the knife in from twenty to twenty-five minutes. The rennet should be diluted with fifty times its own bulk of cold water and added to the milk in such a way that the coagulation will be uniform throughout the whole mass.

When the curd breaks clean across the finger and is sufficiently firm to stand up before the knife, it is ready for the cutting. Great care should be taken to secure an "even cut" so that the curd particles will be uniform in size.

We want every piece of curd in the vat warmed alike. We want the center of each piece just as warm as the outside. As curd is a poor conductor of heat, this condition can be secured only by slowly and steadily raising the heat. The effect of heating rapidly is to cook the outside of the larger pieces of curd faster than the inside. This contracts the surfaces and confines the whey in the center. It would be preferable, if possible, to heat the inside of the cubes the faster, driving the whey to the surfaces; we do not want to do either. We want an even cook.

One of the most important steps in the process of cheese-making is to know when a curd is properly cooked or firmed. The real condition can hardly be described in words, but the maker must learn to recognize it by experience. The curd should not be salty and soft, but springy and elastic. The most convenient and sure test is to take up a large double handful of the curd and compress it dry of whey. After a minute remove the pressure; if it falls apart readily and the particles resume their former shape and size, it is very good evidence that the curd has been properly firmed.

We should then have one-eighth of an inch acid on the curd and draw the whey. Careful attention ought to be given to the work at this time. When the whey is allowed to remain too long with the curd, excess of acid is developed, and a dry, mealy cheese is the result. There will also be a great loss of fat. If the whey is drawn too early, a soft, mushy article will be produced. The necessity of diligence and care in this branch of cheese-making is of vital importance in order that the separation of the whey might be the most perfect possible.

From thirty-five to forty-five minutes should be consumed in raising the temperature to 99° or 100° F., as the case may be. To assist the curd in heating evenly and keep it from matting together, it should be stirred from the time it is cut till the heat is shut off. The automatic curd-agitators now on the market are preferable to the hand-rake commonly in use.

When one-eighth inch of acid has developed in the curd, the whey is drawn and the curd dipped upon the racks where it is left to drain and mat, having a uniform depth of about five inches. If the curd has been properly firmed in the whey, it will not require any stirring at the time of racking, for this means an additional loss of fat and solids. As soon as the mass is matted sufficiently so as to admit of its being turned over without crumbling, it should be cut into blocks of

convenient size for handling and turned over, repeating the process every few minutes, always with a view to perfect drainage. The best textured, close, firm-bodied cheese are those made from curd that have been piled but very little, or not at all. If the curd is piled, it is important that the outside pieces be folded into the center of the pile each time to insure an even color and uniform temperature of from 96° to 98° F., throughout the mass. When the curd is sufficiently ripened or matured for milling it becomes stringy or meaty, and when pulled apart splits instead of breaking. In cutting through the mass the color should be even, with no white spots showing. At this stage of the process when the curd is in normal condition it will probably have at least one inch of fine silky threads when applied to the hot iron. The acid should be well developed at this stage of the process, but the amount of acid is not so important as that the curd should be meaty in texture.

Knife mills ought always to be used, as peg mills tend to bruise and tear the curd, injuring the texture and causing unnecessary loss of butter-fat.

After the curd is ground, it is kept sufficiently stirred to keep the particles from matting together again. A further maturing of the curd takes place, during which it takes on a peculiar flavor resembling the odor of clean, rich, ripe cream when ready for the churn. It is extremely difficult to convey in words to the minds of others a definite idea of that peculiar condition characteristic of curd when ready for the salt. However, resort is had to the hot-iron test which furnished us with two species of evidence. That if when a portion of curd is applied to the hot iron it will string nice and silky, and if when so applied it emits an odor like nice toasted cheese and does not smell like burnt hair, it is usually ready for salt. Still these tests are not absolutely reliable in all localities and under all circumstances. Another method of gaining the desired information is by the sense of feeling and the condition of the moisture which oozes out between the fingers when squeezed in the hand. The curd when ready to salt should not feel harsh, but soft and velvety and will exude a moisture of half fat and half whey. When salted, a clear brine should run from the curd. The temperature of the curd at time of salting should not exceed 90° F. After the salt is added the curd should be spread out thin, so that it will cool off, and when it is put into the press should be at a temperature of from 78° to 85° F. If the curd is put to press too warm, the fat is more easily pressed out and lost.

With the majority of the rank and file of cheese-makers it is not necessary that much should be said about the hooping and bandaging of cheese. The careful painstaking maker is an artist in a way and takes great pride in turning out a neat-appearing cheese, symmetrical in form, neatly bandaged and perfectly closed on its surface. Still we often—too often—find makers who are slack in this very important part of the work. They have more or less difficulty in getting their cheese properly closed. This is true of some makers even when the curd is in the most perfect condition for pressing. Through negligence they permit the press-cloths to become stiff and full of whey while the hoops are not always

kept scrupulously clean. No amount of pressure will secure a good rind if the press-cloths and hoops are not in first-class condition. If factory operators were to exercise more care and devote more time and attention to the work of hooping and dressing the cheese, there would not be so many goods upon the curing tables with checked rinds and showing free fat under the bandages.

At the time of turning the bandages all the whey should be rinsed out of the press-cloths by dipping them in scalding water and placing them again upon the cheese as hot as possible. In the morning the cheese ought always to be turned end for end in the hoop. When taken out they should be examined carefully to see that they are perfect in shape, and all defects remedied. Then pour over the cheese again before applying the pressure water sufficiently hot to melt all free fat that may have accumulated under the circle cloth and bandage. This warming of the surfaces aids in the formation of a firm, transparent rind and prevents the cheese from checking. It also improves the appearance of the cheese.

With cheese as with anything else we must try to please the eye. Marketing cheeses that are of unequal height or lopsided from some defect or carelessness in the process of making is always poor economy.

Let us remember that cheese is an article of food, and that it should not only be put up in a neat, attractive form, but also that it should not come in contact with anything having a bad smell.

Recent experiments of Drs. Babcock and Russell have demonstrated that the quality of cheese was best when cured at temperatures ranging from 35° to 40° F., or thereabouts. Cheese cured at 50° F. was better than that cured at 60° F. Cheese cured at 60° F. was better than that cured at 70° F. This leads us to believe that in ripening Cheddar cheese, much lower temperatures than have heretofore been thought advisable may be used with very considerable success.

Now in conclusion, I will say just one word in respect to the general effect of the cheese industry and all other successful dairy business, the general effect on the country and its inhabitants.

You will inevitably notice as you leave the country in which there are no dairies and get into the dairy country, that you will find the farms better equipped, in more comfortable condition, fences in better shape, buildings larger and more comfortable both for the people and for the cattle; you will find schools and churches, business places, banks—and here is the reason for it. The dairy business is such that it requires constant everyday attention, not only during the summer time during the growing season, but in the winter time. Now when the boys are brought up under such surroundings and know that every day and every hour brings its duty, that they must, to use a much-quoted expression, live "strenuous lives," if they leave the dairy business and go into other branches they have acquired the habit of constant attention to their business, doing everything at the proper time, and I believe that if there is one class of young men more than another, that has a chance of success in any business it is those who have been brought up on a dairy farm and in the cheese business.

Real Experience in Selecting, Preparing and Handling the Jersey in the World's Fair Contest.

C. T. GRAVES, SUPERINTENDENT OF JERSEY HERD AT THE WORLD'S FAIR CONTEST.

The American Jersey Cattle Club chose as their agents to select cows to participate in the dairy contests, J. J. Richardson, of Davenport, Iowa; Geo. E. Peers, of Rochester, N. Y.; Wm. Gettys, of Athens, Tenn.; Rolla Oliver, of Dearborn, Mo.; and the writer of this paper.

That the cattle from the extreme South and the extreme North and those from the far East and great West could meet under equal conditions, it was decided to assemble them near the World's Fair grounds in ad-

vance, and the club was offered for this purpose, by Mr. A. O. Auten, his farm two miles from Jerseyville, Ill. The Auten Farm was accepted for the purpose but was without stabling for cows and the work of designing barns was begun. Mr. Auten did not want to erect a single building not adapted to high-class dairying, and desired a harmonious whole. Grade stakes were set, drains were laid, and the geography of a modern breeding and dairy plant was perfected and work was begun. A building boom in Jerseyville was at its height and not a contractor could be had at home and with considerable difficulty a force was assembled. Material came slowly and many ups and downs were experienced.

In this connection, let me correct a false impression created in the minds of readers of some of our agricultural papers through the writings of some disposed to jump at conclusions. These critics would have the public believe their accounts of the arrival at Jerseyville of the pets of millionaires in special cars, better explained by one or two of their expressions—"They travel as prima donnas and receive training such as is accorded the most skilled athletes." What can be further from the truth? With the exception of a few that came from remote sections by express, they came in barn-painted cars and most of them did not impress one as ever having seen anything extra good. The claim has been made by these critics that the Jerseys had the advantage of special care for a year before the dairy demonstration began. Any one who has done any building is kindly asked to consider the problem of building a barn the size and character of that on Auten Farm, a dairy-building to match, erect a power-house and equip with power-pump, feed-grinders, feed-cutter, install an electric light plant, erect a silo eighteen feet in diameter and fifty feet high, dig two big wells and two cisterns, lay a mile of drain-tile and about half as much iron pipe, move and remodel an old horse-barn, make new lots and haul on wagons hundreds of loads of soil, gravel, cinders, and crushed stone, put down cement walks, and a lot of other small jobs in improving such a farm, and tell the public how much time you would have out of a short spring and summer to train a lot of cows, many of which were fighting flies in short pastures more than a thousand miles from the scene of future conflict. Aside from the foregoing duties of the cow experts, we were growing ensilage more than fifty miles from Auten Farm and visiting herds in different sections of the country and having alfalfa cured and baled in Kansas and Colorado.

While the building was going on, three members of the committee were selecting cows in their respective territories. Characteristic of Mr. Richardson, he had selected a few cows and forced them on to us before we had a barn for them. We tied these "prima donnas" to the fence with such halters as one of us farmers usually give when we sell a horse, and fed them anything we had time to get between acts. Good clover hay could not be had; but with ground corn and oats, wheat bran and gluten feed which we finally procured, we began to train them for the great handicap which it proved for the Jerseys. While Rolla Oliver was the first man engaged, I was the first to enter service and the next was Harry Nedro, a boy who had grown up in the little town of Maitland, and had received all his cow-education on my little farm. He was a good pupil and took kindly to my teachings, one of the first of which was kindness—a factor of no little importance in handling a highly organized dairy cow. He was taught the value of brushing and scratching as a means of promoting the health of the cow and of winning her affections. He was taught how to go gently up into her udder for the last of the milk which contains the most fat. His eye was trained to detect any disturbance of her organization and to seek a remedy. He was taught to make a study of her likes and dislikes and when these traits were considered with his faithfulness and his willingness to

grapple with work, they made him appear fitted for such work; and for these reasons he was selected and stayed to the end and landed some of the winners safely at their home in Portland, Ore.

During May, June, July, August, and September, we were receiving cows at Auten Farm and giving them a liberal allowance of very moldy hay, ground corn and oats (half and half by pounds), ordinary wheat bran and gluten feed. They were milked at exactly the same time morning and evening and given water in the same manner and oftener when they wanted it—and the good cow that is accustomed to proper attention will show that she wants something—and last and no less important, they were kept clean and comfortable. I feel justified in taking the time to relate how these two features were provided, and express regret that we were not permitted the use of the same sort of stall at St. Louis. With that, our cows would have looked better, felt better, and done better and the labor would have been reduced. I liked the principle of the Drown stall, but not the construction; and my ideas appealed to Mr. Auten. So I took a team and went to a small sawmill fifteen miles distant on the bluffs of the Mississippi, and purchased seasoned oak, hickory and maple and took it to an old-fashioned planing-mill in Jerseyville. A model was worked out on the cut-and-try plan and stalls were made for Mr. Auten's barn in that shop. They are entirely home made even to the fastening and he told me recently that they are in perfect repair. They are the best stalls of which I have knowledge. The desirable features of this stall were apparent to all visitors to the farm and they were numbered by the hundred. We opened a visitors' register and there we find them registered from Canada to Southern Texas and from San Jose, Cal., to Berlin, Germany, many of them come attired in immaculate white, and after a thorough inspection of the plant were ready for the reception room.

Now, to the manner of selection. The cows that came to Jerseyville and St. Louis showed as many different methods as we had agents, but blanks were mailed to breeders large and small—to the millionaire and to the fellow out in the woods. Some responded and many did not; and some who had made a grand-stand play the year previous became painfully reticent. Some offered anything they owned that the committee considered worthy and were frank enough to say that they could give few figures as to the capacity of their cows, while others claimed to have crack cows, but regarded them as too valuable to risk for such work. Many had facts and figures and great cows, but they freshened at an unfavorable time of the year, and quite a few had crack cows that were not offered because they represented some other fellow's line of breeding. Some objected to contribute a candidate because they were confident the test would be run in the interest of some particular individuals. It was a Rip-Van-Winkle awakening to one who had not mingled much with the Jersey world to find so many different kinds of Jersey people, and between them all it looked at one time that twenty-five desirable cows would not be offered. But a few Western breeders who were not afraid of Missourians let us have several and gradually as the scare wore off, we were offered more than we could care for. In the preliminary selection we were governed by figures as far as possible, but personally I attached little value to many of the figures for they were mostly for a day, or rarely for more than a week; and as in other things, "The race is not always to the swift or the battle to the strong." I believe in the long-distance kind and the basis of awards was to be net profits; it was the characteristic to look for in breed, form, and lineage.

As an illustration, I will mention the selection of that wonderful little cow, Baronetti. When Mr. Hilgert was founding a herd I advised him to visit Mr. Wm. Gettys, of Athens, Tenn., and buy some helpers, as I liked their ancestry; and later I saw with pleasure

Dyspepsia of Women

ABSOLUTELY NEEDLESS AGONY

Caused by Uterine Disorders and Cured by Lydia E. Pinkham's Vegetable Compound

A great many women suffer with a form of indigestion or dyspepsia which does not seem to yield to ordinary treatment. While the symptoms seem to be similar to those of ordinary indigestion, yet the medicines universally prescribed do not seem to restore the patient's normal condition.



Mrs. Pinkham claims that there is a kind of dyspepsia that is caused by a derangement of the female organism, and which, while it causes a disturbance similar to ordinary indigestion, cannot be relieved without a medicine which not only acts as a stomach tonic, but has peculiar uterine-tonic effects also.

As proof of this theory we call attention to the case of Mrs. Maggie Wright, Brooklyn, N. Y., who was completely cured by Lydia E. Pinkham's Vegetable Compound after everything else had failed. She writes:

"For two years I suffered with dyspepsia which so degenerated my entire system that I was unable to attend to my daily duties. I felt weak and nervous, and nothing that I ate tasted good and it caused a disturbance in my stomach. I tried different dyspepsia cures, but nothing seemed to help me. I was advised to give Lydia E. Pinkham's Vegetable Compound a trial, and was happily surprised to find that it acted like a fine tonic, and in a few days I began to enjoy and properly digest my food. My recovery was rapid, and in five weeks I was a well woman. I have recommended it to many suffering women."

No other medicine in the world has received such widespread and unqualified endorsement, or has such a record of cures of female troubles, as has Lydia E. Pinkham's Vegetable Compound.

The following cows that came out of that lot: King's June Beauty, Bachelor, Juliet and Baronetti. I can see them to-day as I saw them in Mr. Hilgert's barn, the home at one time of some of the grandest cows the world has ever produced. Make a note of this for Missouri. When I went to inspect Dr. Still's offering, this same Baronetti appealed to me as his most likely candidate that could be brought to freshen at the right time. A cow of medium size, of good length and depth of body, clean, bony head, long, thin neck, thin wethers, prominent spine, long, slim tail, thin thighs, arched flank, and with a milk receptacle that attracted the eye of every visitor to the barn. This cow freshened in February and was quite close to eight months in milk when the test closed and she finished the last week with an average of a fraction more than 39 pounds per day and made 14.85 pounds fat and 25 pounds solids not fat. Her milk-yield for the eight months was considerably over 10,000 pounds and she went home better than she came. When you consider that she stood seventh in class A, you can readily understand that she is a great cow.

We began weighing each milking of every cow on her arrival at the farm and after resting from their trip, their milk was tested by the Babcock method and a great many lessons were taught. It shows how the fat in milk varies and we had to keep them up to get a line on each cow. A sample of one cow's milk tested 2.8 at one time and 6.8 the next time. We took single samples and also composite samples and found practically no difference in the tests. Abortion developed in the herd and lost to the work several of the early selections and some of our

very best cows. The list would have read different had five of these cows not aborted, for they belonged in the Eurybua-Brown Lassie class. I must tell you how the entire force was deceived in one of these cows. The transportation of these cows was a particular job and for that reason most of it was entrusted to Rolla Oliver, who had been tried out. This Portia of Prospect came in late in Rolla's care and at this time I was trying to divide the cows between the boys as near equal in merit as possible, as few changes in milkers is advisable. Portia was long and slim of body and was built for speed. We had several conferences about Portia's prospects and she seemed to be without friends. The other boys had full strings and I had decided to place her in Rolla's row for she looked mighty good on paper; but signs of displeasure could be detected and he was asked to milk her for the present, pending a solution of the problem. We improved every cow that came to us but none changed form as Portia did. She could stow away that mouldy clover in large quantities and made proper use of it. She was not rich in appearance but proved about as rich as any cow in the barn at Jerseyville. She was a heavy feeder, had wonderful digestive capacity, was a deep milker and the milk was rich—about every thing commonly found in one cow, lacking only beauty; and strange to say, since I come to think of it, she had strain in the blood of the greatest of them all, Loretta D. We wished for Portia many times when closing up the gap that the Holsteins made in the first spurt. Do not trust to appearance in selecting cows; weigh the feed to them, weigh their milk and test it. Net profit is the deciding factor. Airy's Vine Hugo gave during the 120 days 5437 pounds of milk and is credited with \$39,869 net profit. D's Brown Lassie yielded in the 120 days 224.3 pounds less milk and made \$8.00 more profit. Lassie Raster Pogis was our smallest milker and gave during the 120 days 4313.8 pounds of milk, while Chroma 3rd of Hood Farm gave 5080.8 pounds of milk, a difference in Chroma's favor of 767 pounds of milk; but Lassie Pogis exceeded Chroma \$7,945 in net profit.

Bear in mind that the cows arrived at Jerseyville one or more in a bunch, and about the first of October, 1903, the extreme eastern cows arrived in charge of "old reliable," the faithful Scotchman, Jerry Keohane, being needed before it was considered wise to ship the cows so far by freight on account of the heat and distance. Here permit me to emphasize the importance of good care in the cow business and the moment we improve this branch of dairying just as quickly will our cows begin to improve in work and appearance. I learned this on a family cow the first article purchased when we began our present home. Do not forget what I said about buildings and the numerous other things that demanded our time and attention; remember that some of the cows came in May and more came in the fall. Bear in mind that some failed to conceive; others aborted and were promptly disposed of, so that only sixteen of the twenty-five ever saw Jerseyville, the other nine having been shipped direct to the Exposition grounds during the winter. While at Jerseyville we baled 100 tons of straw and some inferior clover and on November 19, 1903, we finished loading fourteen cars with our two bulls, cows, horse and other equipment. We arrived at a cold and cheerless unfinished barn the following evening. We had to dig our way into the barn provided for us, and when the demonstration began the barn was not complete. The remainder of the cows came a few weeks later. We nearly froze before we had any way of heating our office and water and our portion of the grounds was a sight to behold till after our work had begun. We had provided plenty of feed and bedding and were able to accommodate our Shorthorn Holstein friends, for there were times that a team could not get to the barns.

Have any of you present seen up to

this time anything conducive to the skillful training of cows for a race? If we had accomplished anything in this direction it was soon to be all undone. We had selected cows that were due to freshen from March 15 to May 1, and bred the early selection as near the same as those things can be controlled, for the reason that the dairy demonstration was to begin May 16, in compliance with an agreement with the Exposition company and representatives of the various breed associations. The working dairy was not ready till June 15, and not completed at that time. We had trotted a fast heat when some of the best cows of other breeds scored for the word, but I find that I am about to skip a period that may interest some, the calving period. The cows were liberally fed up to within ten days of when they was due, and then sparingly. We fed old-process oil-meal at all times and it is especially valuable at this time to keep the voidings soft. We had a good lot of mature cows, most of which were in thriving condition and we expected milk-fever, and out of the lot of forty-two ten went down with the dreaded malady. I had seen where oxygen had been successfully used in a few cases and was prepared with an outfit. The first cow to calve was the first one to have it and she was a "corker" and an admirable subject to test the remedy. The tube was introduced into each teat one after another till the udder was filled with double-distilled air. A tape was tied around each teat to prevent the escape of the gas and then massage of the udder was resorted to; the gas was worked along up into the veins. A little later the performance was repeated and the work was faithfully pursued for forty hours before she regained her feet. She is enjoying life on a neighbor's farm to-day. Nine other cases followed this, but none were so stubborn.

We allowed each cow 30 days to get on feed and commenced taking a sample of each milking and charging her with the feed. When the committee proceeded to select twenty-five out of the lot, they were enabled to do so intelligently. This detail work called for more help and it was decided to create a new position in that of feeder. Mr. Hugh G. VanPelt of Des Moines, Iowa, had spent a summer with me and handled my Jerseys and I regarded him an excellent man along this particular line. I requested that the place be offered him, knowing that what little I knew of feeding cows harmoniously blended with his knowledge; and assisted by the faithful boys who were in close communion with the cows sixteen to seventeen hours each day, we could extract all the butter-fat and solids not fat out of the feed charged to the Jersey cows. To me the three boys was the pulse of the cows and in turn I tried to act as the pulse to the feeder. The American Jersey Cattle Club is having a very exhaustive summary of the work of all the herds that participated in the dairy demonstration, compiled in a most intelligent and convenient form and I presume it will soon be ready for distribution. It will go more into detail with reference to the Jersey herd, giving the preliminary work as well as the 120 racing period. Loretta D. milked in thirty days 1651 pounds; Diploma's Brown Lassie 1635; and others their weight in fifteen days.

Our barn was so closely surrounded with other buildings and it was so completely cut off from all south breezes that it was at last decided to install electric fans, which was done during the first ten days of the tests, and you can imagine the effect on cows of having strangers climbing over and about them, wires across their backs and under their bellies. When the fans were started some of our cows were much afraid of them and spent quite a little of their time in keeping their eyes on the queer things above them. The fans were hung just above the cows' backs, one fan answering for three cows. We were told that fans had been tried and had to be taken out, as cows soon began to die; but we found them valuable in reducing the temperature and even more valuable in



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keeping off flies, but they cost us several pounds of fat the first two weeks of the demonstration; this is particularly true of Loretta D. a cow of high nervous temperament. By an examination of the records you will find that she finished the last ten days of the 120 better than the first ten days. She was becoming accustomed to the conditions and squaring away for business, and I sincerely believe that the next thirty days would have been better than any other sixty days. Other breeds followed example and installed fans. There were times that water failed when we needed it badly and I could dwell at length on small things not conducive to best results. If I properly understand the purpose sought in the presentation of these facts on the part of President Marple, it is to make plain to Missouri dairymen the possibilities of the cow business if judiciously selected, given a proper variety of good feeds in the proper proportion and kindly and properly waited upon.

These records were made under adverse conditions and I feel warranted in saying that I saw on a recent trip, many cows superior to many of our twenty-five under similar treatment, but they did not seem to realize that the net profit on a much smaller number properly handled would be in excess of their present herd as now handled. At some places I saw cattle receiving good care and at Mr. T. S. Cooper's, Coopersburg, Pennsylvania, I saw cattle being taken care of right.

In conclusion, I will touch on one point, telling you how we prepared the cows feed at St. Louis. The alfalfa was cut into half-inch lengths and slightly steamed; the grain was then added to the steamed cut hay and well mixed. Try this with any kind of hay and watch the results. We provided a good variety of feeds. Cows grow tired of one or two feeds and, like a person, relish a change and reward you for it in increased vigor.

My Way of Running a Dairy Farm.

J. W. PLUMMES, HALE, MO.

We try to take the best care of our stock. Early in the fall when the nights begin to get cold, we put our cows in the barn and don't let them out of nights until the grass is good in the spring. We commence to feed ensilage as soon as the grass begins to fail. We feed about twenty pounds of ensilage to each cow twice a day. We also feed wheat bran when we can buy it so as to feed it at a profit. We never pay over 75 cents per hundred for bran. We begin milking at 5:30 in the morning and 5:30 in the evening, in the winter. We give the cows a little hay the first thing and then commence milking. When we are about through, my oldest son starts with two cans of milk for the dairy and commences separating, and another hand follows with milk and brings back separated milk, and so on; by the time the separating is done the calves are fed. There are five milkers and all get through about the same time. It takes about one hour and a half to do the milking and we don't have our breakfast until the milking is finished. After breakfast, the cows are fed ensilage. If it is not storming, the cows are turned out about noon and water pumped for them. We pump water with a gasoline engine. The barn is then cleaned out and bedding put in and ensilage put in for the night. We keep hay in a rack for cows to run to during the day. We are feeding a little shelled corn to our best cows.

We have forty winter pigs that find all waste corn in the barn-yard. The cows are turned out on the grass when it becomes good. We have one pasture for day and another for night. We milk in the barn in the winter and summer. Each milker has a place to begin milking. I have two sons, who take the lead of the work. The oldest sees that the cows are taken care of and the youngest son attends to the hogs.

I keep one single man and one married man, who live in a house near the barn. With this force, I do all the work except filling the silos and putting up ice. I don't raise any small grain, I haven't raised but one crop of wheat in ten years. I buy straw to use for bedding.

I have two silos. Silo No. 1 is 16 feet in diameter and 34 feet deep. It holds 100 tons of ensilage. Silo No. 2 is of 20 feet feet in diameter and 34 feet deep and holds two hundred tons ensilage. We commence to fill silos as soon as corn is fully matured. I would rather have it too ripe than too green. We do not use anything but corn for ensilage. The corn is cut with a corn-binder, bound in small bundles, and hauled in low-wheel wagons. Each man loads his own wagon. Sometimes we have one extra man to help load. Four wagons will bring in the corn fast enough to keep a 16-inch ensilage-cutter going if one doesn't have to haul corn too far. One man cuts, bands, and feeds cutter. We keep a good hand in the silo to tramp the fodder. One man runs the engine. We use our own teams and pay \$1 per day for extra help. We have a No. 16 Ohio Ensilage Cutter and it elevates the corn with a blower. We cut the fodder one inch long. The blower shells off the corn and tears up the fodder. It makes better feed than the old-fashioned carrier and it is less trouble. With the gasoline engine we pump water to supply the engine and wet the ensilage. We have a tank of water near the cutter and keep a small stream running on the fodder as it goes through the blower. The stock has eaten 95 per cent of ensilage since we bought the new cutter. We pile the manure from the cows in a heap. The box stalls in the horse-barn are cleaned out once a week. We haul most of the manure on the meadows and pastures. We don't raise anything but corn, sorghum and grass. Our meadows are well set to clover. We tried cow-peas and alfalfa, but failed with both. We feed skim-milk to calves and pigs. We feed shelled corn and bran to calves, to make up for butter-fat taken out of the milk. We try to get rid of the steer calves as soon as possible. When veal brings a good price, we sell them for veal, and we keep some until they are one year old, and when they get fat on grass, butcher them and sell them to neighbors for a good figure. I have 49 old-fashioned stanchions in cow-barn and five box-stalls. I have 46 grade Jerseys and three full bloods. My bull is a full blood Jersey. I don't let him run with the herd. We have cows coming fresh every month in the year. We raise lots of hogs and fatten all of them. In 1903 we sold \$1901.63 worth of hogs. We have last year's crop of hogs on hand, 180 head in all. We have one pasture for hogs. We get two crops a year off of it. We sow it to rape in the spring and to rye in the fall. We use a 12-horse-power gasoline engine to churn with, pump water, grind feed and saw wood. We have a No. 3, Baby DeLaval Separator. My

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Portraits of the Presidents from Washington to Roosevelt adorn the sides and bottom. At the top is a list of towns in the United States with a population of 25,000 and over. On the back of sheet three is a complete list of towns in the United States with a population of 3,000 and over for the census years 1880, 1890 and 1900, showing our country's growth.

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THE REPUBLIC, St. Louis, Mo.:

Inclosed find One Dollar for a year's subscription to the Twice-a-Week Republic and Farm Progress. Send me, as per special offer, **The New Home Library Wall Charts**. The State Map I desire is

Name

Post Office

R. F. D. State

oldest son makes the butter. It is all made in one-pound bricks. We ship to New York City. In 1903 we made 10,667 pounds of butter from 43 cows and got a net price of 22 cents per pound. In 1904 we made 11,572 pounds from 46 cows and got a net price of 21 cents per pound.

I have a 400-acre farm and my son bought 130 acres last spring. I rent his land. We wintered 175 head of cattle and 16 horses and mules last winter and this spring we have lots of hay left.

Missouri's Need of a Dairy Commissioner.

R. H. PETTERIDGE, ST. LOUIS, MO.

After Missouri's grand performance at the World's Fair at St. Louis, we naturally ask "What effect will it have on our Dairy industry?" And may the answer be, to begin with, "Give us a leader, one who can help us and put us in the right way of successful dairying, and one to whom we can appeal in case of difficulty, and be sure we shall not be swindled." An effort is being made and a bill has been introduced in the assembly at Jefferson City and is known as House Bill number 300. Hon. A. H. Drunert of Montgomery County being its champion.

Why should not this bill pass? Missouri's soil, climate and markets are the best in the United States for dairying and with encouragement will easily lead any other State. She has less than 800,000 cows where we have abundant room for 10,000,000 and at present the average amount of butter produced per cow is only 130 pounds per year. There are dairymen who average 400 pounds per year per cow. The promotion of creameries and dairies in a proper manner will give a zest to dairying which must bring riches and comforts to the neighborhoods in which they are situated. Missouri is sending out of the State \$2,000,000 per year in the purchase of dairy products for her own consumption and we should and could do all this ourselves and have millions besides for export. Dairying comes the nearest to "having the cake and eating it too" of any industry. Missouri farms need fertilizing and with every dollar's worth of hay or grain which is hauled off the farm, 10 cents' worth of fertilizer goes, while with a dollar's worth of butter only one cent's worth is taken away. With dairying the country is getting more fertile and lands increase in value.

Missouri can produce dairy products,

at less cost than any other State. It has been shown that milk can be produced for 40 cents per hundred pounds and butter for 7 cents per pound. Our neighboring States are our competitors in dairying and to enable them to keep somewhere within reach, they employ from one to eight commissioners while we have to take what we can get and to thank our stars we are such a fine dairy State and are no worse off; for what is everybody's business is nobody's, and lacking the organized authority, we must naturally get behind. The labor question is a very important one and will be the first to be dealt with. Without efficient labor it is almost impossible to carry on a successful dairy, and the commissioners of other States appreciate this, and divert the stream of that class of labor into their own land, and thus but few good hands ever reach Missouri. But this will be altered when we get a dairy commissioner of our own, and we will show what can be done in that time to increase dairying.

Everybody uses milk and inspections should be made of those places where it is produced for sale, either wholesale or retail. It is a most important factor in the health of a community that clean, pure and unadulterated milk should be provided. Boards of health have traced many malignant and contagious epidemics to infection spread by criminally careless milk hucksters, and chemists have found it on many occasions adulterated with from 15 to 50 per cent of water and in a great number of cases have found it to contain Formaldehyd and other harmful preservatives for the purpose of keeping it sweet. For such conditions inspection and sampling and a fine imposed when found guilty, will act as a preventive. I have found many samples coming into St. Louis which contain preservatives and also which have been adulterated with water and which would render the dealer liable to prosecution if found on sale. Honesty is the best policy, and to build up a successful business the honest advice of an experienced dairy commissioner is a valuable adjunct of which we have hitherto been lacking. Progress and improvement should be our motto, and I ask every one to make it his business to write a letter to his Representative and Senator to support this bill. It would be a great boon to the dairyman to be able to get advice in the establishment and promotion of creameries and to lend his aid in getting the outfit put in in the most approved design and then be without

the risk of being defrauded by so-called creamery promoters, who charge double the price it is worth and do not even get the first thing necessary to the running of a successful business—the patronage. Dairying is the highest branch of agricultural science and it should be the duty of the dairy commissioner to attend farmers' institutes and to assist in giving instruction in dairying and so disseminate improved methods and profitable practices.

Certified Milk.

WALTER BERNAYS, CITY CHEMIST AND MILK INSPECTOR, BROOKFIELD, MO.

I came here because I want the dairymen of Missouri to know that there is now a society in St. Louis, which is going to encourage the production of a high-grade of milk. I can best tell you how this society proposes to encourage the production of high-grade milk by telling you how it came to be organized. Last year, Mr. Nathan Strauss, the well-known New York philanthropist offered to St. Louis the equipment of a plant for the preparation of modified milk, the product of which was to be distributed to the poor at or below cost. The president of the Provident Association, one of our leading charities, undertook to organize a corporation to accept Mr. Strauss' gift and become responsible for its maintenance. A number of our most prominent citizens, including many physicians, were accordingly called together. At this meeting, it was decided not only to distribute milk suitable for infant feeding to the poor, but also to take up all other lines of work which would tend to reduce the number of deaths of infants, due to dirty milk, and to the ignorance of the mothers as to the best way of feeding and caring for their children. This is how and why the St. Louis Pure Milk Commission was organized. Its object is the reduction of infant mortality in St. Louis.

The first obstacle we met with was our inability to get a high-grade of milk for modification and distribution to the poor. All the physicians on the commission complained bitterly that they could not even get a clean, high-grade milk for their well-to-do patients, who were willing to pay a high price for such milk. On inquiring among our best dealers for the cause of this condition, we found that some dealers had really equipped themselves for the production and sale of such high-grade milk. But no sooner

had they brought this milk on the market when others got up pamphlets similar to those of the man who was really striving to market a high-grade milk and sold their ordinary dirty milk from fine clean wagons in charge of neat drivers and undersold and drove out of business the dealer who, under much greater expense, was honestly endeavoring to put a high-grade of milk on the market.

About this time, the United States Dairy Division Bulletin entitled "Market Milk; a Plan for Its Improvement," came to our notice. We learned from this pamphlet that others had faced the same problem and that Dr. Henry L. Coit, of Newark, N. J., had solved the problem in an entirely satisfactory manner. We proceeded to put Dr. Coit's scheme into practice. We organized a "Committee on Certification" composed of members of the St. Louis Pure Milk Company. Every medical society in the city was asked to send a representative to act with us and report back to his society on our work. The response was most hearty. We now have delegates from the St. Louis Medical Society, the St. Louis Pediatric Society, the St. Louis Hospital Alumni Society, the Obstetrical Society, the Homeopathic Society.

This committee drew up a set of requirements for the production of a high-grade, clean milk, based on the experience of commissions superintending, and of dairymen producing such milk in other cities.

Whenever any dairy farmer announces that he is ready to comply with our requirements for the operation of his dairy, and believes he is able to produce milk and cream which will come up to our standard of excellence, one member of our commission, together with our expert veterinarian, our bacteriologist, and our chemist will inspect his dairy and its product. If they report that our requirements are complied with, we will give the dairyman a certificate of excellence, a copy of which he shall give to each customer with each bottle of milk. From that time on inspections will be made at least once a month, and new certificate issued each month, if these inspections show that the dairyman is still complying with our requirements. This milk will be known as "certified milk." Our certificates will be protected by copyright. They will read as follows: "To Whom it May Concern: The veterinary inspector of this commission has examined the dairy of.....and reports it to be in excellent sanitary con-

dition and cows healthy and free from tuberculosis.

"The bacteriologist reports the milk and cream of said dairy free from micro-organisms within the limits of the standards of this commissions.

"The chemist reports that the milk and cream is of standard composition and that he has discovered no impurities, preservatives, coloring matter, thickeners or other foreign substances.

"The commission certifies to these statements of the examiners, it being understood however that this certificate is good for only one month from date." Seal of Commission.

Does any one doubt that such a certificate backed as it will be by the entire medical profession of St. Louis and by many of its prominent citizens will protect the producer from illegitimate competition, and enable him to sell such "certified milk" at a good profit?

An impression has gotten abroad that "certified milk" can only be produced as a fad by wealthy men. Mr. Gurler, whom we have with us, has shown this to be wrong by the force of example. In St. Louis we want to discourage the production of certified milk as a fad, but put it on a healthy profit-making basis. Any intelligent farmer can produce this milk without a very great outlay of capital.

EIGHTEENTH ANNUAL MEETING KANSAS STATE DAIRY ASSOCIATION.

(Continued from page 457.)

ities for converting feed into milk seemed unable to consume large enough quantities of the more bulky feeds to produce milk up to their normal capacities.

The relative cost of feed consumed by the different lots during the two periods of the experiment are as follows:

pound of butter-fat is shown in the last two columns of the table. most economical productions very little grain is needed if the above-men-

TABLE VI.—Value of Products and Average Cost of Production Per Cow.

	Number of lot.	Value of butter-fat.	Value of skim-milk.	Total value of products.	Cost of producing 100 pounds milk.	Cost of producing 1 pound butter-fat.
First six weeks.....	1-5 cows.....	\$9.95	\$1.56	\$11.51	\$0.53	\$0.105
	2-5 cows.....	6.63	1.25	7.88	.34	.085
	3-6 cows.....	7.99	1.25	9.25	.596	.120
	4-5 cows.....	5.42	.92	6.41	.43	.107
Second six weeks.....	1-6 cows.....	7.56	1.22	8.78	.38	.085
	2-5 cows.....	8.03	1.41	9.44	.53	.127
	3-6 cows.....	7.22	1.13	8.35	.75	.16
	4-5 cows.....	5.19	.802	5.99	.596	.127

The feed cost of producing milk or butter-fat as shown by these figures is less in every case where no grain is fed, notwithstanding the fact that the net profit per cow was slightly greater during the first six weeks with the grain-fed cows. The net cost of producing a hundred pounds of milk or a pound of butter-fat is the ultimate basis upon which the relative profitability of producing milk by different methods of feeding or with different cows must be determined. The man who keeps cows is after profits and he must employ whatever methods possible to reduce the cost of production if he would make the greatest possible profits from his herd.

TABLE VII.—Average Profit Per Cow.

	Number of lots.	Av. total value of products per cow.	Av. total cost of feed per cow.	Av. profit per cow.
1st 6 wks..	1-6 cows..	\$11.51	\$5.56	\$5.95
	2-5 cows..	7.88	2.79	5.09
	3-6 cows..	9.25	5.03	4.22
	4-5 cows..	6.41	2.83	3.58
2d 6 wks..	1-6 cows..	8.78	3.11	5.67
	2-5 cows..	9.44	4.99	4.45
	3-6 cows..	8.35	5.63	2.72
	4-5 cows..	5.99	3.18	2.81

In Table VII the net profits per cow are shown for both periods. For the first six weeks the lots receiving grain gave a greater net profit than the cows receiving no grain. The differ-

tioned roughage is provided for feeding. Experiments in the economical production of milk and butter-fat will be continued along these lines and the results published in future bulletins.

An Eye Opener.

Certain mail-order concerns, hoping to reap the benefits of the hard-earned reputation of standard and reliable centrifugal cream separators, are advertising cream separators that have proved to be so poor and out-of-date that their manufacturers were not able to work them on to the market at a profit and therefore were glad to close them out at any price, rather than consign them to the scrap-iron heap.

A mail-order concern is advertising separators under two names, one the "Celebrated Dundee" for \$25 to \$34, according to capacity. These separators were manufactured under another name, viz.—The American, but they proved to be so inferior that this mail-order concern bought them, changed the name, as above stated, and now advertise them as the "Celebrated." The only thing they were ever "celebrated" for was their inferiority. If they had been "celebrated" for anything desirable, the name would certainly not have been changed so as to deceive the public. The mail-order concern advertise these "celebrated" separators to "skim closer, skim colder milk, run lighter" and to "skim one-half more milk than any separator made." They know that not one of these claims is correct, but what do they care as long as they can "hood-wink" the unsuspecting dairy public and get cash by mail in advance.

This same mail-order concern advertises in other papers the "Economy Separator," and uses these words: "The highest grade cream separator made." "The strongest, simplest, lightest running, clos-

TABLE III.—Feed Consumed the First Six Weeks of the Experiment.

Lot	Grain.						Roughness.								Total Cost of all Feed.	Average Cost per Cow.
	Corn lbs.	Cost.	Bran lbs.	Cost.	Total lbs.	Total.	Alfalfa lbs.	Cost.	Ensilage lbs.	Cost.	Corn-fodder lbs.	Cost.	Total lbs.	Total Cost.		
1.....	888.9	\$5.06	1778.2	\$12.45	2667.1	\$17.51	2676	\$9.37	6078	\$6.08	41	\$0.41	9168	\$15.86	\$33.37	\$5.56
2.....	.....	.....	.....	.....	.....	.....	2230	7.71	5825	5.83	414	.41	8469	13.95	.....	2.79
3.....	738.3	4.21	1466.1	10.26	2196.4	14.44	2676	9.37	5907	5.91	414	.41	8997	15.69	30.16	5.03
4.....	.....	.....	.....	.....	.....	.....	2230	7.71	5995	6.00	414	.41	8639	14.28	14.18	2.83

TABLE IV.—Feed Consumed During Second Six Weeks of Experiment.

Lot	Grain.				Roughness.							Total Cost of all Feed.	Average per Cow.
	Corn lbs.	Cost.	Bran lbs.	Cost.	Total.	Alfalfa lbs.	Cost.	Sorghum Hay, lbs.	Cost.	Ensilage lbs.	Cost.		
1.....	.....	.....	.....	.....	.....	2538	\$8.88	2390	\$3.58	6224	\$6.22	11152	\$18.68
2.....	699.9	4.22	1801.2	5.14	1501	2115	7.40	1992	2.99	5067	5.07	9174	15.46
3.....	731	4.44	1389	11.04	2120	2538	8.88	2390	3.58	5923	5.92	10851	18.38
4.....	.....	.....	.....	.....	.....	2115	7.40	1992	2.99	5502	5.50	9609	15.89

For the first period the cost of feed for the lots receiving grain is almost double that for the lots on alfalfa hay and corn silage alone. Table V shows the average production per cow of the different lots for the two periods.

ence, however, is not very large. For the second six weeks the result as to net profits are just reversed: Lot 1 and 4 receiving no grain, both producing more profit than lots 2 and 3. This would plainly indicate that for the sec-

TABLE V.—Average Production Per Cow.

	Average total milk first six weeks, lbs.	Average test, per cent.	Average total butter-fat, lbs.	Average total milk second six weeks, lbs.	Average test, per cent.	Average total butter-fat, lbs.
1. Six cows.....	1039.8	4.63	48.29	810.5	4.53	36.68
2. Five cows.....	831.4	4.3	32.19	937.16	4.16	38.98
3. Six cows.....	843.1	4.6	38.78	752.7	4.65	35.02
4. Five cows.....	660.8	4	26.31	533.07	3.93	25.14

It will be noticed that lot 1 receiving grain for the first six weeks shows the greater average production of milk and butter-fat. The second six weeks these lots gave a reversal of results as to amount of production, caused by the change in ration, viz., taking the grain away from lot 1 and adding grain to the ration of lot 2. Lots 3 and 4 which were fed the same ration through both periods show the same relative production through the whole twelve weeks.

The question naturally arises as to whether the increased cost of the rations of lot 1 and 2 during the first six weeks was paid for by the increased quantity of milk produced. If the increased production is not paid for or it increased the cost of producing 100 pounds of milk, the dairyman might well consider whether it would not pay better to keep a few more cows if necessary and produce their milk more cheaply by feeding less grain.

In Table VI the exact feed cost of producing 100 pounds of milk and one

and six weeks the cows were fed grain at a loss. The only change in conditions was the advancement in the lactation period. It would appear that cows comparatively fresh and producing large quantities of milk require larger amounts of nutrients than can be obtained from a ration of roughness alone. As the lactation period advances and the milk-flow diminishes a point is reached where the feeding of grain ceases to be profitable providing such roughage as alfalfa hay and corn silage can be fed.

The principal lesson to be learned from the foregoing experiment is that the farmer who would produce milk cheaply should have alfalfa or clover hay and a silo. A combination of these two feeds, silage and alfalfa hay, make the cheapest milk-producing ration available to the Kansas dairyman. The addition of grain will increase the milk somewhat, especially in the first few months of the lactation period. Later in the period, the need for grain decreases and from the standpoint of

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DRS. THORNTON & MINOR, 3909 Olive Street, St. Louis, Mo., and 107 Oak St., Kansas City, Mo.

They are trying to dispose of inferior separators on the reputation of standard separators.

Every farmer knows that it is much more economical to buy a good article at a reasonable price than it is to take chances on a cheap article where they claim to give a dollar's worth for fifty cents. The same is true with separators. A certain kind of separator can be bought for less money than it costs to manufacture the standard separators, but it is true that separators that are selling from \$50 to \$150, according to capacities, do better work, wear better and are cheaper than the low-priced separators. Those who buy these low-priced separators do not stop to investigate the manufacture and efficiency of the better separators.

Set these low-priced, low-grade separators beside the standard separators and compare their material and workmanship, and then compare the efficiency of the separation. Every farmer knows that a cream separator is a machine that is used, as a rule, twice every day in the year and more than any other implement on the farm. Every one must be convinced that the low-priced separators are dear at any price. It requires more attention to operate a cheaply constructed separator, and there is always a loss in butter-fat. A standard separator will save enough over the cheaply made separator to pay the difference in price in a short time. CONTRIBUTED.

Uncle Sam's New Well.

Editor Kansas Farmer:—I was present when well No. 73, of the Uncle Sam Company, at Cherryvale, Kans., was shot, at 5 p. m., April 22. Forty-five feet of first-class oil sand. The well was shot with 20 quarts of nitro glycerine.

When the explosion came, 1,075 feet down, ground slight jarred, and oil flew 150 feet in air. The drill was then sent down to clear out the bottom of hole, and when it came out, the oil followed in a stream nearly 200 feet high, and this gushing has kept up to this time. It is one of the best wells I have ever seen brought in in Kansas. It is a combined oil and gasser, good for 100 barrels of high-grade per day and one million cubic feet of gas, and not more than one-half mile from the refinery. The superintendent of the Warren, Ohio, Machinery Company, who is traveling over the Kansas oil fields selling oil and refinery machinery, told me last night that with all the talk of refineries at other points, not another one had bought any machinery or even broke ground for a foundation for a refinery while the Uncle Sam is being crowded as fast as men and money can crowd it. W. F. RIGHTMIRE.

A Set of Wall Charts.

The attention of our readers is called to the announcement made elsewhere in this issue by The Republic, St. Louis, Mo., of an extraordinary opportunity to obtain, free of all cost, a magnificent set of New Home Library wall charts.

To every person who sends \$1 to pay for one year's subscription to the Twice-a-Week Republic and Farm Progress the Republic will mail, postpaid and securely packed in a large tube, a beautiful set of New Home Library wall charts, containing nine complete maps, as follows: The World, the United States, topographic map of the Russo-Japanese war district, Alaska, Hawaii, Porto Rico, the Philippines, Panama, and any one of these States: Missouri, Illinois, Arkansas, Kansas, Texas and Oklahoma and Indian Territory (the two last named on one page). In ordering, state which State map is desired.

In addition to these magnificent maps, the charts contain a wealth of valuable statistics, including population of cities, index of all towns in the State represented, money-order post offices, rural delivery routes, railroads, express offices, legislative facts and figures, history and description of Panama and portraits of all the Presidents, from Washington to Roosevelt.

The Twice-a-Week Republic is the oldest and best semi-weekly newspaper in the West. Farm Progress is the leading farm and home monthly.

Regular price of charts is \$2.50, but under the Republic's offer you get them without cost.

Read this announcement, then send \$1 at once to the Republic, St. Louis, Mo., and get in return these two great journals an entire year and the New Home Library wall charts free. Don't delay, as the offer is limited to sixty days.

The coming season is likely to show radical changes in the construction of cream separators. Heretofore manufacturers have been so busy perfecting the skimming qualities of their machine that, with here and there an exception, they have given little attention to other points, except, perhaps, to secure a light-running machine. Skimming perfection has been virtually attained, and, with the introduction of cream separators on every well-regulated farm, the fact has been impressed upon manufacturers that one important element, heretofore neglected, must be reckoned with. Special tools, wire brushes and all sorts of appliances that have in the past been sent out with machines so that a reasonable amount of cleanliness could be maintained, are at best but makeshifts. The future separator must be easy to clean. Right along in line with this suggestion, comes the Omega Separator Co., of Lansing, Mich., and presents a machine that embodies every good point that has been deemed valuable heretofore in separator construction, and in addition its ease in cleaning is certain to make it a favorite wherever introduced. With the Omega it never has been necessary to wait for the machine to run down, and with the 1905 model, the separator can be stopped, taken apart, cleaned, washed and put together again in three minutes time. When other machines require from ten to fifteen minutes to "run down" and half an hour or more to clean, it can easily be seen what saving to the farmer's wife and daughter the new machine means. This has been effected in the 1905 machine by making all the inside surfaces absolutely smooth, and by straightening all the cream and milk tubes, so that the only appliance needed for keeping the machine perfectly sweet and clean is soap and water and a dish-rag. As the manu-

facturers say, the only thing that goes with the Omega is satisfaction. Their new catalogue, which is now in press, should be obtained by every farmer who contemplates putting in a cream separator. It not only tells all about the Omega, but gives valuable advice on all points to be considered in separator construction. It can be had by writing to the Omega Separator Co., Lansing, Mich.

The Stock Interest

THOROUGHbred STOCK SALES

Dates claimed only for sales which are advertised or are to be advertised in this paper.
April 28, 1905—Combination sale of Shorthorns and Herefords at Coffeyville, Kans. H. E. Bachelder, Manager, Fredonia, Kans.
May 24, 1905—Blue Ribbon Cattle Sale at Sioux City, Iowa. D. R. Mills, Des Moines, Iowa, Mgr.
May 4, 1905—Combination Sale of Roadster and Standard-bred horses; Union Horse Sale Co., E. E. Abell, Secretary, Wichita, Kans.
May 16, 1905—First annual Shorthorn sale by Shawnee Breeders' Association, Topeka, Kans., I. D. Graham, secretary.
May 16-19, 1905—Blue Ribbon Cattle Sale at Dexter Park, Chicago, Ill., D. R. Mills, Manager, Des Moines, Iowa.
June 6-9, 1905—Blue Ribbon Cattle Sale at Kansas City, Mo. D. R. Mills, Des Moines, Iowa, Manager.

No Hog-Cholera.

EDITOR KANSAS FARMER:—What I said in my first article, published in the KANSAS FARMER of February 2, a good many of your readers knew before; what I now say a good many do not know and may be glad to learn; it may be of great benefit to them.

Some of the farmers think a hog is only a hog, it can get along with hog-gish treatment; it is fat, does not get cold and don't freeze. How much are they in error! All the corn necessary to produce heat and energy is burned in the system as fuel, and not stored up as fat. Comfortable, sheltered beds are equivalent to a considerable amount of food, as stock suffering from cold can not thrive and to warm them with grain is much more expensive than good nests and shelter. Let whoever does not believe this write to one of the agricultural colleges. They have demonstrated plainly enough by experiments, and say that in the test, shelter for hogs was a saving of 25 per cent in corn. It takes time and labor to raise corn; how unnecessary to throw it all away.

In the summer protect the animals from the burning rays of the sun by shade-trees or the roof of dry sheds. The hog pays liberally for his comfort. But after all this care and protection, a man may think his hogs are cholera-proof, but this is not so. Why? Because the hog's rations are not always right in composition. Every animal needs for its development organic and inorganic or mineral food. Where hogs are raised and fed on a large scale, corn is chiefly and in some cases entirely the feed. This practice, if continuous, is injudicious. We learn from the chemist and the physiologist that the animal body is made up of mainly four elements, water, ash or mineral ingredients, fat and nitrogenous materials. In every animal body continual change takes place. If food is not supplied in the right proportion, in the right composition to meet the wants of the animal, it suffers and sickness will follow. Fed in the right proportion with the right food, the animal is healthy and grows; fed exclusively on one feed the animal will die. Do you not now understand why hog-cholera sometimes breaks out in a herd well-cared-for and well-fed? I know and have the remedy for this. My remedy does not contain any drugs.

The hog has peculiar habits, as for instance the habit of rooting and wallowing in the mire. All these habits have their uses. Rooting is not only to find substances necessary for health and growth, but for exercise and to help digestion. Human invention has produced the hog-ringer, the hog-lancer, the snout-cutter, thus hindering the hog in his natural occupation without furnishing a substitute. The Creator gave the hog his instinct to root and nature's laws can not be broken without punishment. Because laziness is natural for a hog some owners would let him have his own way and he is given a pen full of manure and other vegetable substances, just large enough to stay and lie in—always in dirt and filth. Why does the hog love

to wallow in pools and draws? Why does the hen take a dust-bath? For cleaning the body, and getting rid of parasites and lice. Is it improbable that the hog has the same intention? How many farmers give their hogs an opportunity to take a bath? The hog is noted for its greediness and therefore it rejects hardly any nurture and has the capacity to convert the food rapidly into fat, which accounts for quick and easy pork production. This big appetite often leads the hog to swallow quantities of food half chewed and out of proportion to the capacity of its stomach. My remedy is a regulator; let your hogs have free access to it, keep it always within reach, and you have no trouble. My remedy is also a preventive and has proved itself the most effective known. My remedy destroys worms and bacteria, also hinders their development.

Scientific authorities assert that dirty, filthy stables, pens, yards, which favor and support the development of bacteria are the main cause of hog-cholera. All the farmer has to do is to keep the stables and yards clean. Occasionally plow up old places of exercise and sow them to grass. But if not entirely able to keep bacteria from finding their way somehow into the body or organism of the hog, we have the remedies to paralyze their effect. For every poison there is an antidote. If you keep and treat your hogs according to my directions, they will not have cholera.

Years ago I was working out by the month, and at once place in Illinois the farmer managed his swine husbandry in the manner I have described. He had about 200 shoats, averaging when ten months old 300 pounds. He shipped several car-loads of hogs every year. Before I left he marketed one car-load in Chicago, weighing on an average 560 pounds each. At the same time hog-cholera was raging all through the neighborhood, and he had no loss by death—not even a sick hog on the place. What does this prove but that the man understood his business? Hog-raising was to him a success not a failure.

As long as the world moves there will be healthy and sick people and healthy and sick animals. But follow my advice and there will be no more epidemics of hog-cholera, and if animals fall sick they can be cured. I do not manufacture any hog-remedy, but I sell the prescription with my book; every farmer can prepare it himself. The necessary substances are on every farm. If you think you do not get your money's worth, or are dissatisfied, return the book with your address and call for the money. Write to the KANSAS FARMER for the book, "No Hog-Cholera Any More." The price is 25 cents. ALBERT THEYSON.

Morris County.

Cattle Supply of the World.

It may be news to many to learn that as the number of cattle per capita the United States is far behind a great many other countries; and further, that British India grows more cattle than the United States, though the proportion to population is much smaller. It is also interesting to note that Uruguay in proportion to population has ten times as many cattle as the United States.

The figures are given in the following table as shown by the official census returns:

Country.	Total.	Per capita.
Uruguay	6,827,428	7.078
Paraguay	3,500,000	6.585
Argentina	22,000,000	4.495
Australia	10,128,496	2.325
Bosnia	1,416,000	.815
Canada	4,120,586	.767
Denmark	1,749,313	.714
United States	61,424,599	.707
Sweden	2,582,555	.499
Cape Colony	1,077,044	.448
Norway	950,201	.428
Roumania	2,589,040	.426
Switzerland	1,340,375	.403
France	14,673,810	.377
Servia	942,847	.371
Austria	9,507,626	.364
Hungary	6,738,000	.350
European Russia	35,916,857	.349
Germany	18,939,692	.324
Netherlands	1,655,600	.314
British India	87,188,923	.295
Great Britain and Ireland	11,477,824	.276
Belgium	1,675,000	.250
Algeria	992,551	.207
Italy	5,000,000	.154
Spain	2,218,000	.119
Portugal	625,000	.115
Japan	1,490,883	.031
Total	318,747,540	.382



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If you will send us your name and address we will send you a sample of Carbolem Dip, free. We will also include a complete set of plans for home-made dipping vats, and

A Valuable Book "THE DIPPING PROPOSITION"

which treats on the common ailments that domestic animals are subject to, and tells how to cure them, and how to prevent a recurrence of the same. Tells how to cure Sheep Scab, Ticks, Mange, Texas Fever, Cattle Lice, Hog Cholera, Hog Lice, Worms in Hogs, Fleas and Lice on Dogs, Goats, Cats, Chicken Cholera, Lice, Gapes, Rot Foot in Sheep, Galls, Thrush and many other equally annoying, expensive diseases, and how to use, when to use and why to use Carbolem Dip in a hundred and one ways to promote health among animals and fowls. Carbolem is a non-poisonous disinfectant, germicide, antiseptic, and vermicide—a necessity in every home, invaluable on every farm. Trial gallon Carbolem Dip \$1.50, express prepaid—enough to make 100 gallons ready for use. Dipping tanks at cost.

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KILLS TICKS AND LICE

ON ALL LIVE STOCK,
SHEEP, SWINE,
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PREVENTS AND CURES PARASITIC
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Kreso Dip kills disease-germs, ticks, lice, mites and fleas; cleanses the skin, glosses the hair, heals scratches and wounds; cures scab, mange and ringworm, and acts as a fly-repellent. It is scientifically prepared in our own laboratories, never varies in strength, and is therefore reliable.

Easily prepared for dipping or hand-dressing—simply mix with warm, soft water.

\$1.25 PER GALLON, AT YOUR DRUGGISTS.

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KENDALL'S SPAVIN CURE NEVER FAILS.

Wingina, Va., March 7, '04.
DR. B. J. KENDALL CO.,
Gentlemen:—I always keep your Kendall's Spavin Cure and Blister on hand and they never fail in what you say they will do. I have cured a very bad case of Ringbone of long standing and must say I feel very thankful for your remedy. I recommend it to all. Respy yours,
Nick Ragland.

Price \$1.00 for \$5. Ask your druggist for Kendall's Spavin Cure, also "A Treatise on the Horse," the book free, or address
DR. B. J. KENDALL CO., ENOSBURG FALLS, VT.

The Topeka Horse Sale.

The third annual sale of the Topeka Horse Sale Company was held at the State fair grounds on Tuesday, April 18. Some of the animals offered seemed to bring low prices but the sale, as a whole, was considered satisfactory. Buyers were present from St. Louis, Chicago, and Kansas City and at times the bidding was quite spirited. The sale was conducted by Col. L. R. Brady, of Manhattan, in his usual energetic manner. He was assisted by Col. C. M. Crews, of Topeka.

This sale only serves to emphasize the need for a permanent sale pavilion at Topeka. The sales were as follows:

The Pope 38424, b. s., by Bon Cheval dam by Riley Medium; S. J. Hodgins, Topeka.	325
Wilkesbar 38760, b. s., by Escobar 2:13; dam by Sealskin Wilkes; A. Massey, Topeka.	300
Leo Riley, 38257, b. s., by Riley Medium, 2:10; C. W. Thompson, North Topeka.	140
Outcome, b. m., by Gilman McGregor; James Dendrey, Meriden.	170
Knoxie Glen, br. m., by Glenwood; F. P. Brady, Rossville.	75
Jester Young 40875, b. s., by Jester T.; A. C. Taylor, Belleville.	155
Alice Gould, blk. m., by Andersonian; F. P. Brady.	75
Julia Mason, b. m., by Geo. E. Mason, dam by Silverthorne; W. M. Allen, Topeka.	90
Zelda Gould, br. m., by David Thorne; J. M. Conrad, Ottawa.	70
Anderson Thorne 38520, b. s., by Andersonian, dam by Silverthorne; Joe Jarvis, Holton.	225
Alice Daw, b. m., by Jackdaw, dam by Honor; Dr. G. C. Pritchard, Topeka.	175
Little Dago, br. g., by Mount View, 2:21; Joe Jarvis, Holton.	160
Jet, blk. m., by Mount View, 2:21; Donnelly Bros., Lawrence.	130
Joe and Pinnacle, pair br. g., by Mount View, 2:21; B. S. Rice, Melvern.	365
Bute, b. m., by Jackdaw, dam by Wickliffe; Jas. Gillfillin, Kansas City, Mo.	500
Mack, s. g., by Tom McGregor, 2:12; Dr. Keith, Topeka.	150
Maude and Queen Lil, blk. mares (pair); Salthouse & Norris, Topeka.	300
Ottawa Boy 38294, blk. s., by Kewanee Boy, sire of Little Squaw 2:04; dam by Riley Medium 2:10; C. B. Samson, Topeka.	225
Willie Riley 38311, b. s., by Riley Medium 2:10; Jos. Christman, Topeka.	300
Dexter, b. s., by Mariott; Dick Hodgins, Topeka.	140
Santa Fe, ch. m., by Mohawk McGregor; F. P. Brady.	80
Hopelette, b. m., by Parapet 2:21; R. I. Lee, Topeka.	145
Prince and Lady, pair b. g.; J. C. Heinsley, Topeka.	160
Lady Grey Gown, gr. m., by Challis; Harry Hogart, Topeka.	75
Newton, blk. Percheron s.; Dr. Dennen, Topeka.	170
Blue Bells, gr. Percheron s.; Bert Graham, Hoyt.	935
Crown, s. s.; T. V. Wordell Topeka.	40

Dickinson County Shorthorn Breeders' Association Hold a Successful Combination Sale.

Another successful pure-bred stock sale was held at Hope, Kans., April 19, in the sale pavilion. This time it was a combination Shorthorn sale under the auspices of the Dickinson County Breeders' Association. Forty head were sold and they were mostly young, hence the general average was low. Prices ranged from \$25 to \$165, the latter was realized for No. 1 in the catalogue. She went to J. M. Baker, Narka, Kans., and was consigned by C. M. Garver, Abilene. The top bull was from the herd of D. Ballantyne & Son, Herington, and brought \$100. The general average was \$55.25. The following were the consignors: C. M. Garver, Abilene; D. Ballantyne & Son, Herington; S. H. Lenhart, Hope; O. L. Thiesler, Chapman; H. R. Little, Hope; M. C. Hemmaway, Hope; Geo. Channon, Hope; E. A. Sumner, Hope; J. E. Landis, Abilene; and J. H. Long, Hope. The sale had been well advertised and a large portion of the buyers were from without the county, though a number of the good animals went to home breeders. The best sales in the catalogue order were as follows:

GARVER'S CONSIGNMENT.	
1. Cow, Winsome Belle, J. M. Baker, Narka, Kans.	\$165
2. Lady Waterloo, John Garver, Abilene.	120
BALLANTYNE'S CONSIGNMENT.	
3. Bull, Henry Backhus, Hope.	100
4. Bull, John Malle, Wakefield.	70
5. Bull, John Meehan, Tampa.	75
6. Bull, H. E. Bacon, Herington.	95
7. Bull, Alex. Strattmann, Holyrood.	65
THIESLER'S CONSIGNMENT.	
12. Cow, Geo. W. Kelly, Detroit.	40
14. Bull, S. Spotts, Abilene.	55
15. Bull, F. W. Meyers, Carlton.	50
18. Heifer, R. Waring, Abilene.	40
19. Heifer, J. A. Lanning, Achilles (Rawlins County).	35
LITTLE'S CONSIGNMENT.	
20. Bull, J. M. Burt, Gypsum.	55
22. John Meehan, Tampa.	55
23. Fred Pfeiffer, Green.	60
24. Heifer, C. M. Garver, Abilene.	65
25. Heifer, J. A. Lanning.	65

27. Heifer, J. M. Baker.	50
28. Heifer, Geo. Myers, Tampa.	75
29. Heifer, same.	70
30. Bull, Emil Hoen, Lindsborg.	70
31. Bull, E. Campbell, Elmdale.	65
HENMWAY'S CONSIGNMENT.	
32. Bull, E. Rosander, Lindsborg.	60
32½. Bull, J. B. Franklin, Hope.	35
LONG'S CONSIGNMENT.	
33. J. M. Baker.	45
33½. A. L. Book, Hope.	40
CHANNON'S CONSIGNMENT.	
34. Bull, Carl Fisher, Hope.	35
38. Bull, John Meehan.	55
40. Bull, J. Christian Lindsborg.	40
LANDIS' CONSIGNMENT.	
43. Cow, J. A. Lanning.	65
44. Cow, John Meehan.	40
SUMNER'S CONSIGNMENT.	
46. Bull, Fred Albrecht, Herington.	40
Col. L. Brady, Manhattan, assisted by H. R. Little, Hope, and W. F. Heaton, Roxbury, did the selling and to their efforts is largely due the success of the sale.	

J. D. Stanley's Good Shorthorn Sale.

Mr. J. D. Stanley, of Horton, Kans., who dispersed his fine herd of Shorthorn cattle on May 19, writes:
"My sale was a success in every way, everything bringing good prices. Top on cows, \$410, second \$400; average on seven head Scotch cattle, \$269.29. Average on my 28 cows and heifers, \$156.25. Average on my 34 head, \$151.99. There were 8 head in by other parties that cut down the average, which was on 46 head sold, \$137.77."

The top of the sale was brought by the Scotch heifer, Naomi's Ruth 3d by Gold-Red Lad 15691, who brought \$410, and went to Nebraska. The second highest price was brought by the Brawith Bud cow, Red Bud 2d by Red Knight 120752, who sold to Ellis Ludwig, of Sabetha, Kans., for \$400. Other buyers were D. E. Reber, Morrill; D. L. Dawdy, Arrington; C. A. Shows, Lancaster; C. W. Taylor, Pearl; J. W. Lamb, Holton; E. Hays, Hiawatha; John McCoy, Hiawatha; Dennis Cassey, Powhattan; Clem Bell, Holland; E. G. Gilliland, Humboldt; Neh. W. W. Denton, Dentonville, Kans.; J. F. Strickler, Highland Station; James Overfield, Baker; J. E. Thomas and Roy Eisenbice, Morrill.

In the sale were animals consigned by M. C. Vansell, Muscotah; C. O. Dimmock and Everett Hays, Hiawatha. The general summary follows:

37 females brought.....	\$5,147.50
Average.....	139.12
9 bulls brought.....	1,190.00
Average.....	132.22
46 head brought.....	6,337.50
General average.....	137.77

Gossip About Stock.

F. A. Dawley, owner of Elm Grove Herd of Poland-Chinas at Waldo, Kans., is doing business in his usual vigorous style. He writes: "I have been blowing I got one at E. H. Ware's sale that was I got on eat E. H. Ware's sale that was bred to old Chief Perfection 2d. I got a Perfection E. L. sow at Walgamuth's that was bred to Keep On; also a G's Perfection sow bred to Perfection E. L. at the Gossick & Hanna sale as well as a number of others bought elsewhere. Have about 60 pigs to date and more to follow. Nonpareil is proving himself a sure getter and produces large, fancy litters. I can spare a few choice sows bred to Nonpareil for May and June farrow." See Mr. Dawley's advertisement on page 470 and note the change.

The blocky, beefy Galloways are making new friends every day. Their early-maturing qualities which makes them especially valuable for baby-beef, together with their hardiness, which enables them to withstand the sudden changes in temperature, make of them a peculiarly desirable breed for Kansas conditions. Being polled they are easily handled and show a milder disposition than do horned breeds. Kansas has several herds of these very desirable cattle, one of the best of which is the Pleasant View Herd belonging to W. Guy McCandless, of Cottonwood Falls. These cattle are grown under ideal conditions in the best alfalfa region in the State and are growthy and in fine condition. Mr. McCandless can now fill orders for bulls for one animal or a car-load and they are good ones, being of the same kind with which he has been winning prizes at the State and other fairs. Write him and he will make you some interesting prices.

Charles Morrison, owner of the Phillips County Herd of Red Polled cattle and Poland-China swine, writes: "I have shipped last week a handsome yearling Red Polled bull and Poland-China sow to the State Agricultural College at Manhattan. Prof. R. J. Kinzer was here and made the selection. He was very much pleased with my herd of Red Polls and Poland-Chinas and soon found what he wanted. I also sold a fine yearling Red Polled bull to Hull & Leemon, of Kirwin, Kans. It is no trouble to sell Red Polls when you can get parties to see them. They are the true farmers' cattle and are growing very popular. They have no horns, are all red, very hardy, easy feeders and kind disposition. The cows are good milkers. They stood second in the Buffalo test, and as to size they are as large as any breed of cattle. I have had bulls at 12 months weight 1,220 pounds. My herd bull, Actor 751, weighs in breeding trim, 2,200 pounds. Red Polls come nearer filling the wants of the general farmer than any other breed. I have one yearling not sold out of my last year's crop of 13 bulls, and I have never raised enough bulls to go around. Have been breeding these cattle for twelve years and find that every man that has a sprinkle of Red Polled blood in his herd wants more. I have a few fine heifers to spare. They are from a milking strain. Also 18 fine Poland-China gilts bred, due to farrow in May and June. They are the business type, up-to-date in every particular. Parties wanting Red Polls or Poland-Chinas will do well to write me or, better still, visit the herds."

The Moore Chemical & Manufacturing Co., of Kansas City, Mo., the well-known manufacturers of the famous Car-Sul Dip and Moore's Hog Remedy, is now under the complete business management of Dr. H. J. Whittier, upon whom the

general management of the business has devolved entirely since December, 1899. A former stockholder in the company, who recently withdrew and attempted to establish a business in competition has been temporarily enjoined by the Kansas City courts from engaging in the manufacture of chemicals, owing to a previous contract with the Moore Chemical & Manufacturing Co. Therefore, Car-Sul Dip and Moore's Hog Remedy and the other livestock specialties of this company can in the future as in the past be procured only from the original manufacturer. The goods will maintain hereafter the same high standard of excellence that has made them so popular and efficient in the past. Our readers who are not familiar with Car-Sul Dip should send to the Moore Chemical & Manufacturing Co., 1501 Genesee St., Kansas City, Mo., for their new book, "Facts for Stockman," which contains much valuable matter which every owner of live stock should have.

A Fire Department in Your Own Home at Low Cost. Protection Assured and Guaranteed. Endorsed by Fire Insurance Writers and Chiefs of Fire Departments Everywhere.

For one dollar, I will send postpaid to any address, my full and complete formula for making and using my celebrated dry powder fire extinguisher, the materials for which can be purchased from any druggist for a few cents per pound. So simple a child can operate them. Protect your homes, farm and ranch buildings, oil derricks and other structures. Don't pay extravagant prices for extinguishers not a whit better than mine. Its effects are instantaneous and certain. Entirely safe and as harmless as sugar to anything except fire which it destroys in the twinkling of an eye. Made in a few minutes at your home. Always ready. Never deteriorates. Keeps indefinitely in any climate. Supply your neighbors and others at a handsome profit. Splendid opportunity for farm boys to make some extra spending money. Don't delay. This offer may not appear again. Order to-day. You can not afford to be without this protection. Address, J. R. Lusk, Topeka, Kans.

Whitman's Baling Presses.

In this issue of our paper will be found the advertisement of Whitman Agricultural Company's celebrated baling presses, also cut of their very handsome exhibit at the World's Fair, St. Louis, where they received the grand prize. These presses have been victorious and in use throughout the world. The company claim the remarkable record of never having been in competition, in expositions or field trials, in any country, where they failed to receive the very highest award. They claim to have received more first prizes in the past ten years on their balers than all other manufacturers in America combined. These presses, both steam and horse-power, were awarded the grand prize at the late World's Fair in St. Louis. They guarantee these machines in every respect superior to anything now made, being far more rapid, powerful and durable. This reliable company have been manufacturing hay presses for many years, and have made valuable improvements from year to year on their machines. Illustrated catalogues and circulars will be furnished free on application.

A Great Music House and Their Wonderful Offer.

Attention is called to J. B. Thiery & Co., and their advertisement, which appears in this issue. Every home desirous of securing a beautiful piano or organ will receive something of great interest by writing to this firm for their special buying proposition. Their offer not only gives a home an instrument at a great saving of money, but no cash is needed, as the firm extends from one to two years' credit to all reliable and honest people. J. B. Thiery & Co. is one of the greatest firms of its kind in the country. They sell direct to the homes, thereby cutting out all the agents' and small dealers' profits and commissions. If you want to know how to supply your home and family with a first-class piano or organ, read what they say in their advertisement, and then write to them, mentioning Kansas Farmer.

Gopher.

About two years ago the McFarland Chemical Company, of Topeka, manufactured a machine and remedy which was the most successful appliance of the kind used in the State, but for lack of capital the manufacture and sale was limited, and the old institution is now succeeded by the Uncle Sam Exterminator Company, which has perfected the machines and put the price within the reach of all. Notice their announcement in this issue.

One-Way Rates.

Every day from March 1 to May 15, 1905, the Union Pacific will sell One-way Colonist tickets at the following rates, from Missouri River terminals, Council Bluffs, to Kansas City, inclusive:
\$20.00 to Ogden and Salt Lake City.
\$20.00 to Butte, Anaconda and Helena.
\$22.50 to Spokane and Wenatchee, Wash.
\$25.00 to Everett, Fairhaven, Whatcom, Vancouver, and Victoria, via Huntington and Spokane.
\$25.00 to Tacoma and Seattle, via Huntington and Portland or via Huntington and Spokane.
\$25.00 to Portland and Astoria, or Ashland, Roseburg, Eugene, Albany and Salem via Portland.
\$25.00 to San Francisco, Los Angeles and San Diego.
Correspondingly low rates to many other California, Oregon, Washington, Montana, Utah, and Idaho points.
Through Tourist cars run every day on Union Pacific between Missouri River and Pacific Coast; double berth \$5.75. For full information call on or address nearest Union Pacific agent.

When writing advertisers please mention this paper.

HAIL INSURANCE.

Farmers insure your crops in the Kansas State Mutual Hail Insurance Association.

CHAS. A. WILBUR, Agent for Shawnee Co

111 W. 6th St., TOPEKA, KANS.

Successor to R. A. Richards.

Bog Spavin

Lameness resembles bone spavin, but the bunch is in front of the true hook joint, a little to the inner side, and is soft and yielding, hardening sometimes as the case grows old.

Fleming's Spavin Cure (Liquid)
Is a special remedy for the soft and semi-solid bunches that make horses lame—Bog Spavin, Thoroughpin, Splint, Curb, Capped Hook, etc. It isn't a liniment to bathe the part, nor is it a simple blister. It is a remedy unlike any other—doesn't irritate and can't be imitated. Easy to use, only a little required, cures the lameness, takes the bunch, leaves no scar. Money back if it ever fails. Write for Free Horse Book before ordering. It tells all about this remedy, and tells what to do for blemishes of the hard and bony kind.

FLEMING BROS., Chemists,
212 Union Stock Yards, Chicago, Ill.

CAR-SUL

The Disinfectant Dip That is Guaranteed.

Stronger and more efficient than any other. Absolutely harmless. Does not gum the hair, crack the skin, or injure the eyes. Kills all lice and vermin. Cures scurvy, mange and all skin diseases. Heals all cuts, wounds, galls and sores. For hogs, cattle, sheep, young stock, poultry and general household use it has no equal.

Send For Free Book
on care of hogs and other livestock. If your dealer does not keep Car-Sul, do not take an imitation but send to us direct.
Trial gallon \$1.50, express paid; 5 gallon can \$8.00, freight paid.

Moore Chemical & Mfg. Co.
Originators of Dipping Tanks, 1507 Genesee St., Kansas City, Mo.

The Kansas State Agricultural College

A ten weeks' summer course in Domestic Science and Art for teachers will begin May 23, 1905. The regular spring term of the college begins March 28th. All of the common school branches are taught each term, and classes are formed in all of the first-year and nearly all of the second-year studies each term. Write for catalogue.

PRES. E. R. NICHOLS,
Box 50, Manhattan, Kans.

Learn About Pacific Northwest

Our new and handsomely illustrated 88-page book (with map) tells you about the leading industries in Oregon, Washington and Idaho, where the best of everything grows and where there are more openings for the man with small means or the man with thousands, than anywhere else in the Union. Four cents in postage will bring it to you. Write today.

A. L. CRAIG, GENERAL PASSENGER AGENT
THE OREGON RAILROAD & NAVIGATION CO.
PORTLAND, OREGON

Don't forget the Great Lewis & Clark Exposition, Portland, Oregon, June 1, to October 15, 1905

The Markets

Kansas City Grain Market.

Wheat prices were 3 to 8 cents lower than on Saturday, due to large offerings and the extreme weakness of futures. The demand was fair at the decline, except for inferior samples. The railroads reported 139 cars of wheat received, compared with 105 cars a week ago and 62 cars a year ago. Sales of car lots by sample on track, Kansas City: Hard wheat—No. 2, 1 car 92c, 1 car 90c, 4 cars 88c, 3 cars 86c, nominally 85@93c. No. 3 hard, 7 cars 85c, 5 cars 84c, 1 car 83½c, 10 cars 83c, 1 car 82½c, 20 cars 82c, 1 car 81½c, nominally 80@85c. No. 4 hard, 16 cars 80c, 5 cars 79c, 2 cars 78c, 2 cars 77c, 1 car 76c, 11 cars 75c, 2 cars 73c, 5 cars 72c, 11 cars 70c, 2 cars 68c, 3 cars 67c, 1 car 66c, 2 cars 65, 1 car mixed 63c. Rejected hard, 1 car 60c, nominally 55@65c. Soft wheat—No. 2 red, nominally 85@93c. No. 3 red, 2 cars 85c, nominally 80@85c. No. 4 red, 1 car 78½c, nominally 63@80c.

Corn prices declined ½c, though receipts were light. The demand was fair. The railroads reported 66 cars of corn received, compared with 83 cars a week ago and 59 cars a year ago. Sales of car lots by sample on track, Kansas City: Mixed corn—No. 2, 1 car yellow 44½c, 3 cars 44½c, 33 cars 44c; No. 3, nominally 43½@44c; No. 4, nominally 40@43c. White corn—No. 2, 2 cars 45c, 2 cars 44½c, 6 cars 44½c, 1 car 44c; No. 3, nominally 44c.

Oats were in fair demand. Prices were generally steady. The railroads reported 20 cars of oats received, compared with 10 cars a week ago and 22 cars a year ago. Sales of car lots by sample on track, Kansas City: Mixed oats—No. 2, 2 cars 31½c, 1 car color 31½c, 1 car color 30½c; No. 3, nominally 30@30½c. White oats—No. 2, 2 cars 33c, 1 car 32½c, 2 cars 32½c, 5 cars 32c. Rye—No. 2, nominally 71@74c.

Corn-chop—Nominally 84c, in 100-lb sacks. Timothy—Nominally \$2.55 per 100 lbs. Flaxseed—Nominally \$1.17. Bran—1 bulkhead car 74c, in 100-lb sacks. Shorts—1 bulkhead car 80c, in 100-lb sacks. Millet—German, \$1.40@1.50; common, \$1.25 @1.35 per 100 lbs. Red clover and alfalfa—9@11.50 per 100 lbs. Cane-seed—Nominally \$1.40@1.50. Kafir-corn—Nominally 65@70c per 100 lbs. Linseed cake—Car lots, \$27 per ton; ton lots, \$28; per 1,000 lbs., \$5; smaller quantities, \$1.60 per cwt. Bulk oil-cake, car lots, \$28 per ton. Castor beans—\$1.35 per bushel, in car lots. Barley—No. 3, 1 car 37c.

Kansas City Live-Stock Market.

Kansas City, Mo., Monday, April 24, 1905. Cattle receipts last week were not excessive, but even fairly liberal receipts following the run of the previous week proved too many, and prices continued the downward course inaugurated the middle of the previous week. During the week beef steers lost 20@50c, most on the medium to common kinds. Proportion of beef cattle was heavy, as speculators had bought a good many cattle for delivery last week, and they had to come. A large run of grass cattle in the Texas division proved an injury to prices on medium cows and heifers in the native division. Stockers and feeders were dull and averaged a quarter lower for the week.

Conditions are improved in the cattle market to-day, with only 7,000 head here and 20,000 at Chicago, a light Monday run at both markets. Prices are steady to strong as compared with the close of last week. Unless too many cattle are received to-morrow, which is unlikely, the market should be good balance of this week. Feeders generally have not been alarmed by the break of last week, nor their confidence in a continued good market shaken. The best steers still sell at \$6.40@6.60, bulk of steers \$5.50@5.65, cows \$3.25@5, veals \$5@6.25, bulls \$2.75@4.75, stockers and feeders \$3.25@5.15.

Conditions last week naturally worked toward higher prices for hogs but bad cattle market, weak provisions and adverse grain markets assisted packers in holding down the market. However, prices made a net gain of 6 cents during the week. Receipts were considerably lighter than they have been running, and quality not as good, pointing to a limited supply to come just now, and stronger prices. Market is higher to-day, top \$5.52½, bulk of sales \$5.35 to \$5.50, light hogs up to \$5.45.

Generally, the mutton market was strong last week. Prices were lower Thursday, but got back up again Friday. A good proposition of receipts now is clipped stock. Texas grass sheep have been expected since middle of last week, but none have been received as yet. Spring lambs sold last week around \$8.00, range of prices for both clipped and woolled stock in different classes was, lambs, \$6.00 to \$7.40, yearlings \$5.35 to \$6.60, wethers \$5.00 to \$6.00, ewes \$4.50 to \$5.65.

J. A. RICKART.

South St. Joseph Live-Stock Market.

South St. Joseph, Mo., April 24, 1905. There was a general reduction in the market on beef cattle to-day because of the severe decline of last week, and as a result of the moderate marketing there was a much better tone to the trade and prices were about 10c higher on anything desirable in the steer line. Pretty good 1250-pound dressed beef steers sold up to \$6.00 and fairly good medium short-fed steers sold around \$5.50@5.75 with hay-fed offerings at \$5.00@5.25. The Eastern situation is still very sensitive and liable to a still further decline in value under pressure of heavy receipts later on in the week in Chicago, but this can be avoided by shippers and producers sending their stock to the outside markets where the demand is stronger and prices relatively higher in the East. There was also a better tone to the trade in butcher stock and good handy well-fatted heifers sold up to \$5.40 and pretty decent kinds of light-weight heifers sold around \$4.90.

Special Want Column

"Wanted," "For Sale," "For Exchange," and small want or special advertisements for short time will be inserted in this column without display for 10 cents per line of seven words or less per week. Initials or a number counted as one word. No order accepted for less than \$1.00.

CATTLE.

FOR SALE—Registered Jersey bull calves, all ages, ready for service, prices \$25 to \$50. All sired by "Financial Count," (bred by Wm. Rockefeller, the Standard Oil millionaire), from imported sire and dam. Both Island prize-winners, dam being winner in class two years over the Island of Jersey. Sire's dam gave 62 pounds of milk daily (59 in public test of several days) and is dam of eight cows, all whose average daily milk record is 45 pounds, all with public butter records. "Count's" dam and four generations back, gave from 22 to 28 quarts daily, and all had butter records. The dam of "Count's" sire (Blue Belle) sold last year for \$3,500, and was also a great Island winner. Some calves are from daughters of Stoke Pogis Marigold, whose dam and sire's dam were 25 pound cows. Later whose dam has authenticated butter record of 32 pounds in seven days, and will sell last six "foundation" cows in herd and young bull. Write what you want to Sayda Polo Jersey Farm, Route 6, Parsons, Kansas.

FOR SALE—Seventeen registered Angus bulls, 10 to 20 months old; also a number of cows and heifers at reasonable prices. Will sell my herd bull. Address A. L. Wynkoop, Bendena, Kans.

FOR SALE—Several good red thoroughbred non-registered Shorthorn bulls, 16 months old and in good condition. Price for the choice, for the next 10 days, \$50 each. Come and see them at once and get a bargain. A. F. Huse, Manhattan, Kans. Phone at residence.

FOR SALE—Registered Aberdeen-Angus, 17 bulls, 10 to 20 months old, or would exchange. Also a number of cows and heifers at reasonable prices. 90 head in herd. A. L. Wynkoop, Bendena, Kans.

FOR SALE—10 Registered Galloway bulls, cheap. J. A. Darrow, Route 3, Miltonvale, Kans.

FOR SALE—Red Polled bulls, half-brother to World's Fair winner, D. F. Van Buskirk, Blue Mound, Kans.

FOR SALE—8 Scotch Shorthorn bulls from 10 to 30 months old, all red. J. J. Thorne, Kinsley, Kansas.

FOR SALE—Aberdeen-Angus cattle, registered bulls, cows or heifers. J. L. Lowe, Erie, Kansas.

FOR SALE—Shorthorns—One herd bull, Greenwood 165885 and 3 young bulls, all Scotch-topped. Brookover Bros., Eureka, Kans.

FOR SALE—A registered Red Polled bull, 30 months old, weight 1500 pounds, in good condition, will guarantee him a breeder; price, \$100. For pedigree or other information address W. E. Brockelsy, 815 E. Hancock, Lawrence, Kans.

FOUR GOOD HEREFORD BULLS, 15 to 20 months old, at reduced prices if taken at once; also a few younger ones. A. Johnson, Clearwater, Kans.

FOR SALE—Guernsey bulls from best registered stock. J. W. Perkins, 423 Altman Building, Kansas City, Mo.

FOR SALE—Eight good, registered Shorthorn bulls, four straight Cruickshank, good ones, and prices right. H. W. McAfee, Station C, Topeka, Kansas.

FOR SALE—A 3-year old Shorthorn bull, sired by Royal Bates. Address Dr. N. J. Taylor, Berryton, Kans.

SWINE.

FOR SALE—A good thoroughbred Tamworth boar and 2 extra good Poland-China boars old enough for service. Write A. A. Adams, Berryton, Kans.

FOR SALE—Duroc boar pigs, fall litters, pigs right, prices right. W. A. Wood, Elmdale, Kans.

EIGHT DUROC BOARS at a special low price to close out, weighing from 100 to 175 pounds; also a lot of winter pigs. A. G. Dorr, Osage City, Kans.

DUROC-JERSEY fall gilts and sows bred for fall litters by 5 leading males. Address John Schowalter, Cook, Neb.

FOR SALE—Say! I have some fine, big-boned, broad-backed Berkshires, brood sows or pigs. Want some? Write me; turkeys all sold. E. M. Melville, Eudora, Kans.

FOR SALE—Boars for immediate use. Sons of Perfect Know, out of daughter of Ideal Sunshine. Geo. W. Maffet, Lawrence, Kans.

while fair to medium cows which constituted the supply sold largely at \$4.40; choice fat cows were selling at \$4.75@5; fat bulls were steady at last week's higher range of prices as the demand was strong on both packer and shipping account. Deals were in moderate supply and steady, common to choice being quotable at \$5.50@6.50. While good heavy feeders indicated a further decline of 10c to-day, the general run of stock stuff showed a little improvement, as regular dealers were very free buyers of all weights under 750 pounds, prices of all kinds of stock cattle for the past two weeks have been the lowest of the season and the country has lost an opportunity to fill up their pastures and summer feed-lots with cattle worth the money. Everything indicates that values will greatly increase as the season advances and those in need of anything in the stocker and feeder line should get in as soon as possible while prices are right and they can obtain a good assortment.

The hog market is working higher slowly on account of moderate receipts, sales to-day ranging from \$5.40@5.50, with the bulk selling at \$5.45@5.50. It is hardly probable values will make much permanent gain and heavy receipts would force values down much more readily than they have gone up, therefore shippers should be on the safe side and should keep their stock coming to market as soon as ready. The local demand continues very strong with the receipts not up to the requirements of the trade.

Heavy receipts of sheep and lambs to-day broke the market 10@15c on all classes, top Colorado lambs selling up to \$7.30. The demand, however, was very good, and the 12,000 offered were pretty well sold much before the close of the session.

WARRICK.

Observation Cafe Cars now in service on Wabash day trains between Kansas City and St. Louis, both directions and on Wabash New York Fast Mail train No. 8.

HORSES AND MULES.

TO TRADE for good Jennets, good registered standard-bred stallion. H. T. Hineman, Dighton, Kans.

LEAVENWORTH COUNTY JACK FARM—5 miles north of Easton; 20 jacks and Jennets for sale. O. J. Corson, Potter, Kans.

STRAY MARE—A black mare came to Wm. Cook's residence, one-half mile east of the city of Downs, Kans., on or about the 10th day of October, 1904, weight about 900 pounds, age about 8 years, worth \$40; branded on the left shoulder; owner or owners will please come, prove property and pay expenses.

SEEDS AND PLANTS.

FOR SALE—Tomato and cabbage plants, strong, vigorous. Tomato, 25c. per 100, \$2 per 1000; cabbage same prices. C. A. Hicks & Co., Lawrence, Kans.

PLANTS FOR SALE—Strawberry, blackberry, dewberry, rhubarb, grape-vines. Write for special prices. Address J. C. Banta, Topeka, Kans.

ALFALFA SEED—J. T. Axtell, Newton, Kans.

FOR SALE—Seed Sweet potatoes; 6 kinds; write for prices to I. P. Myers, Hayesville, Kans.

FOR SALE—Speltz, 60c bu. f. o. b. Two registered Galloway bulls. Wheeler & Baldwin, Delphos, Kans., or S. B. Wheeler, Ada, Kans.

STRAWBERRY, Blackberry and Raspberry Plants—Best varieties, low price. J. H. Wendell, Route 5, 2½ m. north on Central Ave., Topeka, Kan

ENGLISH BLUE-GRASS SEED FOR SALE—My own raising; fresh and clear of all foul seed; 5¢ per cwt., sacked and loaded. Chester Thomas, Waterville, Kans.

SEED CORN—Both white and yellow at 90 cents per bushel; cane, millet and Kafir-corn seeds. Prices and sample on application. Adams & Walton, Osage City, Kans.

SEEDS WANTED—There are many inquiries for seeds adapted to various parts of Kansas; Black Hulled White Kafir-corn, different varieties of oats, corn suited to localities, etc., are in demand. Those who have such for sale may make profits for themselves and confer benefits on others by advertising in this column.

FOR SALE—Speltz, 60 cents per bushel; Soy-Beans, \$1.25; Red Kafir-Corn, 50 cents; sacks free in ten bushel lots. Seed extra nice and clean. C. M. Garver, Abilene, Kans.

WANTED—Cane, Kafir-corn, millet, alfalfa, clover, English blue-grass and other seeds. If any to offer send samples and write us. Missouri Seed Co., Kansas City, Mo.

POULTRY.

S. C. BROWN LEGHORNS—The champion winter and summer layers. Also Banded Plymouth Rocks and Buff Cochins Bantams. Eggs from either variety, 85c per 15; \$1.25 per 30. L. E. Evans, Fort Scott, Kans.

PEKIN DUCK EGGS, \$1 per sitting of 12. Mrs. M. M. Banta, Topeka, Kans.

BUFF LEGHORNS EXCLUSIVELY—Eggs \$1.75 per 50; \$3 per 100. J. A. Reed, Route 3 Wake field, Kans.

WHITE LILY POULTRY YARDS—Eggs from pure-bred White Langshans, \$1 per 15. Satisfaction guaranteed. Mrs. John Cooke, Route 1, Greeley, Kans.

BARRED AND WHITE PLYMOUTH ROCK Eggs, \$2 per 15. Hackin and Bradley strains, scoring 93½ to 94½. Mr. and Mrs. Chris Bearman, Ottawa, Kans.

FULL-BLOOD Plymouth Rock Eggs for sale; \$1 for 18. H. C. Burns, Edgerton, Kans.

WHITE WYANDOTTE

Eggs, guaranteed fertile, from, from heavy laying prize winners.

\$2 and \$3 per 15.

BEECHER & BEECHER, BELLEVILLE, KANS.

FARMS AND RANCHES.

WANTED—Men and teams to break prairie. Will rent the land or sell it on easy payments. Address, W. W. Cook, Russell, Kans.

160 ACRES good, level Reno County farm, four miles of market town; 70 acres in wheat; ½ with sale; no improvements. Price, \$4,500; \$2,000 cash, \$2,500 five years, 6 per cent. F. C. Purdy, Sterling, Kansas.

SOME FINE BARGAINS—480 acres, 60 acres alfalfa, 90 acres bluegrass 250 acres under plow; fine improvements; a great bargain; price, \$20 per acre. 80 acres, good land, all smooth; moderate improvements; good bargain; price \$2100. 320 acres, all closed in, 90 acres bottom; good improvements; 10 acres timber; running water; cheap at \$6200. 120 acres, small improvements, 70 acres under plow; reasonable; price \$2000. Garrison & Studebaker, Florence, Kans.; office at Minneapolis, Kans., also.

DO YOU WANT to buy a farm ranch, city property, or buy, sell or exchange a stock of merchandise, or want a bargain in some of my wheat farms, write me. F. C. Purdy, Sterling, Kans.

FOR SALE—Good farm and pleasant home, one-half mile from county high-school and city public school, three-fourths of a mile from several churches and stores, 2 grain elevators and stations. Farm consists of 800 acres, adapted to farming and stock raising, good 9-room house, with water, bathroom and good cellar, ice-house, tool-house, barns and sheds sufficient to hold 40 tons of hay and 150 head of cattle and horses, alfalfa, shade and fruit trees. Farm can be divided. Price, \$15 per acre. Call on or address the owner, Box 192, Wakeeney, Kans.

BARGAINS in Central and Western Kansas land. J. J. Hazlett, Sterling, Kans.

160 ACRES, three-fourths mile from Bucklin, southeast part of Ford Co., one-half smooth in cultivation, balance pasture, 7-room house finished, 40-foot barn; other improvements to match. Price, \$3,500; \$2,000 cash. No agents. E. A. Gildemeister, Bucklin, Kans.

BARGAINS in good grain, stock and alfalfa farms. J. C. Burnett, Emporia, Kans.

FOR SALE OR EXCHANGE—Land, merchandise and city property. Let me know what you want to buy sell or trade. A. S. Quisenberry, Marion, Kans.

FARMS AND RANCHES.

TWO SNAPS—160 acres cheap; improvements, valley land, 140 acres cultivated; price \$3,200. Small payment down, balance yearly payments. 160 acres, 12-room house, 30 by 40 barn, 85 acres cultivated; price, \$4,500; half down, balance terms. Garrison & Studebaker, Minneapolis, Kans. We also have offices at Florence and Salina. Try us.

TEXAS BARGAIN—900 acres, 800 in wheat, 18 horses, 10 cattle, thrasher outfit worth \$2,000, finest of land, will make 16,000 bushels wheat this year. Price, \$30 per acre; one-third cash, other in four payments. Great wheat belt of Texas. G. J. Clark & Co., Iowa Park, Wichita County, Texas.

FIFTY farms in Southern Kansas, from \$15 to \$70 per acre; can suit you in grain, stock or fruit farms. I have farms in Oklahoma, Missouri and Arkansas for sale or exchange. If you want city property, I have it. Write me. I can fix you out Wm. Green, P. O. Box 966, Wichita, Kans.

FOR TRADE—200 acres improved near county seat, Central Tennessee; fine. Also Franklin County, Kansas, farms to sell. Buckeye Agency, Route 2, Williamsburg, Kans.

FOR SALE—200 acres fine pasture land, 175 acres of it mow land, two miles from Alma, living water that never fails, all fenced. This is a bargain if taken soon. Call on or address Mrs. M. A. Watts, Alma, Kans.

LAND FOR SALE in Western part of the great wheat State. H. V. Gilbert, Wallace, Kans.

FARMS For rich farming and fruit-growing. Write to J. D. S. Hanson, Hart, Mich.

VIRGINIA FARMS Good land. Fine crops. \$5 per acre and up. Address, Arr'l Dep. 66, N. & W. Ry., Roanoke, Va.

LAND IN THE OIL DISTRICT

We have land from \$5 to \$50 per acre in tracts of 100 to 1500 acres. List your property with us. We sell or trade everything. Money loaned. Farms rented and rents collected.

ENLOW & CO., Elmdale, - Kansas.

FARM LOANS

Made direct to farmers in Shawnee and adjoining counties at a low rate of interest. Money ready. No delay in closing loan when a good title is furnished and security is satisfactory. Please write or call.

DAVIS, WELLCOME & CO., Stormont Bldg., 107 West 6th, Topeka, Ka.

I CAN SELL YOUR FARM, RANCH OR BUSINESS, no matter where located.

Properties and business of all kinds sold quickly for cash in all parts of the United States. Don't wait. Write to-day, describing what you have to sell and give cash price on same. A. P. TONE WILSON, JR., Real Estate Specialist, 413 Kansas Ave., Topeka, Kans.

For Sale or Trade for Land

A large breeding barn and about 4 acres of land with good breeding stock, or will sell and give purchaser time on part. This is one of the very best breeding points in the state.

L. C. WYMER, - Peabody, Kansas

MISCELLANEOUS.

WANTED—Canvassers for a fruit can holder and sealer. Territory given. J. W. Adams, 741 Tennessee, Lawrence, Kans.

WHITE PEARL POPCORN on ear for seed. One pound, 5 cents; four pounds, 15 cents; larger lots at special rates. D. O. Coe, 119 East Sixth St., Topeka, Kans.

FOR SALE—A good second-hand survey with carriage top. Call at 222 Topeka Ave., Topeka, Kans.

WANTED—All-around farm hand with some dairy experience, who can care for separator and dairy-room. Permanent position for right man. Also young boy, old enough to milk, and handle team who wants to grow up with a dairy, fruit and vegetable farm. Sayda Polo Jersey Farm, Route 6, Parsons, Kans.

HERDSMAN WANTS POSITION—Am 35 years old; long experience and best of references. Address George Mason, 1308 Penn street, Kansas City, Mo.

WANTED—Middle-aged woman with no incumbencies to do house work in a family of three. R. J. Linscott, Holton, Kans.

HONEY—New Crop, water white, 8 cents per pound. Special prices in quantity. A. S. Parson, Rocky Ford, Colo.

FOR SALE—Second-hand engines, all kinds and all prices; also separators for farmers' own use. Address the Geiser Mfg. Co., Kansas City, Mo.

AGENTS WANTED Sell our \$1 bottle Sarsaparilla for 35 cts.; best seller; 350 per cent profit. Write to-day for terms and territory. F. R. GREENE, 115 Lake St., Chicago.

LEGAL.

PUBLICATION NOTICE.

To Charles Woodcock:—You are hereby notified that on the 4th day of April, 1905, an order of attachment was issued by M. F. Laycock, the clerk of the Court of Topeka, in and for Shawnee County, State of Kansas, in an action pending in said court in which E. G. Kinley is plaintiff, and you are defendant, against you, for the sum of \$23.94, and that said cause will be heard by said court on the 25th day of May, 1905, at 8 o'clock a. m.

FRANK H. FOSTER, Attorney for Plaintiff.

Stray List

Marion County—J. H. Thrasher, Clerk. HEIFER—Taken up by A. D. Tooker, in Grant p. (P. O. Marion), Nov. 3, 1904, one 3-year-old red heifer, bar on left hip.

WEEKLY WEATHER CROP
BULLETIN

Weekly weather crop bulletin for the Kansas Weather Service, for the week ending April 25, 1905, prepared by T. B. Jennings, Station Director.

GENERAL CONDITIONS.

The weather was cold the first of the week but warmed up the last days, still the week has been too cool for good results. Showers occurred over the State; they were generally light in the southern and eastern counties, much better in the central, northern, and northwestern counties.

RESULTS.

EASTERN DIVISION.

Wheat has made good progress during the week except in Brown, Doniphan, Wilson, and Wyandotte Counties. Oats have done fairly well but the crop is needing rain. Corn-planting is well along; the early planted corn is up, and in Crawford and Montgomery is being cultivated. Potatoes are coming up, and in Montgomery are being cultivated. Alfalfa is doing well. Grass needs rain and warmth. Apples are in full bloom this week and give promise of an abundant crop. Cherry-trees are full of bloom. Plums and pears are in bloom. Seedling peaches are in full bloom. Strawberries are coming into bloom in Cherokee but are thought to be killed in Wyandotte.

Anderson.—Cold, dry weather has been unfavorable to growth of crops; with the possible exception of wheat, all growing crops are in need of rain and higher temperature.

Atchison.—Wheat is growing well; pasture is good, although growth of grass has been retarded by cool weather; oats growing slowly; a large amount of corn is being planted and the ground is in fine

good progress; fruit is only slightly injured by the cold; stock is in pasture and is looking well.

Johnson.—Rain and warmer weather would be beneficial to all crops; grass and oats making slow growth; corn nearly all planted; potatoes injured by frost; blackberries winter-killed.

Linn.—Weather too cold and dry for good growth of crops; wheat needs rain; corn-planting is at its height and some is coming up.

Lyon.—All vegetation retarded by cold weather.

Marshall.—All growing crops doing well; corn-planting is in progress; wheat and oats are doing well; grass is growing well although somewhat retarded by the cool weather; apple-trees are in full bloom and were not injured apparently by the frost; poor prospect for peaches.

Montgomery.—Wheat is doing well; oats and garden products need rain and the weather is too cool for growth of corn; early corn and potatoes are under cultivation.

Morris.—Wheat, barley, oats, spelt, and grass are doing fairly well; early planted corn is coming up; apples give promise of good crop; cattle are in pasture.

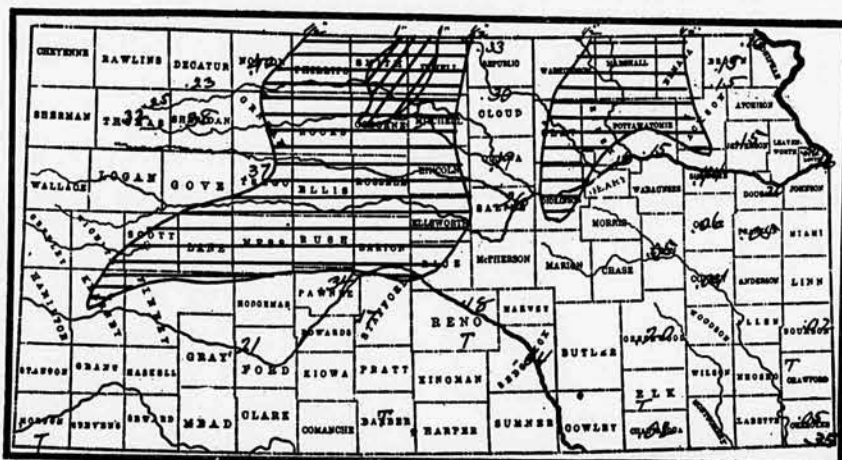
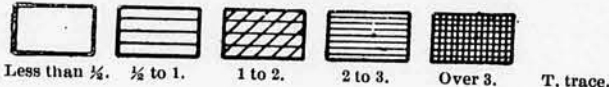
Osage.—Wheat and oats are in good condition but need rain; about one-half corn-planting completed; garden products growing slowly.

Pottawatomie.—Crops are doing well and corn-planting is well advanced.

Shawnee.—Wheat and rye are doing well; rain would be beneficial to pastures and meadows; apples, cherries, pears, peaches, plums, and grapes are in bloom and give promise of good crop; potato-planting is in progress and gardens are doing well; corn-planting is in progress; cattle are doing well, but pastures are hardly sufficient for stock; the weather has been too cold for rapid growth of crops.

Wilson.—Wheat is doing fairly well but the cool, dry weather has been unfavorable to growth of oats and grass—all of these crops need rain; apples are in full bloom and gardens are growing well;

Rainfall for Week Ending April 22, 1905.

SCALE IN
INCHES:

condition; cherries, plums, apples and peaches are in bloom; fruit-trees probably damaged somewhat by frost.

Bourbon.—Wheat and oats are not in good condition on account of the cool, dry weather; rain would be beneficial to these crops and to vegetables; most of the corn ground has been planted, but planting has been delayed by the dry weather.

Brown.—Growing crops including meadows and pastures have made slow growth since last report; corn-planting is in progress but will not be general until next week; apples are beginning to bloom and were apparently uninjured by recent cold weather.

Chase.—Crops are doing well; wheat, alfalfa and grass are in good condition; corn-planting is advancing; gardens are growing.

Chautauqua.—Wheat is growing well but the weather has been too cool for growth of corn; about two-thirds of the corn crop, however, is up and shows a good stand; oats and alfalfa are making good growth.

Cherokee.—Farm-work is progressing rapidly; wheat, oats and tame grasses look well; fruit-trees are still in bloom and with exception of peaches give promise of a good crop; strawberries are in full bloom but probably suffered injury from frost.

Coffey.—Good week for farm-work but rain would be beneficial at present; two-thirds of corn ground has been planted, but some of the early planting has been spoiled; apple-trees are in bloom.

Crawford.—Wheat is in fine condition; oats show a good stand but need rain; flax has been sown but the dry weather has prevented the sprouting; corn is all planted and some early sown fields are under cultivation; almost all stock is in pasture.

Doniphan.—Vegetation has been retarded by cold weather; wheat has deteriorated; no corn has been planted, thus far, in the northern portion of the county; trees are in blossom, but somewhat damaged by freezing temperature.

Douglas.—Wheat is doing well; grass-growing has been delayed by the cool weather; much corn is being planted; some peach- and apple-trees in blossom.

Elk.—Cool, dry weather has not been beneficial to crops; growth of grass retarded.

Franklin.—A large amount of corn has been planted, but rain would be beneficial to crops.

Geary.—Wheat is doing fairly well, but growth of oats and grass shows little improvement; corn-planting is progressing well and a large part of the ground has been planted; apples, pears and late cherries are in full bloom.

Greenwood.—Cattle are in pasture; corn and potatoes are coming up; corn-planting one-half completed; oats and wheat are looking well; fruit prospects are good.

Jefferson.—Good week for farmwork, although vegetation was delayed by the cold weather; corn-planting is making

corn-planting is well advanced and some corn is up.

Wyandotte.—Wheat is looking yellow and the weather has been too cool for vegetation; oats are growing very slowly; strawberries are injured.

MIDDLE DIVISION.

Wheat is in good condition but has not made as rapid progress this week as heretofore. Oats generally are in good condition, though in Sedgwick some yellow spots have appeared. Corn-planting has begun in the northern counties and is nearly finished in the southern; the early planted is coming up in the central and southern counties. Potatoes are generally planted; the early potatoes are coming up. Apples are in full bloom, giving good promise. Cherries, pears and plums are full of bloom. Strawberries are in bloom. Grass looks well but has grown slowly, needing warmer weather. Alfalfa is in very good condition, and in the southern counties is nearly ready to cut. Barley is not in as good condition as heretofore, weather too cool. Speltz is growing slowly in Washington.

Barber.—Most of the late wheat is in poor condition; otherwise, it is in good condition, although rain would be beneficial; corn-planting is in progress; growth of grass has been retarded by cold weather.

Barton.—Wheat is generally in good condition but is not looking so well as it did a few weeks ago, on account of the low temperature and dry weather; the ground is very hard; corn-planting is progressing and alfalfa is in very good condition; fruits are in bloom but were somewhat damaged by cold weather.

Butler.—About one-half of the corn ground has been planted and some is coming up; ground is in good condition; wheat, grass, and alfalfa are looking well; alfalfa-cutting will begin in about ten days; apples, cherries and plums are in bloom and there are prospects of a fair crop; rain is needed.

Clay.—Corn-planting is progressing well, some fields being finished; wheat, oats and alfalfa were benefited by recent rains; grass is growing slowly on account of the cold weather; potatoes are being planted.

Cloud.—Wheat is in good condition; farmwork delayed by cold, wet weather.

Cowley.—Wheat and oats are looking well and corn-planting is almost completed; rain would be beneficial to crops.

Dickinson.—Crops are generally in good condition, with the exception of corn; although corn-planting has been well advanced, the weather has been too cold for good growth; grasses look well; fruits still in bloom.

Ellsworth.—Wheat is in good condition; about one-fourth of the corn ground has been planted.

Harper.—Wheat is doing well and oats are up; early planted corn is up and almost all corn ground has been listed; ground is moist and in good condition; strawberries are in bloom and there are

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good prospects for all fruits except

Jewell.—Winter grain is doing well in spite of the cold weather which has been experienced; alfalfa is in good condition; corn-planting has been well advanced; all crops are making a good start.

Kingman.—Corn-planting is almost completed; wheat and small grain are in good condition; grass is growing well but is beginning to show need of rain; apple-trees are in bloom.

Lincoln.—Wheat is in very good condition and no plowing up has been necessary; a large amount of corn has been planted; alfalfa has been doing well and was benefited by recent rains.

Marion.—Wheat and oats made a good growth during the week, although the weather was a little too cool for corn and grass.

Ottawa.—A cold, dry week but with exception of fruits, no injury has been done to crops by the cold; wheat is generally in fine condition; alfalfa is doing very well for the season; early potatoes are up; apple, plum, and pear-trees are in bud; trees; blossoming of fruits has been generally slow on account of the cold weather, but prospect is good with the exception of peaches.

Pawnee.—Wheat is looking well; oats and barley are not making good growth on account of the cold weather.

Phillips.—Fall grain has made a good growth, notwithstanding the cold weather, and recent rains have been beneficial; wheat is looking well and pastures are starting; peaches and other fruits are not seriously injured by recent frost; corn-planting is advancing.

Reno.—Wheat and oats continue to look well, but are needing rain; alfalfa is making a good growth; corn-listing is progressing rapidly and some corn is up; sorghum is being listed for seed; potatoes are up and garden vegetables are generally doing well; rhubarb, asparagus, and radishes are plentiful; cherries and strawberries are in bloom.

Republic.—Cold weather has been unfavorable to growth of all crops although some corn has been planted; fruit has been injured by the cold.

Rooks.—Wheat is doing well but the weather has been too cold for good growth of barley, oats and grass; alfalfa is looking well, although growth has been delayed; corn-planting is making good progress.

Russell.—A dry, cool week; wheat is in fair condition but is in need of rain; alfalfa is growing slowly; potatoes are coming up and strawberries are in bloom; corn-planting is progressing well; rain would be beneficial to all crops.

Saline.—Wheat is looking well; apples and cherries are in full bloom.

Sedgwick.—Wheat is in good condition; oats are doing well but are yellow in some places; corn is all planted and is sprouting.

Stafford.—Farmwork is well advanced; wheat is doing well but needs rain; corn-planting is in progress.

Washington.—Wheat is looking well; oats and speltz are growing slowly and alfalfa is doing well; some corn is being planted; apples and cherries are in bloom and potato-planting is almost completed; growth of all crops has been delayed by cold weather.

WESTERN DIVISION.

Wheat is in good condition, except that some yellow spots have appeared in the northeastern part of Thomas County. Oats are improving in the north and are in good condition in the south part of the division. Corn-planting is progressing in the southern and central portions, but has about stopped in the northern on account of the cold weather. Alfalfa is in good condition. Rye is doing well. Barley is recovering from the effects of the late freeze in the northern counties and is in very good condition in the southern. Apples, peaches and plums are in blossom. Grass is improving in the southern counties but has been retarded by the cold in the northern.

Decatur.—Favorable weather for growth of winter wheat; barley and oats recuperating from injury by recent frosts; corn-planting has begun; injury to fruits by recent cold weather was over-estimated.

Ford.—Wheat and alfalfa are in good condition; fruits in this section were injured by cold weather.

Kearney.—Cool, wet week and ground too wet to plow; wheat, oats, barley and alfalfa are doing well; apricots, peaches and plums were injured by cold weather but apples are in good condition.

Lane.—Corn-planting is in progress; peaches and wild plums are in bloom.

Morton.—Some plowing has been done; grass is improving and cattle are thriving; apricots are in good condition; a few peach blossoms have appeared.

Ness.—Ground in good condition and favorable weather for growing crops toward end of week; fruits somewhat injured by cold during first part of week but damage to other crops was slight.

Norton.—Wheat and rye are doing well; ground in fine condition; weather too cold for corn-planting; alfalfa is progressing slowly; apricots and peaches somewhat damaged by cold.

Thomas.—Wheat is doing well, although some of it is showing yellow patches; barley has been injured by frost and growth of range-grass is slow; plowing for corn is in progress but not much has been planted on account of the cold weather.

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In another column the Norfolk & Western Railway offers an exceedingly attractive proposition relative to productive farming lands, well located near thriving towns on their line, having good social, church and school advantages, and excellent shipping facilities to the large markets of the Atlantic seaboard. This railway company is making strenuous efforts to develop these old Virginia farms and plantations, which have fallen into neglect since the war, and have already succeeded in inducing a large number of Northern and Western farmers to come down and locate. If you will write Mr. F. H. LeBaume, Agricultural and Industrial Agent N. & W. Ry., Box 52A, Roanoke, Va., he will take pleasure in sending you a full assortment of attractive literature setting forth the many advantages of that section of the country, with testimonials from farmers already located there.

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By W. J. SPILLMAN

Agrostologist, U. S. Department of Agriculture

An intensely practical discussion of the farm grasses of the United States of America is presented in this volume. It is essentially a resume of the experience of American farmers with grasses, and it is safe to say that no other work has covered the ground so thoroughly. No attempt has been made to give a connected account of all the grasses known in this country, but the aim has been rather to give just the information which a farmer wants about all those grasses that have an actual standing on American farms. The valuable subject is considered entirely from the standpoint of the farmer. One of the most important features of the book is the maps showing, at a glance, the distribution of this distribution are fully brought out. The principal chapters treat on the grass crop, the seed and its impurities; the bluegrasses; millets; southern grasses; redtop and orchard grass; brome grasses; grasses for special conditions; haying machinery and implements; insects and fungi injurious to grasses, etc., etc. The methods followed on some pre-eminent successful farms are described in detail, and their application to grass lands throughout the country is discussed. The discussion of each grass is proportional to its importance on American farms.

This book represents the judgment of a farmer of long experience and wide observations regarding the plan in agriculture of every grass of any importance in American farming. In its preparation its use as a text book in schools as well as a manual of reference for the actual farmer has constantly been kept in mind. The book is most conveniently arranged and splendidly indexed, so that the reader may find any subject at a glance.

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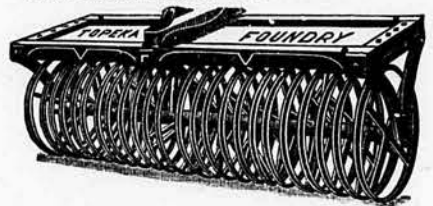
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The Veterinarian

We cordially invite our readers to consult us whenever they desire any information in regard to sick or lame animals, and thus assist us in making this department one of the interesting features of the Kansas Farmer. Give age, color and sex of animal, stating symptoms accurately, of how long standing, and what treatment, if any, has been resorted to. All replies through this column are free. In order to receive a prompt reply, all letters for this department should give the inquirer's postoffice, should be signed with his full name, and should be addressed to the Veterinary Department, Kansas Farmer, Topeka, Kans., or Dr. C. L. Barnes, Manhattan, Kans.

Knee Sprung.—I have a mare that is knee-sprung; has been that way for about a year. What can I do for her? Great Bend, Kans. W. R.

Answer.—If your horse is well along in years, very little can be done for it. A young animal may be helped by rubbing the limbs with a stimulating liniment and strengthening the affected muscles.

Mare with Weak Eyes.—I have a 5-year-old mare with weak eyes; one eye especially is quite weak. The other seems to be nearly normal. She has been affected for a year or so. What is the cause and remedy? I do not know whether or not she has had any treatment, as I bought her but recently. Hill City, Kans. W. C. W.

Answer.—If there is a scum over your mare's eye, hot water applications will greatly relieve her. If the eyes are weak only at times, I would recommend your giving iodide of potassium internally in doses of about one dram daily in ground feed. Continue this treatment for about two weeks, then withhold for a week and begin again.

Ailing Mare.—My black mare has sick spells occasionally; takes them most any time with nothing, apparently, to cause them. She will lie down on her side and stretch out, but seldom rolls, and hangs her head when standing. She has not had any trouble for about six months until the last few days. I have not used her much all winter, but hitched her up and worked her one day when she became sick again. Is sick for from one to three hours; will have a colt in May. I have given her a little asfoetida. Can you tell me what to do for her? Cabool, Mo. C. L. W.

Answer.—As you have not given any very definite symptoms as to the trouble with your mare it is hard to prescribe. It looks to me like a touch of colic, which may be chronic, or possibly coming from worms. First, would advise giving her the following: Turpentine 2 ounces, liquor ferri dialysatus ½ ounce, raw linseed oil 1 pint. Give her this after she has fasted ten hours. Twenty-four hours after giving her the prescription give her another pint of raw linseed oil. It will be well then to have the following prescription filled: Pulverized iron sulfate, 1½ pounds; pulverized nux vomica, 9 ounces; pulverized ginger, 1 pound; pulverized gentian, 4 ounces; oil-meal, 35 pounds. Mix and give two and one-half ounces of this three times daily in ground feed. This is a good general tonic to tone up the system. You will probably need to give it for a month to get good results, especially if the mare is not in good condition. A handful of buchu leaves in her ground feed once daily will be beneficial in keeping the kidneys acting freely.

Lame Mare.—About four weeks ago my mare got cut just below the large pastern joint; she was not lame until after I had worked her three or four days. The cut healed, but ten days afterwards, the pastern joint swelled up and she can hardly walk. The joint is feverish, but is not hard nor very soft. I have been using a solution of mullen tea, vinegar and salt. Can you tell me what to do for it? J. W. S. Kennedale, Texas.

Answer.—From the fact that there is considerable fever and soreness in the mare's pastern joint I would advise you to have the following prescription filled: Compound soap liniment, 1 pint; fluid extract of belladonna, 6 ounces; fluid extract of poke-root, 6 ounces; turpentine, 2 ounces; tincture of arnica, 4 ounces. Mix and shake well before using; apply this to the af-

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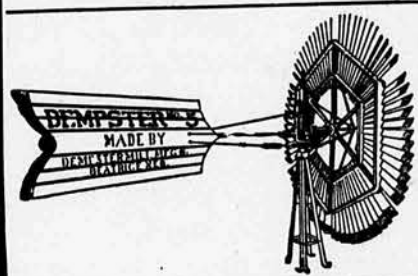
Perry Henderson, of Litterberry, Ill., writes as follows. Gentlemen: The Iowa Worm Powder you shipped me by express December 24, 1904, I received on December 26th. I went to feeding right away and there was no end to the worms that came from my hogs. I had 80 head of shoats and they were in bad shape. Since feeding the Iowa Worm Powder I have been feeding Iowa Stock Food and I never had Worm Powder do any better than mine are doing now. I had some of my neighbors use some of the Iowa Worm Powder and they got the best of results from it. I got a man to use it who was using another worm remedy. He now thinks the Iowa Worm Powder the only worm remedy, and says he will not use the other any more. I wish you could have seen the worms that passed from his hogs. It was a sight. I advised him to feed Iowa Stock Food to keep his hogs gaining better.

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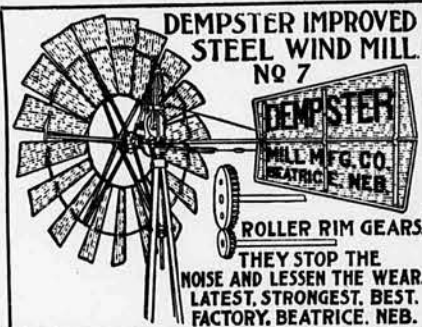
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fect joint three times daily with considerable hand-rubbing. Before applying, wash the joint with water as hot as the mare will bear, wipe dry and apply the liniment.

Poisoning.—I had a cow which gave birth to a calf March 18, she "cleaned" and seemed to be as well as usual until the 27th; I found her in the stable with her eyes turned almost front side back; the muscles in the entire body quivering like one with the ague; and she suffered with partial tetanus. I at once gave her 6 grains of capsicum and 35 minims of camphor. Afterward I gave a pint of lard to move her bowels, and ½ teaspoonful of fluid extract of buchu as her kidneys were not working as they should. I also gave 12 minims of fluid extract of black cobalt, but her bowels did not move. As night came on tetanus was complete. She stood with her back slightly bowed and would occasionally lie down. Deglutition was very imperfect from the onset, and the last six hours it was entirely absent. It was forty hours from the time I first noticed her being sick until she died. Eighteen hours after death I skinned her and held a post mortem examination. I found no mucus in the mouth or nose; the alimentary canal from the mouth to the anus was highly inflamed; the inner lining of the rumen was cooked as completely as though it had been boiled, and it adhered to the food in squares. The spleen was dark blue and the lungs looked like those of a hog that had died of swine-plague. I found considerable gas and about a gallon of blood in the thoracic cavity and some gas in the rumen. The cow had been running in a pasture of about 100 acres, part clover and part wild

grasses, just where she had been running all winter. She was fed ear-corn, cornmeal, and cow-peas, and corn-husks for roughness. She was a dark Jersey, 7 years old. Please tell me through the KANSAS FARMER what was the cause of her death.

My opinion is that the cow died from some irritant poison, but what it was or how she obtained it I do not know. The fact that she was stiff and stood about in a stupor induced me to think that probably she had eaten poison hemlock. G. W. M. Creech, Arkansas.

Answer.—It is probably true that your cow died from some poison as the post mortem would indicate, but from the quantity of drugs you gave her and the variety I would be suspicious of their being somewhat implicated in bringing about the fatal issue. The fact that she didn't clean well was probably also a cause for poisoning from the decomposing tissues. If they had been removed at the proper time the probabilities are she would have needed no further treatment. A 3-per-cent solution of any of the common coal-tar products, used as an irrigation at such times will often save the life of a valuable cow. C. L. BARNES.

Never feed a hen while on the nest; she needs the exercise gained by leaving the nest and scampering about with the others for the feed offered. Her nest will also not be so likely to be soiled if she is compelled to leave it at least once a day. Never feed a sitting hen mash feed, for it has a tendency to keep the bowels loose; rather use for her diet wholesome whole grains with plenty of grit and water.

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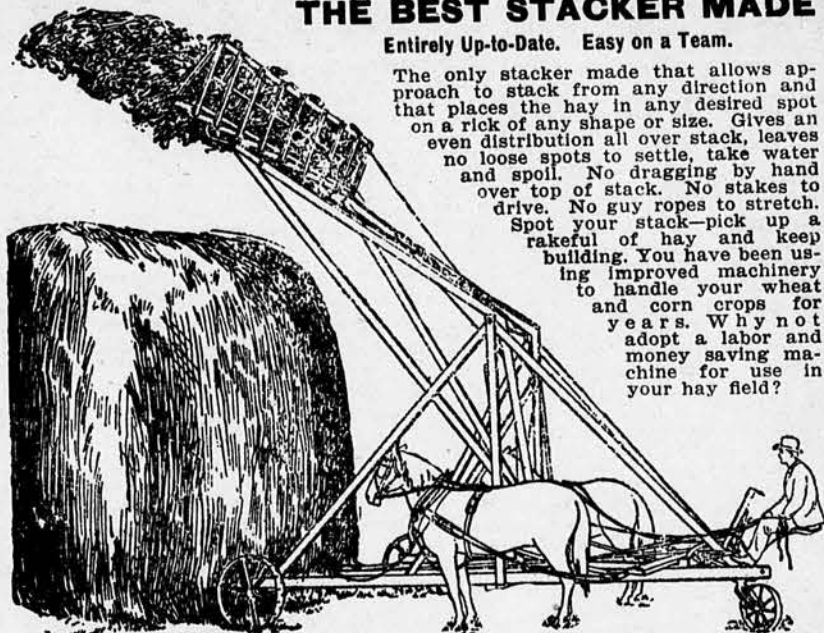
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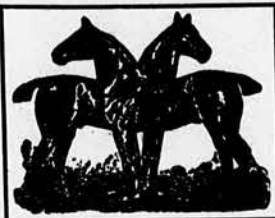
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Ninety-eight per cent of the whole-milk butter factories of the world now use DE LAVAL CREAM SEPARATORS in cream separation. Twenty-five years of experience has proven that their use means the greatest economy and best results in every way.

What is true of the Factory Separator is exactly true in relative degree to the Farm Separator. The difference is in size alone.

The DE LAVAL "BABY" or "DAIRY" HAND SEPARATORS have been the foundation of the new system of farm separation and cream gathering for central churning, not only in America, but in all dairying countries.



Their superiority to would-be competing machines is greater in this use than in any other, because of the importance of running a very heavy cream, which keeps better and is less in bulk to transport. DE LAVAL machines alone can produce such a cream, with anywhere near clean separation, especially at cool temperatures.

The Continental Creamery Co., of Kansas, and the Beatrice Creamery Co., of Nebraska, the biggest cream gathering concerns in the world, have to-day 20,000 farm patrons using DE LAVAL separators, to which number they are adding 10,000 more during 1905.

What these two big companies are doing some 2,000 other creamery concerns are doing on a comparatively smaller scale, every one with satisfaction

and success, including 200 of them in Kansas and Nebraska, some almost as large as Continental and Beatrice.

Scarcely a successful creamery concern anywhere is today attempting the use or sale of other than DE LAVAL machines. Nearly all who have tried other machines have either changed to the DE LAVAL or abandoned the handling of separators. The few who have not are more interested in the temporary profit out of "cheap" separators than the substantial building up of a prosperous industry for creamery and patrons alike.

The DE LAVAL SEPARATOR COMPANY

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