ONTANA HONOR ROLL DAIRYMEN TELL THEIR STORIES

NATIONAL DAIRY ASSOCIATION

NATIONAL HONOR ROLL

The National Dairy Association awards this diploma to

John Doe

And adds the name to the National Honor Roll in recognition of the

outstanding efforts of developing a herd of 12 cows to a yearly production

average of 2,500 pounds of butterfat for a high milk-testing laboratory.

By direction of the Board of Directors.

[Signature]

[Seal]

MONTANA STATE COLLEGE
EXTENSION SERVICE
ROSEMAN, MONT.
The object of this publication is to give dairymen of the state the benefit of the ideas, experiences and methods of Montana Honor Roll dairymen who gained this distinction by attaining an average yearly production of 300 pounds of butterfat or more per cow in a Montana Dairy Herd improvement association.

In 1931, these Honor Roll dairymen were sent a questionnaire of a practical nature covering some of the important factors in attaining high production. Sixty-eight returned the questionnaire. Their answers are conveniently grouped in this bulletin for the benefit of other dairymen.

By carefully studying the information obtained in this practical fashion, dairymen can increase their knowledge, and indirectly, their experience in dairy farming. They can see how their own ideas, methods and practices agree or differ from those of the Honor Roll dairymen.

The ideas and methods contained in this bulletin must of necessity vary according to local feed conditions and market facilities. However, the high production obtained is generally associated with economical production and a high return above feed cost. (See production table on page 20).

In general, the ideas expressed and the methods employed by dairymen whose answers are in this bulletin, seem to be practical and should be of great value to the dairy farmers of the state.

J. O. TRETSVEN
A Summary of the Methods, Ideas, and Experience of 68 Montana Honor Roll Dairymen

By
J. O. TRETSVEN, Extension Dairyman
Bozeman, Montana

Questions and Answers

Following are the questions asked and a summary of the answers together with a discussion of the replies where such may be helpful.

General Information

Question No. 1: How many cows are there in your herd?

Answers:
10 herds had under 10 cows
35 herds had 10 to 20 cows
23 herds had more than 20 cows

Question No. 2: What breed are your cows?

Answers:
38 herds were Holsteins
16 herds were Jerseys
7 herds were Guernseys
1 herd was Ayrshires
1 herd was Shorthorns
5 herds were mixed cattle

A few of these herds were purebreds while the great majority of them were grades that had been bred up by the use of purebred sires.

Acknowledgement—Mr. J. Alton McIlhatten assisted in compiling some of the data which he used in a thesis submitted in partial fulfillment for the degree of Bachelor of Science in Agriculture.
Question No. 3: How long have you been dairying?

Answers: The answers ranged from four to 40 years, the average being 12 years. It is significant to note that these men had been in the dairy business an average of 12 years. This seems to emphasize the fact that it takes a number of years to develop a good herd of cows and also to acquire experience and knowledge of the business. Dairy farming is naturally a long time proposition. The “in and outer” will likely not be a success.

Breeding and Development of Cows

Question No. 4: Do you use a purebred sire?

Answers: 65 replied yes  
2 replied no  
1 replied part time

The two men who did not use purebred sires were market milk producers who purchased their cows and consequently were not interested in the calves. The fact that 65 of the 68 men with high producing herds used purebred bulls is rather conclusive evidence as to the value and importance of this practice.

Question No. 5: How long have you used a purebred sire?

Answers: The answers ranged from two to 40 years, the average being nine years.

Again we have more evidence that it takes a period of years to breed up a good herd.

Question No. 6: Do you believe in cross breeding or the crossing of breeds?

Answers: 64 replied no  
4 replied yes

The replies are most significant in that the great majority do not approve of crossing breeds. It is apparent that one of the
important factors that have contributed to the success of these dairymen is the long continuous use of a purebred bull of their chosen breed. The continuous crossing of breeds is one of the principal reasons for so many ill-shaped, off-colored, and inferior cattle in some communities.

**Question No. 7:** Was your bull allowed to run with the herd?

**Answers:**
- 45 replied no
- 10 replied part of the time
- 13 replied yes

It is apparent that most of these men did not permit their herd sire to run with the cows. No doubt, there are several reasons for this practice. Some of these reasons may be listed as follows:

1. The cows may be bred at the desired time and a definite breeding record kept.
2. Heifers may be run with the herd without getting them bred at too early an age.
3. When bulls run with the herd they may break through fences and get with neighbors' cattle.

Supplementary data from Montana Dairy Herd Improvement associations showed that keeping the bull away from the herd gave a return of $12.62 more per cow than when the sire ran with the herd.

**Question No. 8:** Did you keep a breeding record of your cows?

**Answers:**
- 65 replied yes
- 3 replied no

Nearly all kept a breeding record of their cows to know the freshening dates. Thus the dairymen could govern the feeding and management accordingly.

**Question No. 9:** Are your cows large for their breed?

**Answers:**
- 35 replied yes
- 25 replied medium
- 8 replied no
Large, strong, well-developed cows are more profitable, irrespective of the breed they represent. To supplement their answers the production for each man's herd was obtained from the annual report of his respective Dairy Herd Improvement Association for the year, and the average determined for the group. The butterfat production per cow for the three groups was as follows:

- Cows reported to be large for breed averaged 341 pounds
- Cows reported to be medium for breed averaged 323 pounds
- Cows reported to be small for breed averaged 313 pounds

Additional studies made by the Bureau of Dairying also show that the larger cows had the greater net returns above cost of feed. This means that the good dairyman will try to breed, feed, and manage his cattle in such a way that they will develop into large, strong animals.

Salt, Minerals, and Stock Tonics

**Question No. 10:** Do you force your cows to eat salt?

**Answers:**
- 52 said no
- 16 said yes

Many dairy farmers have an idea that by mixing large amounts of salt with the grain they can force their cows to drink more water and in turn produce more milk. Seventy-three percent of these men did not force their cows to take more salt than they normally want. It is a common practice to mix a little salt with the grain and then supply the balance in boxes or blocks to which the cows have free access. An excess of salt is more likely to be detrimental than beneficial.

**Question No. 11:** Did you feed a commercial mineral mixture?

**Answers:**
- 60 said no
- 8 said yes

**Question No. 12:** Did you feed bone meal?

**Answers:**
- 52 did not feed bone meal
- 16 fed bone meal
Question No. 13: What results were obtained with bone meal?

Answers: 11 reported good results
         1 reported fair results
         1 reported poor results
         3 did not report

Here are some of the beneficial results reported:
   “Increased the calf crop.”
   “Cows were eating rags and bones before.”
   “Raised stronger calves.”
   “Cows stopped chewing bones.”
   “Improved their appetite.”

Apparently the benefits derived from the use of bone meal will vary greatly. In those districts of Montana where the soils are deficient in phosphorus, producing cows are greatly benefited by the addition of bone meal to the ration unless other feeds high in phosphorous are used.

Question No. 14: Did you feed any commercial stock tonics or condition powders?

Answers: 64 replied no
         4 replied yes

Management Problems

Question No. 15: Did you warm the drinking water in winter?

Answers: 6 reported yes
         3 reported sometimes
         9 reported having spring water
         10 reported freshly pumped water
         3 reported having drinking cups in the barn
         37 reported no

A little less than half of the dairymen had a water supply that was quite favorable in this respect. It is regretted that
information was not obtained from the 37 dairymen as to their opinion regarding the advantage of having warm water.

**Question No. 16: How often were cows watered in winter?**

Answers:
- 2 said once daily
- 35 said twice daily
- 7 said thrice daily
- 21 said access to water all day
- 3 said they had drinking cups in the barn

The dairymen quite generally agreed that cows should be watered twice a day or oftener.

A good water supply to which the cows have free access at all times or at least twice daily in winter is highly essential to a good milk flow.

**Question No. 17: How long were cows left out of doors in winter?**

Answers:
- On this point the dairymen varied greatly in their practice.
- 25 said long enough to water
- 17 said all day in moderate weather
- 15 said six to eight hours
- 5 said two to four hours
- 5 said all the time
- 1 said not at all

This is a debatable question. Some very successful dairymen keep their cows inside most all the time in winter while others keep their cows outside or in sheds except when in the barn to be milked. The success of this latter method depends largely upon having a good water supply to which the cows have free access, a well bedded shed, a building site protected from the wind and well fed cows.

**Question No. 18: Did cows have access to an open shed when not in the barn?**

Answers:
- 18 reported yes
- 1 reported part time
- 49 reported no
Many dairymen find a good shed to which the cows have access in winter very beneficial.

**Question No. 19:** Is your dairy barn comfortable?

**Answers:**
49 reported yes  
14 reported fairly so  
5 reported no

Most of these men had comfortable barns for their cattle. This does not mean that the barns were necessarily expensive buildings. Many of the highest producing herds were kept in relatively cheap barns.

**Milking**

**Question No. 20:** Do you milk and feed at regular hours?

**Answers:**
57 replied yes  
6 replied fairly so  
5 did not reply to this question

In the minds of most dairymen regular milking periods seem to be highly important. Recent experimental data indicate that regularity in feeding seems to be even more important than that of milking, for maximum results. Certainly regularity in both milking and feeding is very desirable.

**Question No. 21:** Do you use milking machines?

**Answers:**
29 replied yes  
38 replied no

**Question No. 22:** Do you strip cows after the machines?

**Answers:**
All 29 reported in the affirmative

**Question No. 23:** Do you milk all the cows in the herd with machines?

**Answers:**
23 said yes  
6 said no

In many herds there are some cows that do not respond well to the use of milking machines. Some dairymen milk these by hand.
and retain them in the herd while other dairymen practice culling such animals from the herd.

**Question No. 24:** Do you milk fresh cows 3 times daily?

**Answers:** Only 9 said yes
59 said no

Where men are specializing in dairying and are striving for maximum production, thrice a day milking is often practiced. Under ordinary farm conditions it is not considered a profitable practice except in special cases.

**Feeds and Feeding**

**Question No. 25:** What kind of hay did you use?

**Answers:** 54 used alfalfa
2 used mixed hays
12 used alfalfa and other hays

Alfalfa is preeminently the choice of dairymen wherever it is available.

**Question No. 26:** In general, was the quality of your hay, choice, good, fair, or poor?

**Answers:** 9 classified their hay as choice
47 classified their hay as good
12 classified their hay as fair
None reported poor hay

**Question No. 27:** What effect does good quality alfalfa hay have upon production and the grain requirement?

**Answers:** 42 said good quality alfalfa increases production and lowers the grain requirements
6 said they used no grain with good quality alfalfa hay
5 said good quality alfalfa increased the milk flow
15 did not answer this question
Good dairymen appreciate the value of quality alfalfa hay in the dairy ration. A good grade of leafy, pea green alfalfa hay is rich in lime, contains most of the essential vitamins and is high in digestible protein. Furthermore, the protein in good alfalfa is of such quality that very efficient and economical production may be obtained without the use of high priced protein supplements.

Supplementary data were obtained through the testers of Dairy Herd Improvement Associations prior to this survey and relative to the importance of quality alfalfa hay for milk production. The testers were asked to grade the hay used by the dairymen as good, fair, or poor. The average return above the cost of feed per cow by the dairymen in three associations who used good, fair and poor hay is shown by the following table:

<table>
<thead>
<tr>
<th>Quality of Hay</th>
<th>Average Returns Above Cost of Feed per Cow</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good</td>
<td>$66</td>
</tr>
<tr>
<td>Fair</td>
<td>52</td>
</tr>
<tr>
<td>Poor</td>
<td>39</td>
</tr>
</tbody>
</table>

It is apparent that the men who were forced to use the lower grades of hay either had a reduced milk flow or their feed costs were high.

**Question No. 28:** Did you grind your hay?

**Answers:**
1 said yes
4 said sometimes
63 said no

Under ordinary farm conditions grinding good alfalfa hay has not been an economical practice. Experimental data indicate that the advantage of ground alfalfa hay over whole hay does not justify the cost except in some special cases.

**Question No. 29:** Do you feed all the hay the cows will eat?

**Answers:**
67 said yes
1 said no

This bit of overwhelming evidence speaks for itself.

**Question No. 30:** What percent of the hay was fed outdoors in winter?
Answers: 16 reported none
16 reported feeding 10 to 25 percent
30 reported feeding 25 to 50 percent
3 reported feeding 50 to 90 percent
1 reported feeding 100 percent
2 did not answer

Question No. 31: Did you feed silage?
Answers: 58 said no
8 said yes
2 said pea vine silage

It is of interest to note how few of these men had silage. The average production of butter fat per cow of the above 10 herds fed silage, was 340 pounds while the average of those herds where no succulent feed was used, aside from the pasture grass was 339 pounds, practically no difference.

Question No. 32: Do you think a silo is a paying investment where you raise good alfalfa hay?
Answers: 16 replied that they did not know
10 replied yes
38 replied no
4 did not answer

While there seems to be some difference of opinion, most of the men expressed themselves against the economic value of the silo under these conditions. Of the 10 men who used silage, only 5 reported in favor of silage, 1 was in doubt, and 4 said no.

The experience of a large number of Montana dairymen seems to be that where an abundance of good alfalfa may be produced at relatively low cost, the silo is not a profitable investment. This, no doubt, explains why there are so many unused silos in Montana.

Question No. 33: What other succulent feed did you feed?
Answers: 47 reported none
12 reported feeding beet pulp
4 reported feeding mangles
1 reported feeding carrots
1 reported feeding apples
3 did not report
Question No. 34: What kind of grain did you use in winter?

Answers:
18 reported a mixture of barley, oats, and bran.
9 reported a mixture of barley, oats and wheat.
11 reported a mixture of barley and oats
3 reported barley only
2 reported commercial mixtures only
3 reported commercial mixtures and local feeds
7 reported cottonseed meal or linseed meal with other concentrates
7 reported other mixtures
8 reported no concentrates used at all

Note that 38 men used very simple mixtures of the common small grains with or without wheat bran.

It should also be recalled from question number 25 that 54 of the men used alfalfa hay and 12 used alfalfa and other hays. Thus, alfalfa hay and these simple grain mixtures constituted the most common ration used. Only 7 men used cottonseed meal or linseed meal in their feed mixtures. The answers to this question again indicate that alfalfa hay and a mixture of our common feeds makes a very practical dairy ration.

It is also worth noting that 8 of these men used no concentrates at all. Men who have choice alfalfa hay, good irrigated or sub-irrigated pasture and good cows have been able to get an average of over 300 pounds of butterfat per cow. This is significant from the standpoint of economical production.

Question No. 35: What rule did you go by in governing amount of grain or concentrates fed in winter?

Answers:
8 used no grain or concentrates
18 used 1 pound for each 4 pounds milk
4 used 1 pound grain for each 3½ pounds milk
Most dairymen have some common rule that they go by in apportioning grain to their dairy cows. In the practical application of such rules there must be considerable variation due to the quality of the roughage fed, the richness of the milk produced, the quality of the grain used, and the condition of each individual cow.

**Question No. 36: What kind of pasture did you have?**

**Answers:**
- 32 reported irrigated
- 7 reported irrigated and dry land
- 7 reported sub-irrigated
- 8 reported native
- 6 reported dry land
- 6 reported other type
- 2 reported no pasture

Forty-six of the 68 men had some irrigated or sub-irrigated pasture. Certainly good irrigated pasture plays a major part in the economical production of milk.

**Question No. 37: In general was pasture good, fair, or poor?**

**Answers:**
- 32 reported good
- 27 reported fair
- 7 reported poor
- 2 men had no pasture

Fifty-nine of these men had fair to good pasture.

In 1924 the testers for the Montana dairy herd improvement associations were asked to grade or classify the pasture of their members as good, fair, or poor, or none. The returns above cost
of feed per cow for these men was compiled from the records. The following table will give the results obtained.

<table>
<thead>
<tr>
<th>Quality of Pasture</th>
<th>Average Returns Above Cost of Feed Per Cow</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good</td>
<td>$72</td>
</tr>
<tr>
<td>Fair</td>
<td>56</td>
</tr>
<tr>
<td>Poor or none</td>
<td>54</td>
</tr>
</tbody>
</table>

**Question No. 38:** Did you feed grain when cows were on pasture and if so, how much?

**Answers:**
- 30 replied yes
- 33 replied no
- 5 replied sometimes

The amount used varied from just enough to coax the cows to come into the barn up to 1 pound of grain for every 3 1/2 pounds of milk produced daily.

**Question No. 39:** How long do you aim to have cows stand dry?

**Answers:**
- 25 said 6 weeks
- 41 said 8 weeks
- 2 said 10 weeks

Nearly all aimed to have their cows stand dry six or eight weeks.

**Question No. 40:** Were dry cows conditioned on grain before calving?

**Answers:**
- 37 replied yes
- 30 replied no

**Question No. 41:** What amount of grain did you feed to dry cows?

**Answers:**
- 13 reported feeding less than 4 pounds daily
- 17 reported feeding 4 to 8 pounds daily
- 7 reported feeding 8 pounds or more

Experiments have shown that dairy cows need a rest period...
each year. Unless a dry period is provided and the animals are well fed during this period, the production will be unsatisfactory the following lactation.

Many good dairymen believe it is profitable to feed their cows so that they will be in good thrifty condition at calving time.

**Raising Dairy Calves and Heifers**

**Question No. 42:** How long do you leave baby calves with their dams?

**Answers:**
- 13 removed calves at birth
- 9 removed calves in 12 hours
- 15 removed calves in 1 day
- 8 removed calves in 2 days
- 15 removed calves in 3 days
- 5 removed calves in 4 days
- 2 removed calves in 1 week
- 1 did not answer

The dairymen certainly do not have a uniform practice on this point. Furthermore, there seems to be good reasons for all of the principal methods listed. These reasons may be summarized as follows:

In removing the calf at birth the cow does not fret long over the loss of her calf and thus will let her milk down more freely. There is also less danger of inducing milk fever with the mature cows.

The chief reasons for leaving the calf with its mother a day or two are:

The calf generally gets a better start when allowed to nurse for some time.

The frequent nursing of the calf is beneficial for caked udders, especially in the case of heifers. It also saves labor.

Many dairymen find it more difficult to teach a calf to drink that has been allowed to nurse for a few days. However, when the proper methods are employed in teaching older calves to drink, no serious difficulty is experienced.
Question No. 43: How long do you feed whole milk?

Answers:
- 2 reported 1 week
- 14 reported 2 weeks
- 18 reported 3 weeks
- 18 reported 4 weeks
- 1 reported 5 weeks
- 9 reported 6 weeks
- 4 reported 9 weeks
- 2 reported 2 months

Here again there was a wide variation in methods. However, most of the men reported within a range of 3 to 4 weeks. Many dairymen who market whole milk do not have skim milk. As a result they may feed whole milk for a short time and then substitute calf meals, or they may continue using a little whole milk for 8 to 10 weeks when milk feeding is discontinued and the calf is then raised on hay and a good grain mixture and water. One rather common rule is to feed the calves whole milk until they eat grain readily and then gradually switch to skim milk.

Question No. 44: How much milk do you feed daily to a 10-day-old calf?

Answers:
- 1 man reported 4 pounds
- 7 men reported 6 pounds
- 14 men reported 8 pounds
- 13 men reported 10 pounds
- 19 men reported 12 pounds
- 3 men reported 14 pounds
- 9 men reported 2 gallons
- 2 men reported over 2 gallons

Considerable variation in the answers might be expected to this question, due to the differences of opinion and the breed of cattle. Forty-six of these men reported between 6 to 12 pounds daily, which may not be very far from the common rule of feeding 1 pound of milk to every 9 or 10 pounds of live weight. As a basis of live weights, the following figures will apply for 10-day-old calves:
Jersey ...................... 60 pounds  
Guernsey .................. 75 pounds  
Holstein ................... 100 pounds  
Ayrshire ................... 78 pounds  
Brown Swiss ................ 106 pounds

Question No. 45: How much skim milk do you feed daily to a 7 weeks old calf?

Answers:

1 man reported none  
2 men reported 6 pounds  
8 men reported 8 pounds  
5 men reported 10 pounds  
7 men reported 12 pounds  
6 men reported 14 pounds  
17 men reported 2 pounds  
19 men reported 2 to 3 gallons

Again there was much variation in methods, apparently due to many factors such as breed of cattle, market for milk and feeding practices.

The feeding of a large amount of milk at a time is thought to be a common cause of calf scours. The average amount as stated by the majority of these men seem to be in keeping with good dairy practices.

Question No. 46: What kind of hay do you recommend for calves?

Answers:  
57 gave alfalfa as their choice  
9 gave mixed hay as their choice  
1 gave poor hay as his choice

Good alfalfa hay is certainly a splendid feed for calves. Many good dairymen however prefer a good grade of mixed hay for young calves while on skim milk.

Question No. 47: What kind of grain do you recommend with skim milk?

Answers:  
21 said whole oats  
14 said barley and oats  
3 said barley, oats, and bran
5 said ground oats
3 said calf meals
2 recommended oil meal in mixture
Others did not answer

It is significant to note that so many recommended whole oats, or a mixture of the common grains. Only two recommended protein rich concentrates in the mixture.

In general, experimental data seem to substantiate the recommendation of these men.

**Question No. 48**: Do you use commercial calf meals in the skim milk?

**Answers**: 12 said yes
52 said no
2 said sometimes
Others did not report

**Question No. 49**: To what age do you feed skim milk to calves?

**Answers**: 2 fed up to 2 months
13 fed up to 4 months
28 fed up to 6 months
14 fed up to 8 months
4 fed up to 10 months
1 fed up to 12 months

A common recommendation is to feed skim milk until the calves are 6 months old. The largest group followed this practice.

**Question No. 50**: At what age do you aim to have heifers freshen for the first time?

**Answers**: 2 reported less than 2 years
42 reported 24 to 27 months
30 reported 30 months
1 reported 36 months

The proper age will, of course, vary some with the breed of cattle and the rate they are fed. Twenty-four to 27 months is generally recommended for well-grown Jersey and Guernsey
heifers. While 27 to 30 months is common for the later maturing breeds. This is essentially what is practiced by these men with few exceptions.

### Production and Feed Costs

A high average production per cow is generally associated with the greatest returns above cost of feed. This is shown in the following table in which the individual cow records, taken from Montana Dairy Herd Improvement Association, were grouped according to butter fat production.

<table>
<thead>
<tr>
<th>No. of cows per group</th>
<th>Av. lbs B. fat per cow</th>
<th>Av. value of product per cow</th>
<th>Av. cost of roughage per cow</th>
<th>Av. cost of grain per cow</th>
<th>Av. cost of feed per cow</th>
<th>Av. cost of feed above cost of feed</th>
</tr>
</thead>
<tbody>
<tr>
<td>68</td>
<td>153</td>
<td>64.63</td>
<td>35.19</td>
<td>5.84</td>
<td>41.03</td>
<td>23.60</td>
</tr>
<tr>
<td>178</td>
<td>204</td>
<td>87.24</td>
<td>35.61</td>
<td>8.18</td>
<td>43.79</td>
<td>43.45</td>
</tr>
<tr>
<td>288</td>
<td>251</td>
<td>108.16</td>
<td>37.11</td>
<td>12.63</td>
<td>49.74</td>
<td>58.42</td>
</tr>
<tr>
<td>259</td>
<td>298</td>
<td>127.90</td>
<td>39.02</td>
<td>13.97</td>
<td>52.99</td>
<td>74.91</td>
</tr>
<tr>
<td>197</td>
<td>347</td>
<td>147.58</td>
<td>40.21</td>
<td>19.81</td>
<td>60.02</td>
<td>87.56</td>
</tr>
<tr>
<td>90</td>
<td>395</td>
<td>166.07</td>
<td>40.44</td>
<td>21.40</td>
<td>61.84</td>
<td>104.23</td>
</tr>
<tr>
<td>31</td>
<td>445</td>
<td>190.48</td>
<td>40.77</td>
<td>23.84</td>
<td>64.61</td>
<td>125.87</td>
</tr>
</tbody>
</table>

Note that as the average production per group increased from 153 to 445 pounds of butter fat, the cost of roughage increased from $35.19 to $40.77, only, while the cost of grain increased from $5.84 to $23.84. This increased the total cost of feed from $41.03 to $64.61 or approximately 58 percent. Though the cost of feed increased 56 percent, the returns above cost of feed per cow increased from $23.60 to $125.87 or 433 percent. The returns above cost of feed will vary considerably depending upon the price ratio between feed cost and the price of dairy products. This data were obtained prior to the depression. Since the depression the return above cost of feed has been noticeably less.
Conclusions

A few valuable conclusions may be drawn from the answers given by these Honor Roll dairymen, and the discussions following:

1. Dairy farming is a long time proposition. The "in and outer" can't expect to get far in this business.
2. As far as possible use good purebred sires.
3. Cross breeding is not recommended.
4. Keep a definite breeding record of the cows.
5. All of these Honor Roll dairymen kept production records of each cow in their herds. This enabled them to:
   a. Cull out their inferior cows
   b. Save the heifers from the best producers
   c. Feed according to production
6. Good alfalfa hay and a mixture of common grains makes a good winter ration for milk cows.
7. With choice alfalfa hay and good irrigated pasture, good production may be obtained with limited grain and in some cases the grain may be eliminated entirely.
8. Use bone meal in the ration where phosphorous is needed.
9. Let cattle have all the salt they want but don't force them to take more than they desire.
10. Only a few of these men used stock tonics or condition powders.
11. The value of the silo is questionable where good pasture are available and where a good grade of alfalfa hay may be produced at a relatively low cost.
12. Comfortable quarters for the stock is important.
13. Producing cows should have water at least twice daily.
14. Irrigated or sub-irrigated pastures increase production and lower the cost.
15. Large, well-developed cows are most productive and profitable.
16. Good calves can be raised on skim milk, good hay and whole oats or a mixture of common grains, after they are a few weeks old if the right methods are employed.

17. Well-grown heifers should be bred to drop their first calves when 24 to 30 months of age, varying some with the breed.

18. Milking machines are a success when carefully operated and stripping is practiced.

19. Regularity and gentleness are important.

20. Dairy mindedness is the most important factor in making a success.