

FARMERS' AND DAIRYMEN'S INSTITUTE.

Some Interesting Lectures by the Faculty of the Oregon Agricultural College.

The farmers' institute, which was in session three days last week, was brought to a close on Friday afternoon, being one of the most interesting and profitable gatherings of dairymen and farmers ever held in Tillamook county. Those who made it a point to attend these meetings have gained much useful information, and it is to be hoped when a like institute is held in this county the faculty of the Oregon Agricultural College will have a large attendance.

The institute was resumed on Thursday afternoon, with Dr. James Withycombe, Prof. F. L. Kent and John Fulton, and Mr. Thomas Paulsen present to introduce the subjects for discussion. The first on the programme was by Mr. Thomas Paulsen, entitled:

Prospects of Dairying in Tillamook County.

After a few preliminary remarks about the great advantages Tillamook county contained the speaker said:

The dairy industry being the leading one of your county, Tillamook affords me great pleasure to meet here with you today, as dairying has also been the specialty on my farm in Washington county for many years. Tillamook county has one advantage as a dairy country, being its fine pastures, which enable you to produce your dairy products at low cost. There is, however, also one drawback, and that is its remoteness from market, or in other words, the difficulty to market its products expeditiously and cheaply. Co-operation, rightly conducted, might step in here, and in a measure, if not wholly, overcome this, if the creameries and cheese factories of your county would unite, and either run a steamer of your own, or else by contract, at a stated price, agree to furnish all your products to a man or company who would furnish weekly transportation at a reasonable figure. Co-operation can be made to assist all of us, but we must be willing, each of us, to bear our share of the burden, and not fly the tract if we meet with an occasional loss. Losses occur in all business; the wheat buyer who loses on one year's shipment does not quit the business, but tries and does regain his loss with a handsome profit the next year. The principal cause of failure in co-operation amongst the farmer has been the want of business education, but this will, in the near future, be overcome, as our young men, who have opportunities of education not enjoyed by many of the older generations, take the helm.

However, we should learn from others; there are already instances of successful co-operation amongst farmers. I will only cite one, and that is the Hood River co-operative association, which has resulted in great financial saving to the fruit grower of Hood River valley. The position held by the Hood River country in fruit growing is held by the Tillamook country in dairying; and what they have done in fruit selling you can do in marketing your dairy products. Your products should, if possible be concentrated, sold by one firm, and through interchange of knowledge of the methods pursued in its manufacture be made as uniform in quality as possible, and that of the very best. Tillamook dairy product should be sold at one price, and that the highest. This is possible, but only by doing away with small jealousies and want of co-operation. In support of this assertion I will state that a short time ago I read of the benefit that may and does accrue from concerted and liberal efforts. In a certain dairy district in the East the butter and cheesemakers formed an association; the plan adopted was for each factory to bring to their meetings a sample of their product, these samples were examined, the good or defective points noted, and the reason for them ascertained and explained, and by this course the quality of the output of that particular district was made almost uniform and greatly improved, with the result of always obtaining for all of it the top price in their market, Chicago.

There is much said derogatory to the many business trusts which have of late been organized, but this is an age of concentration, and unless the farmer organizes and co-operates he certainly will be left behind.

Tillamook should possess a good live county dairy association, and its leading dairymen should become members of it and help to support the Oregon Dairy-men's Association.

Silos and Silage.

DR. JAMES WITHYCOMBE introduced this subject, and, in doing so, gave some useful information on silos and silage. As this is a subject, Tillamook dairymen and farmers are turning their attention to, we give below some of the doctor's remarks:

Modern dairying has fairly revolutionized the old methods of preserving winter feed for stock. Hay is not only put into the barn in a more immature and fresher state than formerly, but the grass and forage plants constituting the hay is now preserved with all its succulency by means of the silo.

Dairymen well know that for successful dairying during the winter months succulent feed must be provided for their cows. Hiberno, roots, etc., depended upon to supply this want, but this entailed too great expense in many instances for the best interest of the industry, hence the progressive dairymen began an intelligent search of a cheaper method for securing suitable winter feed for his cows.

The silo finally was adopted and ultimately proved to be the solution of the problem. There were, however, many objections raised against this system,

principally born of prejudice and credulity, resultant from preconceived ideas of the character and value of silage as a stock feed. This dispelled, other obstacles intervened, especially the cost of construction, which materially operated against the general adoption of the silo.

The advent of the stave silo, dissipated at last all these objections and now this system of preserving feed is growing rapidly in popular favor.

The questions which are important to the dairyman in this connection are the proper construction and dimension of the silo, the most suitable forage plants for ensilage which are adapted to this section, and the proper season, and the manner of preparing them.

The stave silo is to be commended for its simplicity and cheapness of construction, and to obviate the necessity of explaining the details of construction, I would suggest that those who contemplate the building of a silo would do well to first visit Senator Maxwell's farm, where they can see two of these cheap silos in operation.

The matter of dimension should next be carefully considered, as there is some danger of getting the silo too large. The calculations for the diameter of the silo should be based upon five square feet surface area to the cow expected to be fed. For an example, a silo that is twelve feet in diameter, will contain approximately a surface area of a hundred and ten square feet, hence would be large enough to accommodate twenty two cows.

The injury resulting from the silo being too large, is that the silage is exposed too long before being fed, consequently undergoes decomposition and spoils.

At least two inches, and which is better, four inches of the whole surface should be fed daily, and care should be taken to see that it comes off evenly over the whole surface of the silo.

The depth of the silo is another important consideration, in two respects, pressure and capacity. A silo should be at least twenty four feet deep, thirty would be better, as this would afford a greater capacity, and secure more pressure from the silage, hence make it more impervious to air.

Corn, owing to the structure is eminently suited for silage, but the climatic conditions here precludes the growing of this plant.

Clover and vetches are both excellent forage plants and are undoubtedly well suited to the climatic and soil conditions here. These plants will make excellent silage, possibly not quite so easily preserved in the silo as corn, but will make a much better ration.

In filling the silo, the contents should be thoroughly tramped and spread evenly over the surface. It is a good plan, if convenient, and the season will permit to let the silage settle for a day or two during the operation of filling. When the filling of the silo is completed cover the surface with chaff or old seeds and thrash from a hay mow. Tramp this down well and saturate with water. If the seeds germinate, so much the better, as this will form a desirable coating to exclude the air.

Clover is ready for the silo when it is in bloom; and vetch is in best condition about the time the first seed pods are formed.

The proper time for sowing the vetch is in the fall and a good mixture consists of one bushels each of vetch and winter oats per acre.

Vetches as a Forage Plant.

A paper prepared by Mr. A. Chalmers, of Centerville, Ore., was then read, which was as follows:

Vetches are used to some extent in nearly every part of Europe. The vetches will grow nearly anywhere and in some sections produce a very large crop of nutritious food for stock.

In Aberdeenshire we used it mostly for insouling purposes and was sowed at intervals in the spring in order to be used in the green state through summer and fall. It was used to milk cows through harvest and on till fall to start the feeders or beef cattle before the Swedish turnips were ready for use. The cows respond to the juicy tares with big humpers of milk, and the feeding cattle with nothing else, not even water sometimes, would put on fat very rapidly.

My first experience with vetch in Oregon was in the same way, cutting it green for both horses and cattle with very favorable results, combining quantity, health and nutrition. I believe that the vetch is unsurpassed for our section. Horses will do farm work on it and do well and rarely show any sign of colic or any kinds of disorder from using it extensively. All kinds of farm stock are fond of it in the green state. Hogs will eat it in any state, green or cured, and in insouling will fill up on it and eat it very greedily with very good results, in fact, I do not believe any class of hay, however well cured, is equal to it as a cattle food. Insouling is the cheapest feed we can have when it is rightly gone about, although made from corn it is not relished by a number of cattle and they will only eat it in limited quantities.

stock food in Tillamook county. Any where an insouling bin is placed in a convenient place to feed a very pleasant and satisfactory in winter, it can be fed in a box or rack. Cattle will always eat it up clean. Calves and sheep are very fond of it.

The only difficulty I have had in making insouling from vetch if the weather should be very warm during the time of putting it away, it will wilt standing before it is cut, in such case the cutting and handling should be done with dispatch to preserve moisture to keep it from burning in the silo, which spoils the feed, a difficulty which is seldom noticed in curing corn. In order to give it bulk and fiber I prefer to let it stand till just before the last bloom goes off, for insouling at this stage is gaining very fast in weight and feeding value.

To make good insouling every condition should be right, plenty of green feed, a good large silo not less than 20 feet high, a good machine and elevator and some one to keep the feed equalized when filling. Vetch settles much more than corn and should be filed slow or refilled after setting.

Hawk-Weed.

The institute took up the subject of hawk-weed, a poisonous plant said to be growing in certain parts of the county, and which Captain J. J. Dawson, the weather observer, claims killed 250 head of stock last year. The consensus of remarks by the representative dairymen and farmers went to show that this was an erroneous statement and could not be verified.

On Friday evening Representative J. W. Maxwell called the institute to order in the opera house, which was well filled. The programme was interspersed with vocal and instrumental music, those taking part in these exercises being Miss Belle May, Miss Ruth and Herbert Cooper, Ire Latimer and Miss Lily Baker.

Spontaneous Combustion.

PROF. J. FULTON'S lecture on this subject was attentively listened to. It was interesting, for it touched upon the subject of housing hay and the causes which lead to its becoming heated and often burned. He said:

To prevent spontaneous combustion or fire arising from unnatural causes, care should be taken to avoid the presence of moisture, especially the water that assists in the growth of the plant. It has been found by experience that haystacks may be put up in comparatively hurried conditions without any apprehension of danger when air has largely been excluded, but hardly any precautions will avail if hay has been housed containing much of the water that the plants have drawn from the soil. Green hay will heat to an enormous extent while matured and well cured hay, when hauled in a damp condition, will heat very little but will "must" badly. When hay that has been harvested too green begins to heat opening the stack very seldom betters conditions, as it will allow access to air, and will often cause a fire, when, if allowed to "sweat," it would not. It is safe to say that it is better to let the hay have a shower; than to put it into the barn uncured. The heat evolved from hay is one of the products of fermentation. All vegetable substances undergo exactly the same process, so it can't be avoided, it can be lessened by putting in the hay in just the right condition. Better harvest a little too dry than too wet, you will avoid considerable anxiety. Some losses from haystacks being burned are not due to spontaneous combustion; carelessness in handling matches is responsible for the majority, while campers figure largely.

Care of Milk.

PROF. F. L. KENT had the subject of the care of milk, and as this is a matter peculiarly interesting to the dairymen of Tillamook county, we give the professor's lecture verbatim, for it contains many points where improvement may be made in the handling and care of milk, not only in this but in other countries as well. The professor said:

To sum up the topic of the care of milk in the barn, three words are sufficient, viz: Observe strict cleanliness. What constitutes cleanliness, and why it is so essential are points on which too much will never be said or written.

Some of the undesirable odors and flavors found in milk at times are due to what is known as volatile oils contained in the food. Nearly every one is familiar with the flavor of wild onions, garlic, and various weed flavors found in milk at times. These flavors are due to the volatile oils of the substances contain. The same is true of turnips and some other food stuffs, but is not so strongly marked. All other flavors and odors as well as the normal souring of milk are due to the action of what is known as bacteria, or germs as they are often called.

Bacteria were originally supposed to belong to the animal kingdom, and many people at the present time think of something with legs and wings when bacteria are mentioned. But as methods and apparatus for studying these organisms improved they were conclusively shown to belong to the vegetable kingdom. No person ever saw one of these organisms except with the aid of a microscope of very high magnifying power. They are so small that 25,000 of them, if placed side by side, would make a line not more than one inch in length. There are many species of them, just as we find many species of flowering plants. Some bacteria are the cause of disease, in fact, all contagious diseases, and for this reason many people have come to look on all bacteria as something to be feared, but by far the greater number of the species are perfectly harmless to the human body while many are a positive advantage.

The ripening of cream, and the curdling of cheese are the results of bacterial action, in fact, all forms of decomposition and decay are mainly the effect of the work of these organisms, hence we see that their action is quite as often beneficial as injurious.

The exceeding small size and weight of these bacteria enables them to lodge almost everywhere in nature, and to be easily carried about by air currents. In fact about the only places where they are not found are the healthy and uninjured tissues of plants and animals. But the general distribution of these organisms is due more to the rapidity with which they reproduce

than to their small size and weight. Some reproduce as often as once in twenty minutes. It is probable that once an hour would be a fair average time of reproduction for all species. At this rate under highly favorable conditions one individual would become the ancestor in 24 hours of more than 15,000,000, hence it is evident that bacteria exist under very unfavorable circumstances else they would soon fill the entire world.

Like other forms of plant life, bacteria must have a food supply, moisture, and a sufficient degree of heat in order for growth to take place, and milk furnishes these conditions for bacteria more perfectly than almost any other substance, hence the first and most important point in the care of milk in the barn is to prevent the bacteria getting into the milk while it is being drawn from the cow. The principal source of infection is the particles that fall from the cow's udder and sides. These are hair, particles of the skin, bits of bedding, and mature particles, all rich in bacteria. When these substances fall into the milk the germs carried with them, finding highly favorable conditions for growth, begin multiplying very rapidly. It is very evident that the more care taken to have the udder and body of the cow clean the less will be the amount of foreign matter dropped into the milk during the operation of milking. In Denmark, the leading dairy country in the world as far as quality of product is concerned, it is the rule rather than the exception to have the cows carefully brushed and their udders well washed just before the milking begins. Nor is the practice confined to Denmark. Many of the best dairies of our own country do the same thing.

The feeding of the cows and the cleaning out of the stables never should go on while the milking is being done nor immediately before it begins. If there is no considerable amount in the barn a great portion of the bacteria will settle on the floor, but if the air is in vigorous motion, as will be the case when feeding is going on, the bacteria will be in motion with the air and will get into the milk if milking is going on. Fodder particles will also be flying in the air, and will get into the milk.

By being extremely careful to have the cow's udder the milker's hands and the vessels in which the milk was placed all as clean as possible, and by doing the milking in a very clean place, milk has been obtained which remained sweet for a whole week, although held at a temperature nearly 90°. Such conditions of cleanliness as just noted would not be practicable on a large scale, but they show what may be accomplished by extreme cleanliness, and the nearer these conditions are approached the better will be the quality. It is very evident that there must be something very wrong when the night's milk becomes sour before the milking begins, it would scarcely seem necessary to use a strainer, but one should always be used. And ordinary wire gauge strainer is not sufficient. If any one will take the trouble to place beneath their wire strainer two thick meshes of cheese cloth the substances caught by the cloth will quickly convince them that such a cloth should be used at all times. The can into which the milk is strained is usually placed in one corner of the stable, where it remains until the milking is finished. It would be much better for the quality of the milk if this can could be kept away from the air of the cow stable entirely, and this is often done by having a room joining the cow stable, where the milk is taken as soon as drawn from the cow.

Little bits of barn-yard filth, Little specks of mud, Dropping in the milk pail With persistent thud, Will, in spite of straining, Flavor all the can, And make mighty mischief For the butter-man.

Unclean cans are a source of much trouble in the souring of milk. It is not uncommon for the can when returned from the creamery to stand with the skimmed milk in it until the contents are clabbered. This sour milk is poured out about milking time and the can rinsed out with cold water, or perhaps with the dirty dishwater that the supper dishes have been washed in, and given a few strokes with an old dish rag, when it is considered clean enough for the night's milk. If the night is rather warm the chances are decidedly in favor of that can of milk being sour when delivered to the creamery next morning. Had the skim milk been emptied out of the can immediately after its return from the factory and the can well washed with clean warm water and a brush, then steamed, or rinsed with boiling water, and placed in the sun to air and dry the milk when delivered to the creamery would have been free from taint or sourness. And for the sake of appearances the outside of the cans should also be kept clean.

Another point to be considered in the handling of milk at the barn is the person who does the handling. The idea that any old clothes, the older and dirtier the better, is the proper attire for a man to do the milking in is an idea altogether too common among keepers of cows. The clothes worn when cleaning out the stables and similar work are often the ones used at milking time. It is not uncommon to find a milker dressed in an old pair of blue overalls, so stiffened with milk and filth that they will nearly stand alone when he gets out of them. Overalls are all right but they should be made of material which will permit of their being washed when soiled. In many dairies the milkers are required to wear white suits and are also required to keep them clean. It is generally conceded that the milker should always treat the cow with kindness, should milk rapidly, removing all the milk from the udder, and should never moisten his hands with milk, or dip his fingers into the bucket, as some few milkers are in the habit of doing.

The germs causing the souring of milk are so abundant that it is next to impossible to prevent them from getting into the milk. Where a reasonable degree of cleanliness is observed the souring of the milk is about the only trouble that is met with, and it is well known that if the milk can be kept cold it does not sour so quickly as when the temperature is at 80° to 90°. Why is this? Because the temperature at which the germs causing the souring of milk reproduce most rapidly is from 80° to 90°. If the milk is cooled down below 60° the growth of the germs is very much retarded, and as a result the milk keeps sweet for a much longer time than when not so cooled. And the cooling should take place as quickly as possible after milking. If the milk cools slowly as will be the case if it is put into a can and left

in the open air, the germs will have an opportunity to develop to a considerable extent while the milk is cooling. But if cooled quickly by placing the can in cold water, or what is better by using some of the appliances known as milk coolers, the growth of the bacteria is much hindered and the keeping quality is much improved. Milk coolers, besides reducing the temperature, cause the air to pass through the milk, thus removing the so-called animal odors, which, if not allowed to escape from the milk, are almost sure to give it an off flavor, which is often spoken of as a "smothered" flavor.

It is a pretty well known fact that mixing warm milk with cold milk, for example the morning's milk with that of the preceding evening, will cause the mixed milk to sour more quickly than either hot milk would have done had they been kept separate. Hence in delivering milk to the creamery the night and morning milkings should be kept separate. However, if the morning milk is cooled to the same temperature as the night's milk they can be mixed without trouble, but as a rule it is more convenient to keep them separate than to cool the morning's milk to the temperature of the night's milk.

The professor then read a creamery man's ten commandments, which was as follows:

1. Thou shalt not slumber late in the morning, but shalt arise early and deliver thy milk to the factory, for he that goeth late causeth the buttermaker to use much profane language.
2. Thou shalt not cast all the dirt thou canst brush off the cow into the bucket.
3. Thou shalt not take any cream for thy tea or coffee, for when thou gatest the dividends one shalt say to another "Why taketh it more milk here for a pound of butter than at any other creamery?" Then shall the butter-maker arise and hold the up to ridicule with the batcock rotary test.
4. Thou shalt not mix water with thy milk, thou nor thy man servant, nor thy hired girl, for so surely as thou doest this thing thy name shall be Dennis over the length and breadth of the whole milk route.
5. Thou shalt not feed thy cows too much potatoes, onions, mustard, horse-radish, or bad cabbage, for these feeds, though they be cheap as all outdoors, cause the butter maker to gnash his teeth exceedingly and buy his own butts somewhere else.
6. Thou shalt not set thy can of night's milk in the cellar with the cover off in order to use it for a trap to catch rats and mice therein, neither in the woodshed, as a temptation to thy neighbor's cat.
7. Thou shalt not carry away more ski-n-milk or buttermilk than thy share, least some shall say concerning thee, "For a wonder, one hog carrieth food for another."
8. Thou shalt not use unclean cans, but shalt cause thy cans to be washed every day, and the seams and crevices thereof, for a filthy can is abominable in the butter-maker's sight, and he will visit wrath upon him who bringeth it.
9. Thou shalt not trouble the butter maker, saying, "When shall I receive my pay?" for verily I say unto thee he knoweth not, neither careth a little bit.
10. Thou shalt not say unto one another, "Lo, behold, have not these milk haulers a soft snap? They receive much pay and work not very hard at all." Verily I say unto thee, this is a whopper. They arise early and toil much, and peradventure the board of directors refuseth to buy another separator they will be obliged to toil Sunday morning, when other people are fanning themselves within the gates of the synagogue.

This was followed by an illustrated lecture by DR. JAMES WITHYCOMBE, who pointed out the advantage some cows have over others in the production of milk, and also that in raising cattle for beef.

Chemistry of Stock Foods.

PROF. JOHN FULTON in a few preliminary remarks on this subject said the farmers here could not get a better grass country than Tillamook if they had to order it. It was simply immense the advantages they possessed for growing cheap feed for stock. He did not know whether it would not be better to intensify the feeding of their cows in the summer and ease up in the winter owing to irregular transportation in getting their butter and cheese to market. The professor pointed out minutely the amount of nutrition in the different kinds of grasses, clover and hay, his audience being interested in this part of his lecture. He said, in part:

Good pasture grass is nature's best food for herbivorous animals. Nothing can supercede it, but like everything else it wears out. It is too much to expect perpetuity in vegetable life when we are justified in scouting perpetual motion in machines.

When pastures wear out and become foul with weeds, rennovation should take place by either soiling, or if the condition of the soil will admit by sowing good clean seed of desirable grasses and manuring slightly.

When pastures become exhausted, red top, blue joint or alaska clover would make the best substitutes, a combination of these goods would be best.

Pastures are more seriously damaged by grazing during wet weather than by any other cause. The land becomes puddled and no amount of work will ever put it in its original condition. This can be prevented to a great extent by using silage, of which perhaps the most nutritious is clover, and grazing the stock on the highest ground. Each grass has its value as a flesh and heat producer, none are strictly balanced, i. e., none contain the exact proportions of flesh and heat forming constituents for all purposes.

Too much water in the grass will very materially affect results in the dairy herd, especially milk, rich in butter fat, should not be expected from grass rich in water. The two don't go well together. Water may be the cow's friend, but in it is often the milk man's enemy. When your cows are reveling in grass as wet as it is deep, don't blame your creamery man if your tests drop somewhat, they will rise with the barometer. Study conditions, and to the best of your ability rectify anything that may be out of place, ask the opinion of your neighbor and profit by his experience.

which brought the subjects for discussion to a close.

A vote of thanks was tendered the faculty of the Oregon Agricultural College for the able manner in which they had presented their subjects and the trouble they had been put to in getting here. PROF. KENT thanked the audience for this, and stated he hoped the next time they visited Tillamook there would be a much larger gathering, which was always the case when they made a second visit, for coming into a new section the first time dairymen and farmers did not realize the importance of these institutes.



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