THESIS

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Dairy Cows

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by

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The question as to which stall and tie is best adapted to meet the needs of the dairy farmer is one that has confronted every person interested directly in the production of first class milk, butter, or cheese. This, to the casual observer, would seem an easy question to decide. But to the thoughtful person, searching for the stall and tie that will give the greatest degree of comfort to his cows, and, at the same time, keep them clean and be convenient for the herdsman to use, there appears an almost endless number of stalls each of which has some one or more advantages over all others, and none of them reaching perfection. The process of comparison and elimination soon reduces the number to a dozen or more but at this point, it becomes almost impossible to decide which of the remaining few is best adapted to meet the above requirements. The question as to which is best is one that must be solved by the person who is to use the stalls and ties and can not be answered to the satisfaction of all except by having the different styles side by side and using them for some time under varying conditions. The object then, of this thesis is not to determine the best tie, but to give the opinions of leading Michigan Dairymen on this subject and from these opinions and the observations of the writer on the stalls at the College and elsewhere, to classify the leading features of some of the standard stalls and give at the same time, the objections to them by people qualified to judge.

Following is a list of the questions sent out to prominent

farmers and the answers received in reply thereto:

1. What stall and tie predominates in your stables?
2. In what respects is it better than others which you have tried?
3. What defects, if any, has it?
4. What strong points have other ties that you have used or of which you have knowledge?
5. What defects?
6. If you were to equip a new barn with stalls and ties what style would you put in?
7. Why this one in preference to others?
8. What, in your estimation, should be the determining factor in selecting a stall and tie for a dairy cow?

I. Answers received from Colon C. Lillie of Coopersville,Mich.

1. " We tie all our cows in double stalls, one on either side of the stall. All are tied arcund the neck and the chain or rope slips up and down on an iron bar, about one foot long, attached to side of stall. I water in V shaped trough on top of manger."

2. " I have never tried any other kind."

3. " Some cows will not keep clean."

4. " The Bidwell and Model stalls will keep the cows clean."

5. " The cows are too much shut up, one can scarcely see them from in front. They necessitate buckets for watering which in some respects, are objectionable."

6. " I doubt if I should change. Might possibly use the iron bar that works on plan of Model stall."

7. " Compels animal to stand back when in normal position

and draws her ahead when she lies down."

6. " First, the cow must be comfortable; second, have as much liberty as possible; third, keep as clean as possible."

II. Answers received from H. F. Probert of Jackson, Mich.

(Note: Mr. Probert's answer is inserted merely to show to what extremes a man may go in caring for his cows.)

1." All of my stalls, gutters, etc. are of special design and unlike any others, the stalls all vary in length and width from end to end. There is an upper and lower manger. Part of the upper one is divided off for salt and over the lower one is the covered drinking basin (Automatic). Back of the cows is a double gutter, all of iron laid in cement. The upper holds the solids and through this drains the liquids to the lower gutter leading to the sewer and storage 1800 feet away. The liquid is sprinkled on the land when needed.

The cows have a leather belt on neck with ring for fastening with chain and snap, the chain rising and falling on center rod of stall. The stalls are all of cast and wrought iron, floors of cement, barns steam heated to prevent water from freezing (only) and gutters are furnished with water from a five inch pipe. No feed is kept near stock, all are fed three times each day, grain twice, and barns are well ventilated."

4. "I have used many different stalls and ties. None are all right. Each has some leading feature. Few men would go into my barns and not wish they could duplicate the stalls, etc., yet there are some men who would offer suggestions".

8. " A cow stall should be designed to give the cow all possible freedom and comfort and the attendant likewise, and do not

overlook means for cleaning."

From F. P. Peck, Coopersville, Mich.

1. " I have two kinds of stalls in use in my stables. One kind is the double stall for two cows, one tied at side with a rope around the neck fastened to a ring which can slip up and down on an iron rod. The stalls vary in length from 4 ft. 4" to 4 ft.10" and are six feet wide. The other kind is the Bidwell stall. When a cow is too large or two small for the double stall, I put her in a Bidwell which can be made to fit any sized animal."

2. " It is handy and comfortable for the cows."

3. " It is hard to keep some cows clean in them. Bidwell is not liked by the milkers."

4. " I have never used any other kind except the old fashioned rigid stanchion, which,

5. I discarded years ago as being a relic of barbarism."

6. " The same two kinds."

7. "I believe the Bidwell to be the best and safest stall in use. I would use it for young stock and for animals that would not fit the double stalls."

8. "Should give a cow plenty of room, keep her clean and comfortable, and prevent her from wasting her feed."

From J. M. Park, Coopersville, Mich.

1. " The stalls we now have in use are the G. E. Scott patern only we stand two cows together and tie with the American Cow Tie Chain."

2. " I don't know as they are any better than a number of others."

3. " I don't know of any defects."

4. " I know of none that are any better. My knowledge of ties is limited being confined to head-rope and rigid stanchion. One is too confining and the other gives too much liberty."

5. " The defects are too numerous to mention."

6. " This is a hard question to answer as there are a number of very good stalls and ties. I would combine durability, ease and comfort for the animal, handiness in cleaning and feeding and a supply of drinking water."

7. " Because I think they are essential points."

8. (See answer to 6.)

From James H. Luther of Lamont, Mich.

1. " I use in my stable what is called the Scott stall, invented by G. E. Scott of Ohio, and tie the cows with common chain cattle tie with toggle and ring."

2. " The cows are perfectly comfortable and keep reasonably clean. The stalls are very simple and easily made and are very convenient to put feed in. The cows can not waste any feed or steal each others. The stalls can be very readily arranged to fit any animal large or small."

3. " They require a little more room than some other stalls."

4. " I have never used any other patent stall."

5. .....

6. " I should most certainly use the same stall from my present knowledge."

7. " For the reason given in number two."

8. " Comfort of the cow by all means."

From E. H. peck, Coopersville, Mich.

1. " One of my own construction."

2. " It is better than any other stall I ever used because it keeps the cows clean and is comfortable."

3. " I know of no defects. I believe it to be the best cow stall I ever saw. I tried some of the patent stalls but did not like them."

4. " I use the Gorman tie chain."

5. " The large ring should be made smaller. Sometimes a small cow will put her foot through it."

6. " I would put in the style I now have."

7. " It is comfortable and keeps the cows clean."

From F. M. Luther, Lamont, Mich.

1. " We have the old fashioned stanchion, not from choice, but because we have them and don't like to spend money on the old barn in changing."

2. " The stanchion has few virtues."

3. " It is too rigid and confines the cows too much."

4. " The chain tie where a short chain is passed around the cows neck and a ring is allowed to slide up and down on an iron rod, keeping the cow in place but giving her freedom to lick herself, and a manger with bars slanting toward the cow so that when she stands up she must move back and forward when lying down, will keep the cows clean."

5. " It allows the cow to stand in the gutter if she chooses, which few do."

6. " I am not certain but think one similar to the one

described in answering No. 4."

7. "It gives comfort and freedom and keeps her clean."

8. " Comfort, convenience, cleanliness."

The replies here quoted will give an idea of what stalls are used by Michigan dairymen and why they are used. It remains for me to sum up their reports and give what appears to me as the leading features and principal defects of some of the more important stalls and ties.

In the first place, What are the essential features of a good dairy stall and tie? It is generally conceeded that, above all things, the cow must be kept comfortable from an economic as well as from a humanitarian standpoint. Increase a cow's comfort and you increase her ability to produce milk and butter fat and consequent profit to her owners. But there is another point equally essential, viz., the cow must be kept clean. The production of a strictly first class milk, butter, or cheese, requires that absolute cleanliness be observed. Failure in this will render the production of a first class article impossible and in no place is the milk more subject to contamination than in the stall during the process of milking. Here it is, then, that cleanliness must first be observed, as future neatness will avail us naught, if the milk is polluted before leaving the stable. The first object of every dairyman should be to produce a first class product and to accomplish this result he must use stalls which will keep his cows clean.

Third; our stalls should be so arranged as to be convenient to both feeders and milkers, and should prevent the waste of grain

or forage by its being trampled under foot or otherwise.

Farther than this a stall to be practical must have a low first cost, be durable, and occupy no more space than is absolutely necessary.

H E A D O R N E C K F A S T E N I N G S.

Head and neck fastenings are much more numerous and diversified and much more used than are the so-called stalls or pens. Of these fastenings, perhaps the one which struck me as being the most novel and aroused my curiosity as much as any, was the Newton Improved Cow Tie. This consists of a bow which fits in between the two ends of the manger and swings up and down, the cow being fastened to it by a chain around the neck. When the cow stands up the bow is raised to a horizontal position and the cow pushed back to the edge of the platform. When she lies down the bow takes an oblique position and the cow is drawn forward. So far as I have been able to note, this tie works well. Its principal defect seems to be that it requires different lengths of platform for different cows and there is danger of the cows stepping on each other.

The Model Stall is built with a sloping rack for coarse fodder in front, the bottom being some distance from the floor. Underneath this is a box for grain and silage. The cow is tied with a rope or halter and a two by four nailed just in front of her hind feet. When standing, the manger forces her back on the drop and when she lies down the 2 X 4 encourages her to move forward out of any filth that may have been tracked up on the platform. This stall is comfortable for the cow and will usually keep her clean. Sloping

partitions separate the cows with this style of stall.

There are a number of others more or less like the above but, as they are not much used except by the originators, I shall not discuss them here.

S T A N C H I O N S.

Of the head and neck fastenings, the stanchion, in some form or other, is by far more common than any of the others and, I think, is gaining rapidly in popular favor. At least, when an improved stanchion is placed in a man's barn, it is next to impossible to get him to exchange it for any other form of stall or tie.

As first constructed the stanchion was a rigid affair with apparently no object other than to prevent the escape of the animal intrusted to its care. In this form the stanchion is to be condemned "as a relic of barbarism" as one of our correspondents expressed it. Its principal defect is that it confines the cow too much. I have seen cows that having lain down in a rigid stanchion were unable to get up until the head was released. In spite of this fact, I know of a few herds, the individual members of which average upwards of 300# of butter per year while confined in the rigid stanchion when not in the pasture. This I attribute to excellent care in other directions and their owners have no praise for the rigid stanchion and always express a determination to put in the swing stanchion as soon as possible.

Discarding the rigid stanchion, we have next to consider the swing stanchion of which there are a number of forms on the market.

These, as usually put up, are, it seems to me, all open to the same objection, viz.-- some cows will get dirty in them and to keep the larger number of a mixed herd or of grades clean, requires that the platform be constructed to fit each individual cow. Then, too, there is no partition between the cows and there is danger of one cow stepping on the teats or udder of her neighbor. In the new barn at the College Professor Mumford has overcome these objections very largely by having the platform taper gradually from one end to the other so that, while at one end it is exactly right for the largest cow in the herd, at the other end it is suitable for yearlings. Then it is arranged so that a piece of pipe can be screwed into the floor between the cows and thus prevent them from trespassing on each others territory or stepping on each other. Some cows will back down off the platform and in returning bring along some of the droppings to lie down in and thus become dirty. Notwithstanding this fact the cows of the College herd which are confined in swing stanchions, keep fully as clean as those which are kept out of the gutter by a chain passing in their rear.

The swing stanchion is one of the most convenient ties we have, gives the cow the freedom of her head, and is really very comfortable for her. The Warriner Chain Hanging and the Taylor Steel stanchions are higher and give greater freedom to the animal than do the others. The Taylor has the advantage in that it has no joints to wear loose. The Wilder Adjustable, on the other hand, holds over those already mentioned by being so constructed that it will not swing when open. Everything considered, there is not much choice in the different styles of swing stanchions.

S T A L L S O R P E N S.

Of the cow fastenings which confine the animal in a pen without tying, the Bidwell is probably the best known and most popular. This stall has swing doors on the side to admit the milker, an adjustable manger so as to accommodate the varying lengths of different animals, and a chain passing from one rear post to the other to keep the cow in place. The inventor claims for this stall that it keeps the cow clean, is comfortable, and can be easily adjusted to fit any size cow. While I see no reason to dispute these claims, it is also true that cows will keep as clean in the swing stanchion as in the Bidwell stall, and, so far as I can judge, are fully as comfortable. By some who use both styles it is claimed that the cows prefer the stanchion to the Bidwell. Add to this the fact that the Bidwell is universally condemned by the milkers and that its cost is more than double that of the swing stanchion, and there remains but slight reason for equipping a barn with the Bidwell stall.

Another stall for which great claims are made is the Drown Improved. This is much like the Bidwell but has a swinging manger in front and the side doors swing up and back out of the way when open. The swinging manger is calculated to give the cow more room when getting up but this is hardly necessary. The doors are an advantage over those which swing horizontally in that they are not in the way when arranging the bedding or cleaning the stall, and allow the use of a fire escape--a simple device by means of which all the cows can be freed at the same time. I also think that there is less objection to this stall on the part of the

milkers. It, too, has a high cost and I see no reason for preferring it to the swing stanchion.

Both of the above stalls are patented so the user must pay a royalty in addition to the cost of the stall. This in the case of the Bidwell is 50¢ and for the Drown $1.00.

Another stall which demands attention, principally because quite a number are in use at the College, is the Boland stall. This differs from the Bidwell in that the manger is not moveable and the side doors are of iron piping. An iron bar extends across the front of the stall to which the cow may be tied with a chain if desired. This also serves the purpose of keeping the cow in place. At the College neither the bar fastening or the chain in rear is used but a chain is extended across the stall in front just below the animal's throat and to its center she is fastened with a chain around the neck. Its only advantage over the pens already mentioned is that it gives a better view of the animals. With the rear chain fastening it is in other respects their equal. With either of the neck fastenings, I think it much inferior to them because it does not keep them as clean, and makes it more troublesome to release the cows.

In conclusion let me say that I believe some form of the swing stanchion, erected on a tapering platform, with the bottom farther forward than the top, to be the most practical fastening for the average dairyman. Those who are farming for pleasure only, may use whatever takes their fancy, while those who raise blooded stock and wish to show them off to best advantage, regardless of cost, will probably find some of the iron stalls best suited to their purpose.