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Let's look at

HERRINGBONE DAIRIES

By R. BETTENAY, B.Sc. (Agric.), Agricultural Adviser, and
F. FIELDER, M.D.D., Dairy Instructor

The first of the modern type herringbone dairies in Western Australia was constructed by Mr. F. Tucker of Ruabon, in 1957. Since then there has been strong interest in this system, and there are now at least six such sheds operating in the district between Ludlow and Augusta. Many more are being constructed.

Now seems to be a good time to have a critical look at this type of shed and discuss its advantages and its possible disadvantages, compared with the more conventional walk through bails.

WHAT IS A HERRINGBONE DAIRY?
The modern herringbone dairy is one constructed in such a way as to combine the advantages of "non-stoop" with fast milking by reducing the amount of walking required in the milking operations. This is done by having the milker's alley at a lower level than the cows and by bringing in the cows on either side of the milker's alley, where they are "angle parked" with their heads outwards in such a fashion that the udders are placed conveniently close to the alley. A single milk line runs above the centre of the alley and cups are swung across from one side to the other.

ADVANTAGES
1.—Non-Stoop
This advantage is not confined to the herringbone dairy and can be incorporated into plans of several other types of shed. It enables milking to be done much more comfortably and also enables the operator to give the udder a much closer inspection.

2.—Ease of Breaking in Heifers
Cows readily get used to herringbone sheds and are reassured by the proximity

Fig. 1.—A general view of the first herringbone dairy in the State, an eight-stand shed built by Mr. F. Tucker of Ruabon.
of adjoining animals. In particular, heifers are much easier to break in than in the walk through shed, as they can be brought in between cows already broken in. They then stand in the correct milking position, and need little if any guidance.

3.—Speed in Milking

This is said to be the greatest advantage of the herringbone dairy. Here it must be emphasised that fast milking is only to be commended if it can be combined with complete milking. Trying to race the clock is a big mistake.

A number of studies have been made to compare the time of milking under different systems. The findings of several of these are worth quoting.

In a study in the U.S.A., the following figures were obtained:

<table>
<thead>
<tr>
<th>Type of Shed</th>
<th>Cows Milked per Man Hour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Herringbone—</td>
<td></td>
</tr>
<tr>
<td>6 per side</td>
<td>46</td>
</tr>
<tr>
<td>5 per side</td>
<td>44</td>
</tr>
<tr>
<td>4 per side</td>
<td>40</td>
</tr>
<tr>
<td>Walk Through—</td>
<td></td>
</tr>
<tr>
<td>Double 3</td>
<td>35</td>
</tr>
<tr>
<td>Single 3</td>
<td>31</td>
</tr>
<tr>
<td>Single 4</td>
<td>32</td>
</tr>
<tr>
<td>Single 5</td>
<td>32</td>
</tr>
</tbody>
</table>

Other combinations were all slower than the above.

In an Australian study, from 20 to 25 cows a man hour were milked in conventional walk through systems, compared with 40 to 50 in a herringbone shed with five to six units a man. This could result in a saving of up to two hours a day for a herd of 50 cows.

4.—Less Time Spent Around the Dairy

Because the cows are milked faster, they can return to the paddock earlier. This results in less fertility being deposited around the dairy as dung and urine, and also gives the herd more time for grazing.

5.—Elimination of Leg Ropes

It is possible to use leg ropes in a herringbone dairy, but in practice it is invariably found that the cows are docile and leg ropes are not warranted.

6.—Hygiene

Shed hygiene of a high standard can speedily be accomplished, as the elevated cow platforms lend themselves to better drainage.

DISADVANTAGES

1.—Cost of Construction

It is difficult to set a figure on cost of construction, but in general it is found...
that the herringbone shed is more expensive to build than the walk through type.

2.—Problem of Slow Milkers

It is generally conceded that the herringbone dairy can lead to udder damage and premature drying-off unless the dairyman is efficient and is familiar with the individual cows. The main problem here is with slow milking cows; the time taken to put through a batch of cows is limited by the slowest milker.

This can be at least partly overcome by any one of three methods:—

(a) Cull slow milkers from the herd.

(b) Sort out slow milkers into a separate yard and milk them last in one batch.

(c) Place an additional Rider Unit, on long flexible milk and air lines, for every three units and put the cups on slow milkers first as soon as they enter the shed and have been suitably stimulated. This increases flexibility and reduces the need to sort out slow milkers, but increases the cost of the shed and has the added disadvantage of cluttering up the milker’s alley.

3.—Shed is Suitable Only for Milking Cows

The herringbone shed is suitable only for milking the cows. Its design is such that it cannot easily be used for other purposes, and consequently it is desirable to have a general purpose crush near by. This could be an advantage rather than a disadvantage because subjecting cows to anything unusual in the milking shed interferes with the let-down mechanism, and is not recommended.

4.—Splash Danger

In the herringbone design there must always be some danger of the operator being splashed by dung or urine, but in practice this is seldom a serious problem. Some designs incorporate a dunging yard at the entrance to the shed, and this together with the fact that cows are generally content in the shed, results in little mess being produced. A slightly built-up section at the sides of the milker’s alley gives some added protection.

If many cows dung or urinate in the milking shed you should look for reasons why cows are discontented. Remedying these will result in cleaner sheds and higher production.

POINTS ON CONSTRUCTION

Basic Plan

A standard type of plan, incorporating six stands, is shown in the accompanying diagrams. This can be modified in various ways to suit the particular site and the inclination of the owner but many of the dimensions shown are basic and should not be altered.

Materials Used for Construction

As in all dairy premises, the material used in construction should be one that
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gives strength and permanence, combined with easy cleaning and a pleasing appearance. Wooden frames and asbestos or galvanised iron are permissible, but this ideal can be brought about most readily if the building is of brick or cement on a steel framework.

Fittings in the shed should be of tubular steel, as these, although possibly more costly to install than wooden ones, are permanent and more hygienic.

The breech rails are best constructed of 3 in. x 1/4 in. flat iron, which has the advantage over piping that it gives a flat surface and is less likely to disturb the cow which comes in contact with it. It also takes up less room.

All floors and drains must be cemented.

Desirable Size

It is generally considered that six stands is all that one man can handle and this is adequate for a herd of about 50 cows. If additional labour is available it would be better to build up to an eight stand shed, but there seems little need to go beyond this size unless the herd contains more than 100 cows and a least two full time operators are available.

Floor Levels and Drainage

Drainage must be away from the milk room towards the other end of the shed. In addition, both the milker's alley and the cow platforms should slope away from the centre. The minimum permissible slope is one inch in ten feet and a slightly greater fall could be an advantage.

Consideration should be given to directing drainage from sheds and yards into a sump, from which it can be pumped into a tank and returned to the paddock.

Cow Platforms

The standard height of the cow platforms above the milker's alley is 30 inches and can be achieved either by raising the platforms or lowering the alley, or a combination of both, depending upon ground levels and drainage. It is considered desirable for cows to walk up steps to the platform. Three 10-inch steps are suitable provided each is at least 24 inches wide.

An inclined ramp is better for downward traffic and should be suitably scored so as to prevent slip.

Bail Feeding

Although bail feeding facilities are not necessary they can be incorporated by installing feed bins or a long trough along the outer walls of the cow platforms. However, feeding during milking can offset advantages of this type of shed by requiring more labour and by reducing hygiene, so if it is desired to feed concentrates or licks to the cows, it may pay to construct separate feed bails.

Holding Yards

A holding yard sufficient for the entire milking herd is required at one side of the milking part of the shed, and should be entered via a laneway approaching the shed from the opposite end to the milk room. It is possible to arrange this so that
one lane is sufficient for incoming and outgoing cows, so minimising the number of yards and fences required around the shed.

As a basis of calculation it is considered that 15 square feet of space is enough for each animal provided all cows in the herd are dehorned.

This can be achieved by constructing a semi circular yard with a pivoting gate which is, in effect, a mobile fence used to reduce the size of the holding yard while increasing the size of the exit yard as the herd is being put through the milking shed. After milking, the cows can be held in the dual purpose cemented yard or can be returned direct to the race and so to the grazing paddocks.

Washing the yard can be facilitated by having as the lowest rail of the gate a pipe which can be connected to a water hose. Jets in the under side of the pipe then allow the whole yard to be wetted in one arc of the gate.

MANAGEMENT IN HERRINGBONE DAIRIES

The herringbone dairy is constructed in such a way that cows enter in batches, one side being completely filled for a start, and the cups put on after suitable washing and stimulation. The second side is then filled and cups transferred across the milking alley.

Adequate Stimulation Necessary

Investigations in recent years have shown the necessity for adequate stimulation before the application of the cups. To provide this stimulation, washing should be accompanied by a vigorous massage of the udder for about 30 seconds, followed by use of the strip cup. If this is done no further delay is necessary before putting the cups on.

The latest New Zealand recommendation is that stripping—even by machine—is not necessary, so that after a 30 second stimulation you should be able to remove the cups from the cow opposite when she has finished milking and immediately transfer them to the new cow.

Water for Udder Washing

Cold water is considered quite satisfactory for washing the udder and perhaps the best arrangement is to have water pipes running the length of the dairy at either side of the milker's alley, with down hoppers fitted with automatic shut-off ball valves. By this means running water is immediately available and its use reduces the risk of carrying infection from one cow to the next.

Timing of Operations

For a single operator milking in a six a side herringbone dairy, there is little time available for jobs other than milking cows. Thus, allowing 30 seconds for udder washing and stimulation, 10 seconds to change the cups across the milker's alley, and one
minute batch-changing time, the cups would be on each cow for five minutes, and with a six stand shed, it would theoretically be possible to milk 72 cows an hour.

A batch-changing time of one minute would give little time for more than a cursory glance into the milk room to ensure that everything there was in order.

Dealing with Slow Milkers

As mentioned earlier, the speed with which a batch of cows can be put through the shed is limited by the slowest milking cow, unless the farmer recognises every such cow and takes steps to overcome this problem. It seems desirable to have additional units so that the cups can be placed on such cows as soon as they enter the shed.

If this is done, and the slower milker is encouraged to be one of the first of her batch to enter the shed, adequate time for her to milk out thoroughly can be given.

CONCLUSION

In conclusion it is suggested that the herringbone type of dairy could well suit you, provided you know your cows and provided you milk enough cows for the saving in time to compensate for the slight additional cost over the more conventional type of dairy.

When you consider that, for a herd of 60 cows, a saving of one minute a cow each milking amounts to 365 hours a year, it is obvious that an additional £100 in outlay would be money well spent.

BEEF FOR THE ROYAL SHOW

Shorthorn steers on Yarragadee Station, Mingenew. These are part of the team entered by Mr. W. C. K. Pearse (in the background) for the 1961 Royal Show Carcass Competition. Aged 21 months, the steers were raised on natural grazing, with no hay supplement. Yarragadee Station has been a consistent and successful competitor in this competition. The picture was taken during an inspection of the property during the Royal Agricultural Society—Shell Company pre-show journalists’ tour.
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