Improving the Dairy Herd

BY

R. R. Graves and E. B. Fitts

The bulletins of the Oregon Agricultural College are sent free to all residents of Oregon who request them.
Department of Dairy Husbandry

R. R. Graves, Professor.
O. G. SIMPSON, Instructor.
E. R. STOCKWELL, Instructor.
EDWARD B. FITTS, Extension.
W. A. BARR
S. J. DAMON
Co-operative Extension work with
U. S. Dairy Division.
IMPROVING THE DAIRY HERD.

OPPORTUNITY AND NEED FOR IMPROVEMENT.

Dame Nature has richly endowed Western Oregon with the natural facilities for successful dairying. The climatic conditions are especially favorable for the maximum production of milk. The summers are cool and the cold of the winters is not severe nor prolonged. The extremes, which are so hard on the nervous, highly strung dairy cow, do not have to be contended with in this state, as in the eastern dairy districts. The precipitation is sufficiently large and evenly distributed to render the growing of large amounts of green forage, roots, soiling crops, silage crops, and pastures, a certainty. The natural pasturage of our coast countries probably cannot be surpassed in the United States. We have excellent water. Our transportation facilities, both by rail and water, are good, and will undoubtedly be greatly improved in the future. We have here, indeed, largely the same natural conditions that have smiled on England, the Channel Islands, and Holland, the homes of our greatest breeds of dairy cattle. Our markets are excellent; this state and the adjoining states to the east of us are consuming more dairy products than are produced within their boundaries. The opening of the Panama Canal will undoubtedly open up new markets for our dairy products. With our natural climatic advantages, and the excellent markets at our disposal, there seems no reason why the dairy industry in this state should not grow and prosper.

If we are to enjoy the full advantages of the conditions referred to; if we are to be successful in the highest degree; and if we are to take advantage of yet another opportunity, aside from the selling of milk, cheese and butter, that is open to us, then we must have efficient cows, high grade dairy cattle showing uniformity of breeding. There is an enormous demand for pure-bred and high grade dairy cattle in all of the
states west of the Mississippi. Oregon is importing carload after carload of dairy cattle from the East every year, and the same is true of our neighboring states. Eastern Oregon, Eastern Washington, Idaho, Utah, Montana, Wyoming, and Colorado have been raising alfalfa and selling it for $5.00 and $6.00 a ton. This alfalfa was being fed to dairy cows in Illinois, Ohio, and other Eastern states at prices ranging from $15.00 to $30.00 a ton, and part of the resulting butter was shipped back to Montana, Idaho, and other western states to be consumed. These states are beginning to realize the folly of such a system and are wanting dairy cows to which they can feed their alfalfa. Inquiries are received almost every day, asking where a carload of Holsteins, Guernseys, or Jerseys can be purchased, and usually we have to direct the inquirers to Wisconsin or some other eastern state. Why is this? Washington, Polk, Tillamook and many other counties have been dairying for years. Why can't we go into a locality in one of these counties and buy high grade dairy cattle in considerable numbers? Largely, because it is impossible to find a community where there are a large number of animals showing uniformity of breeding, and of one breed, to select from. As one travels through the country, he sees in most of the herds, with the exception of here and there a pure-bred herd or a well graded herd, a variation in type, form, and particularly color. In some herds, red, white, black, brindle, and a combination of these colors, are to be seen. The presence and admixture of so many colors in common herds indicates a crossing of breeds and usually means the use of the scrub bull. This lack of uniformity in our herds means a loss of thousands of dollars annually, that would come into our counties from the sale of stock, had pure-bred sires been used and community breeding practiced. Jefferson county, Wisconsin, sells more than $10,000,000 worth of pure-bred and grade cattle each year. Why? Because it has gained a reputation as a center for Holstein and Guernsey cattle; because buyers from far and wide know that they can go to this county and pick up a carload of either of these breeds of cattle in a comparatively short time.
There is a great opportunity for the dairyman in the Willamette Valley and the coast counties to reap a great harvest, through community breeding and grading, from the sale of pure-bred and high grade dairy cattle. We have the climate and the cheap feeds that favor the economical development of cattle.

LIVE STOCK IMPROVEMENT NOT DIFFICULT.

The problem of improving our dairy cattle is a comparatively simple one. It is not necessary for us to establish new types or breeds. The four principal dairy breeds will respond favorably to our conditions. The first step must come from the cessation of the crossing of breeds and the using of grade or scrub bulls. We cannot hope to improve our herds by buying cattle, for it is very seldom that our neighbors wish to sell their best cattle. Then, too, the time, expense, and effort involved in hunting stock is almost prohibitive for a busy farmer. Again, where one practices buying cows to keep up the herd, or to maintain the standard of production, once the herd is established, he runs the grave risk of introducing tuberculosis or contagious abortion into his herd. Our easiest, quickest, and most satisfactory method of improving our herds is through the use of a meritorious sire of one of the dairy breeds, the careful selection and raising of his daughters from the best cows, and systematic co-operative breeding.

BREEDING DAIRY CATTLE.

The breeding of dairy cattle is an integrant part of the progressive dairyman's business. The usefulness of the average dairy cow does not cover a period of more than eight years. For various reasons animals are continually dropping out or being discarded.

Cows, to the number of 30,000 or more, are needed to replace those that will finish their work in the herds of Oregon this year, and to provide for the natural increase.

These must be secured either by purchase and brought in from outside the state, or by raising the heifer calves. Some of the dairymen depend upon purchase and others raise calves enough each year to keep the number in the herd good.
If these thirty thousand cows added to our dairy herds each year to keep the number good, were as much superior to their dams as they could be made by proper methods of breeding, this state would soon attract the attention of the whole world because of the high average production of its dairy cows. For the aim of the breeder should be not only to secure reproduction, but at the same time secure animals that are superior to the ones from which they came.

The problem is not a difficult one and an improvement in both type and producing ability can be easily effected. That there is great need of improvement in the producing power of the average dairy herd of our state is very evident.

The work of experiment stations, of cow testing associations, of creameries investigating production in the herds of their patrons, and of farmers awakening to the need of studying production in their own herds, has invariably revealed two facts: (1) A great variation in the producing ability of different individuals in the herd, the best cow sometimes yielding two or three times as much as the poorest; (2) A low average yield per cow. If a record of food eaten is also kept, it will be found that there will be a great variation in the milk yield of different cows receiving the same amount of feed. The cost of production is usually inversely proportionate to the amount of production.

The success of the dairyman is dependent upon the producing ability of the cows in his herd. The cost of feed, labor, and all necessities connected with the production of milk, has increased greatly during the past few years. The price received for milk has not increased proportionately, and the situation is consequently becoming acute. The solution to this embarrassing situation is to keep better cows.

Abundant opportunity for improvement exists, if we will but avail ourselves of it. If proper methods are used, improvement can be easily and quickly effected.

The mating of animals has often been more a matter of convenience than of careful, systematic work, with the result that the average production of our dairy herds has increased very slowly.
Selection. There is nothing that will pay the dairymen better than to study his herd carefully and take steps to start breeding operations with the definite object in view of increasing the value of his herd through weeding out the unprofitable cows and selecting carefully the animals to be mated. In selection, we have the most direct and powerful means of improvement at the disposal of the breeder. The breeding of stock, in fact, is fundamentally a matter of selection. We can get nothing into our young animals excepting what they inherit from their ancestors. By choosing ancestors, therefore, we are able to control progeny to a considerable degree.

A knowledge of the principles of heredity is essential to the breeder before he is able to select his animals intelligently.

Heredity. By heredity is meant the reproduction in the offspring of the characteristics of the parents. Parents transmit to their offspring not only their own characteristics but also those they have inherited. To choose intelligently, therefore, we must not only know our animals well but also the stock from which they came. The persistence of heredity is a very important factor in breeding. Points of superiority or of inferiority existing in the ancestry may appear at any time. The longer animals have been bred along definite lines, the more certain can we be of securing the desired results.

It must always be borne in mind, however, that animals of each generation will show much variation; but if the inferior ones are discarded as they appear, the range of variation will be between higher limits, in each successive generation. This variation in the producing power in different cows is the basis of all work for improvement.

Selection and breeding are the means to the end.

Selection refers to choosing the good animals from a herd, or those possessing the traits desired, and deals with animals already in existence.

Breeding treats of the proper mating of animals so as to secure in the offspring the traits desired. The results of breeding, therefore, are shown wholly in future generations.

Selecting the Cow. In selecting breeding cows an accurate knowledge of their ability to produce milk economically is
the first requisite. While more feed, better care, and more comfortable quarters have their effect in securing a greater milk yield, yet the ability to produce milk profitably is born in a cow and cannot be acquired by any means yet known to man.

Profitable milk production is usually associated with certain developments of conformation which one may learn to recognize until it is possible to become quite skillful in selecting by this method. It is not infallible, however, as a cow may possess an excellent conformation and yet not come up to expectations in production. The only sure method is to ascertain actual production by weighing the milk for the entire lactation period. The persistent, or retentive milker, is usually the one that has the largest amount of milk to her credit at the end of the year, rather than the one yielding a large amount at the beginning of her lactation period. Many a dairyman has been surprised to learn, after weighing the milk from his cows for a year, that his “Best” cow was nearer the bottom of the list than the top.

In addition to being an economical producer, the cow should show evidence of possessing a good constitution and feeding qualities.

Selecting the Bull. As the bull is not in himself a producer of milk, a study must be made to ascertain if he is likely to possess the ability to transmit to his offspring the qualities desired. He is of prime importance in improving the dairy herd, as he controls one-half, or more, of the characteristics of the calf of each cow that is bred to him. Consequently, too much care cannot be taken in making the proper selection.

The chief things to be considered are pedigree and individuality.

Pedigree is a record of ancestry and should be studied carefully. A bull should never be placed at the head of a herd, unless his ancestors were good producers.

The bull transmits the dairy qualities of the females that contributed to his inheritance. Particular attention should be paid to his dam. If she produced milk economically, the chances are that the bull will inherit and transmit to his heifers the ability to do the same. If he has sisters that are good pro-
ducers, the chance is still better. The two grand dams should also receive careful consideration. If they are, or were, producers of milk in large quantities, the value of the bull is still further increased. The paternal grand dam is usually given more serious consideration than the one on the maternal side, although it has not been proved that either grand dam should be given consideration over the other.

If the bulls in the pedigree have proved themselves to be sires of good stock, it is an added point of value.

The more good animals there are in a bull’s pedigree, the better, but too much attention should not be attached to an exceptional animal several generations back in the pedigree.

The following table from Davenport’s “Principles of Breeding” shows the relative influence of different generations and of individuals in the generation:

<table>
<thead>
<tr>
<th>Generation backward</th>
<th>Number of ancestors</th>
<th>Influence of generation</th>
<th>Influence of each individual</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>50</td>
<td>25</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
<td>25</td>
<td>6.25</td>
</tr>
<tr>
<td>3</td>
<td>8</td>
<td>12.5</td>
<td>1.56</td>
</tr>
<tr>
<td>4</td>
<td>16</td>
<td>6.25</td>
<td>0.39</td>
</tr>
<tr>
<td>5</td>
<td>32</td>
<td>3.125</td>
<td>0.10</td>
</tr>
</tbody>
</table>

It has been found that an animal inherits, on the average, fifty per cent of its characteristics from its parents and the remaining fifty from all previous ancestors, and that each generation backward has but one-half the influence of the preceding one. This table should be studied carefully by all who are selecting breeding stock by pedigree; for instance, the table shows that an individual in the fifth generation backward has an influence, on the average, of but one-tenth of one per cent; too small an influence to be of appreciable value.

**Individuality.** If the pedigree is satisfactory then the individuality of the bull should receive consideration. Constitutional vigor and prepotency should be evident as shown by a wide awake, animated appearance, deep chest, large heart girth, strong, well poised head, mild, clear eye, loose pliable
hide, strong back, and at maturity, a well developed crest. He should also be a good representative of the breed to which he belongs.

The successful breeder depends upon the well established fact that “Like Produces Like,” and that by selecting ancestors he is able to control progeny. A good pedigree backed by evidence of vigor and constitution, give promise of ability to transmit to offspring the qualities sought.

The results are sometimes disappointing, even though the utmost care is exercised in selecting animals. There are so many imperfections existing back of any individual that the outcome of mating two animals cannot be predicted with absolute certainty. Some of these imperfections may appear at any time, but care in choosing breeding stock reduces this risk to a minimum.

A bull should not be condemned if some of his calves do not come up to expectations; but unless a large proportion are better than their dams, the breed average or herd average is not being raised and a new bull should be selected. All inferior animals that appear should be disposed of. Selection must be practiced continuously.

A bull whose heifers prove to have superior merit should be retained in the herd as long as the animals with which he is to be mated are not too closely related to him. The value of a superior breeder is beyond computation. The excellence of any breed is advanced by a comparatively few individuals of superior merit and breeding power. Such animals should be used to the utmost and not discarded because of loss of form, an evil disposition, or old age.

When the time arrives that a new sire must be chosen, much care should be taken in the selection. Too much cannot be said against placing a young, untried sire, at the head of a herd, even though his pedigree is all that could be desired and his individuality perfect. He should first be mated with a few females of known merit and his real ability determined before going to the head of the herd.

Breeding is not an exact science, but an art, and the breeder will succeed in proportion as he studies its problems and
exercises good judgment in the selection and mating of his animals.

SYSTEMS OF BREEDING.

Success in breeding is only realized by those who understand the principles involved, and who follow a carefully laid plan with definite results in view.

Selection is a potent factor in all systems of breeding and must be rigidly practiced.

GRADING.

By grading is meant the mating of a pure bred animal with one of mixed breeding. The pure bred animal may be either male or female, but in practice, for economic reasons, the male only is used.

In common usage, therefore, the term “Grading” refers to the use of a pure bred sire on a herd of mixed breeding. It is the cheapest form of herd improvement, as by the use of a single individual, each calf born in the herd carries one-half the blood of its sire; or, in other words, becomes a half blood.

If this sire has been carefully selected, a marked improvement in the milk yield of his heifers over their dams should be shown. Cases are not rare where the milk yield has been doubled in a single generation. In addition to the advance in utility, comes also a uniformity of type and of color that pleases the eye and serves to increase the interest of the owner in the development of his herd.

Grading is a good beginning for the prospective breeder of pure bred stock. It is cheap and safe and brings out clear and strong, in the grades, the breed characteristics. It gives abundant opportunity, also, of becoming familiar with the breed before beginning the costly work of breeding pure breds.

Grading carried on for a number of years results in a herd with characteristics so closely resembling pure breds that it is impossible to distinguish between them. The milk yield also may be fully equal to that secured from pure breds.

A pure bred herd, however, can never be secured by this means, as there always remains a varying amount of the blood of the unimproved stock.
The following table shows to what a small amount this unimproved blood may be reduced in a very few generations.

<table>
<thead>
<tr>
<th>Generation</th>
<th>Sire Purity</th>
<th>Dam Purity</th>
<th>Offspring Purity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100%</td>
<td>0%</td>
<td>50%</td>
</tr>
<tr>
<td>2</td>
<td>100%</td>
<td>50%</td>
<td>75%</td>
</tr>
<tr>
<td>3</td>
<td>100%</td>
<td>75%</td>
<td>87.5%</td>
</tr>
<tr>
<td>4</td>
<td>100%</td>
<td>87.5%</td>
<td>93.75%</td>
</tr>
<tr>
<td>5</td>
<td>100%</td>
<td>93.75%</td>
<td>96.875%</td>
</tr>
</tbody>
</table>

Great care needs to be exercised in choosing successive sires to head the herd. The higher the development to which one has attained, the more difficult is it to maintain and improve upon it. A sire of proved merit should be secured, if possible.

Selection among the cows should be made, and those not coming up to a certain standard, weeded out.

This method of herd improvement is open to every dairyman in the country, and it is through grading that the increase in milk yield must come to most of the dairy herds.

Of the 21,000,000 dairy cows of the country, not over 2% are pure bred, so it must be a long time before pure bred cattle will be in the majority.

When a grade herd reaches a high point of efficiency, the mistake is sometimes made of placing a grade bull at the head of the herd. This should never be done, as all progress stops when a bull is used whose breeding is not of higher order than that of the cows.

Sometimes the error is made of changing breeds. If a bull of another breed is used, not only is all progress halted, but a start must again be made from the beginning.

Grading distributes breed excellence rapidly and with extreme certainty.

**CROSS BREEDING.**

Cross breeding is the mating of two animals of different breeds. This method of breeding is sometimes followed with the hope of securing in a single individual the good points of the two breeds. The results are not likely to be satisfactory.
A good animal is sometimes secured; but the outcome cannot be predicted with any certainty, and disappointment comes much oftener than success.

It is an aid in establishing new breeds, but as this is a work of many years, it should not be undertaken except by experienced breeders who have a definite plan in mind and who are prepared to give the necessary time for it realization.

In the developing of the various breeds, it has been the ambition of the breeders to raise the average milk yield, to reduce variability to the minimum, and to fix the good points of the breed so that they will be transmitted with uniform regularity. The crossing of breeds breaks up lines of inheritance and increases variability, thus defeating the object for which breeds have been developed.

LINE BREEDING.

Line breeding is the mating of related animals carrying not over 50% of identical blood lines. In addition, it implies a succession of sires that trace their descent in some manner to the same individual.

This system is used extensively in breed development and also to great advantage in grading.

The object in this mating of related animals is to strengthen and intensify certain superior blood lines so as to secure individuals of exceptional merit and to increase their prepotency or ability to transmit their characteristics to their offspring. Such mating reduces the number of animals in the pedigree and so lessens the range of inheritance.

Since animals transmit to their offspring only such qualities as they inherit, if the ancestry can be reduced to a very few individuals of superior merit, the chance of securing what is wanted and of being able to predict results is greatly increased.

No method for the improvement of farm animals is equal to that of line breeding if carried on by an experienced breeder. To attain success, however, something more than mere relationship must be considered. Weak or undesirable points are transmitted with exactly the same degree of certainty as are
the strong or desirable ones. A careful study of the animals to be so mated must be made. This requires well trained powers of observation, good judgment, and an intimate knowledge of the ancestry of the animals under consideration.

Relationship, individuality, and ancestry must all be considered.

A study of the pedigree of many of the noted animals in all classes of live stock reveals the fact that they are the result of the mating of related animals. This is the strongest kind of an argument in favor of the practice.

The danger in line breeding lies in the fact that too much attention is likely to be paid to relationship, or pedigree, and too little to selection of individuals.

IN-BREEDING.

In-breeding, strictly speaking, refers to the mating of offspring and parent, or brother and sister, in one or more generations, but in common usage the mating of animals carrying 50% or more of the same blood is considered in-breeding. This would include half brother and sister and full cousins.

In-breeding, is line breeding carried to its limit, and it intensifies all the advantages and disadvantages of that system. It is used successfully, but only in the hands of careful and experienced breeders. Its object is to concentrate, quickly, desirable characteristics in the offspring, and to render these characteristics more stable in order that they may be uniformly transmitted.

An exceptional cow may be bred to her own son and the get, if a heifer, bred to the same sire; or a bull may be mated with his daughter, and again to the heifer in the next generation, and so on. Animals are thus secured carrying a large proportion of the blood of the original animal and as a result the pedigree is a simple one and the range of variability in offspring should be small. It increases prepotency and favors stability. Great successes and dismal failures have followed this practice. In the hands of the experienced man, it is a powerful factor for breed development. Sterility, lack of
vigor, and other weaknesses, however, often follow in-breeding, and a careful selection of individuals to be so mated must be made.

That in-breeding can be successfully followed for many generations is clearly demonstrated by breeders who have succeeded in building up their herds to a very high degree of efficiency without the admixture of any new blood from outside.

The exercise of high abilities on the part of the masters of the art of breeding, has resulted in their securing within their own herds animals that are superior to any that can be purchased.

So long as animals are individually adapted to each other and there is no common weakness in their lineage, in-breeding may be safely followed.

CO-OPERATIVE COMMUNITY BREEDING ASSOCIATIONS.

Objects of the Association. This is an age of co-operation. Practically all of the industries have organized for their benefit and for the control of sales. Farmers, as a class, have been rather slow in organizing. There is a form of organization, however, known as the Community Breeding Association, that has been growing in favor among farmers during the last few years. This association usually has the county for a unit, and may be formed for the uplift of the Holstein, Jersey, Guernsey, or Ayrshire breeds. The primary object of these associations is to help the farmer to breed and raise more productive cows, and to make each community celebrated as a center for some one or two breeds of cattle. Where there are a large number of cattle of one breed in a neighborhood, the comparison of herds and animals of the same breed lends to the owners more of a sense of personal pride in their animals. And this, in turn, leads to the use of better sires, as well as better feeding and development of the young stock. Then, too, the man with the scrub bull heading his herd quickly sees where he is losing money when he observes the large cream checks of his neighbors and compares his own scrub cows with those sired by the pure bred bulls of the breed represented by
the association. Not only is the total production greatly increased in a community, but, since there is surplus stock to be disposed of, buyers will be attracted, and will pay higher prices, because of the uniformity of breeding and the opportunity of buying and assembling a number of cows of the same breed.

The only requirement necessary for membership in a Community Breeders’ Association is a pledge to use only pure-bred bulls of the breed represented by the association.

*Waukesha Guernsey Breeders’ Association.* Wisconsin has something over fifty-five community breeders’ associations, the largest number in any one state. One of the first of these associations to be formed in Wisconsin was the Waukesha Guernsey Breeders’ Association. The association has 73 herds. There are now over 1500 pure-bred Guernseys in this county and it is claimed that the number has increased over 50% since the association started to clean out the scrub bulls and insisted that every member own a pure-bred sire.

This association has its annual meetings, where men of authority along their special lines are invited to speak, and where the members talk over their work and receive an inspiration for the betterment of their cattle that they could receive in no other way. The association also has an annual consignment sale. Co-operative advertising is practiced. In three years, more than $107,946.00 worth of pure-bred Guernseys have been sold from this county besides a great many grades. Some of the benefits that have been derived from this association are: 1. They have worked along the same lines, had the same problems to deal with and consequently have been able to breed more efficiently. 2. There has been an inspiration for semi-official testing and this has led to a gradual advancement in the quality of the herds. 3. A more effective and economical plan of advertising has been developed and this has created a better demand and better prices for their stock.

*The Bull Association.*

The bull association differs from the community breeders’ association in that the association owns and controls the
bulls. Usually, members take out stock in proportion to the number of cows they own and this money is used for the purchase of bulls. The association is divided into blocks or sections, each block containing from 50 to 70 cows. The blocks exchange bulls every two years to prevent in-breeding and to give all members an opportunity to use each bull, as one bull may prove more valuable as a sire than others.

There are many districts in Oregon where the farms are close together, the herds are small, and the dairymen do not feel that they can afford to pay the increased cost of a bull with Advanced Registry backing to use on a herd with only ten or fifteen cows. In such communities, the bull association is to be recommended.

Advantages. The advantages of the bull association are:
Every dairyman in the association has the use for his small herd of cows, of a far better bull than he could afford to purchase for himself. Then, too, the use of the bulls will be had for a number of years without in-breeding, as each block exchanges bulls every two years. The bull association tends to community breeding, the advantages of which have been discussed. Better bulls can be secured and retained. One excellent bull wisely used and kept in service during his lifetime may greatly advance the average yield per cow in a community. An efficient scheme of testing the transmitting ability of untried bulls may be worked out in such an association. Even though from a line of high producing ancestors, bulls will sometimes fail to transmit milking ability, and where such a bull is used exclusively, he may quickly lower the average yield per cow and undo the good accomplished by the efficient sire. It is necessary, of course, for the members of the bull association to advance the interests of one breed.

THE COW TESTING ASSOCIATION.

Objects. The first cow testing association in the United States was organized in Michigan in 1907. Since that time the movement has had a rapid growth. On July first, 1913, there were 111 active associations. The cow testing association is a co-operative business organization among the dairymen of a certain community for the purpose of detecting and
eliminating the unprofitable cow and for keeping an accurate record of the amount of milk and butter fat produced by each cow during the year, together with the cost of production. Its effect is to put the dairy industry on a business basis. For in spite of the fact that the average dairyman honestly believes that he has no poor cows, the work of the cow testing association has shown that in almost every herd there are a few cows that are not earning their feed. These poor cows lower the profits from the entire herd. It is not always easy, however, to know which are the poor cows, without weighing and testing the milk and keeping a record from month to month. This the dairyman generally feels that he has not the time to do, and accordingly he and his neighbors organize, hiring a young man who has been trained in the agricultural college to do this work. Since there are twenty-six working days in the month, it is desired that there be that many herds in the association and that these twenty-six herds contain not less than 300 cows.

Methods and Test. It is the duty of the tester to visit each herd once each month. Arriving in the afternoon, he weighs and samples the milk from each cow that evening and the following morning. He also weighs and records the grain and roughage fed each cow. The next morning the milk samples are tested, the calculations made and entered in the record book, which remains in the hands of the farmer, and in the association book, which is cared for by the tester. The total production of milk and fat for each cow during the twenty-four hours is taken as an average for the month, and the total yield for the month is obtained by multiplying by the number of days in the month. Thus, the farmer has a record of the amount of milk and fat produced by each cow, its value, and the amount of food consumed and its cost. At the end of the year, the monthly record is footed up and he knows just what each cow produced and at what cost.

The cost of this service varies somewhat with the number of cows in the association, but is usually $1.50 per cow a year, with a minimum charge of $15.00 a herd. This goes to pay the salary of the tester; in addition, each member pays
dues of 25 cents, to defray expense for postage, sulphuric acid, etc. It is the duty of each member to furnish the tester board and lodging while at his farm and to convey him to his next stop.

Benefits Derived from the Association Work. Not all of the beneficial results of testing association work come from the larger returns of the herd through the weeding out of the poor cows and better feeding, though this alone is sufficient to justify the organization of the association. One of the most important results is the increased interest taken in their work by the dairymen. A keen interest develops in the work of the various cows as the year's work progresses. An interest in better cows is awakened, and this in turn leads to the pure-bred bull and better breeding. Co-operative buying has become one of the features of many associations, and when the buying is done in large lots and for cash, the reduction in the dairyman's yearly feed bill is an important item.

Had the dairymen of this state co-operated in a community breeders' association since dairying was introduced, breeding along one line in each community and using only pure-bred sires of the same breed, this state would now be known far and wide as the best place in the west to go for good dairy cattle. Buyers are always attracted by the possibility of buying a number of cattle in one neighborhood and once your locality becomes known as a center for Holsteins, Jerseys, or Guernseys, you will have a ready sale for all surplus stock. After all, where bulls of the same breed are used, it is only a question of a few generations before your animals will have all the appearances of pure-bred animals, while if meritorious sires have been used, the cows will be almost as profitable at the pail. In four generations they will carry 94 per cent of the blood of the breed to which they have been graded. By this process not only will the sale of surplus stock be made more profitable, but the average yield per cow will be greatly increased.

Every dairyman in the state should be enrolled in a cow testing association and in a bull association, or a community breeding association. Such associations help in improving the
herd; help in securing better pure-bred sires; help in the better organization of the farms for supporting the herds and help in ridding the herds from, and keeping them free from, diseases. Through active membership in such an association, the dairyman will be able to accomplish far greater results in the selection and breeding of profitable dairy animals and in making his community a prosperous, desirable place in which to live.

CONSTITUTION AND BY-LAWS OF

COUNTY

BREEDER'S

ASSOCIATION.

Constitution.

ARTICLE I. NAME.

The name of this Association shall be the County Breeder's Association.

ARTICLE 2. OBJECT.

The object of this association shall be to promote the breeding and improvement of high grade and pure-bred dairy cattle in County and to aid its members in buying, breeding and selling first-class animals; also to establish a good reputation for County as a center. The Association opposes the admixture of the blood of several breeds and the use of cross breed, grade, and scrub sires. The Association also pledges itself to exert every possible influence for the furtherance and improvement of the livestock interests of the community.

ARTICLE 3. MEMBERSHIP.

The governing body of this Association shall consist of a Board of Directors of nine active members, three of whom shall be elected for one year, three for two years, and three for three years, at the annual meeting at which this constitution is adopted, and three of such directors shall be elected at each succeeding annual meeting for a term of three years, to take the place of those whose time has expired.

ARTICLE 4. OFFICERS.

The Directors of this Association shall annually elect a President, Vice-President, Secretary, and Treasurer, from their own members, whose duties shall be defined by the by-laws of this Association.

ARTICLE 5. BUSINESS.

The business of the Association shall be vested in the Board of Directors, five of whom shall constitute a quorum, and shall have authority to call a special meeting thereof at any time.

ARTICLE 6. ELECTION.

All elections for officers shall be by ballot.

ARTICLE 7.

This constitution may be amended or altered by a two-thirds vote of the active members of the Association present at any annual meeting.

By-Laws.

SECTION 1. NEW MEMBERS.

Any dairyman, who uses a pure-bred sire exclusively in his herd or has a herd under his immediate management, upon recommendation of a member and acceptance by the Board of Directors, shall become a member of this Association upon paying the Secretary the regular annual fee. Honorary members may be elected by two-thirds vote of the members of the Association present at any annual meeting, without payment of dues; but persons, copartners, or corporations engaged in selling, buying, or breeding cattle and residing in County cannot be honorary members of this Association.

(1) Copy of Constitution used in Waukesha Guernsey Breeders' Association, Waukesha, Wisconsin.
SECTION 2. DUTIES AND PRIVILEGES OF MEMBERS.

It shall be the duty of every member to improve his herd of cattle by mating his cows exclusively with well bred sires and doing what he can to care for his herd in an up-to-date manner.

It shall also be the duty of members to co-operate as far as possible with their fellow members in the use of pure-bred sires, and in buying, breeding, and selling animals; also to solicit new members and encourage them in the practice of better methods in caring for their herds.

All active members in good standing shall be entitled to vote in the business meetings of the Association.

SECTION 3. DUES.

The membership dues shall be $3.00, payable annually to the Secretary of the Association; and the members of all co-partnerships joining such Association shall pay the sum annually of $3.00 each.

SECTION 4. DUES IN ARREARS.

A member in arrears of dues over one year shall be ipso facto suspended by the Secretary, but may be restored by paying all amounts due by him to the Association.

SECTION 5. OFFICERS.

The officers elected by the Board of Directors shall serve for the term of one year or until the election of their successors; and shall perform such duties as are ordinarily required of officers in their respective positions.

SECTION 6. PRESIDENT.

The President shall preside at the meetings of the Association and of the Board of Directors and shall give an address at the annual meeting of the members, relative to the work of the association.

SECTION 7. VICE-PRESIDENT.

The Vice-President shall perform the duties of the President in his absence.

SECTION 8. TREASURER.

The treasurer shall receive and hold the funds of the Association and shall disburse and invest such funds as directed by the Board of Directors and shall keep an accurate and detailed account of all receipts and disbursements of the Association and make a report of the same to the Board of Directors and to the Association at each annual meeting.

The records and accounts of the Treasurer shall at all times be open to the inspection of the members. The Board of Directors may require a suitable bond of the Treasurer, conditioned upon the faithful performance of his duties, whenever, in their judgment, it appears advisable to do so.

SECTION 9 SECRETARY.

The Secretary shall keep a record of all proceedings of the Association and of the Board of Directors and all membership dues and miscellaneous receipts and shall pay all moneys received by the Association to the Treasurer. He shall send and receive all notices and records and shall be the custodian of all property of the Association in such matters as pertain to its business and do all in his power to promote the interest and welfare of the Association.

SECTION 10. BOARD OF DIRECTORS.

All meetings of the Board of Directors shall be called through the Secretary. It shall be the duty of the Board of Directors to determine the place and time of the annual and special meetings and give due notice of all such meetings through the Secretary. They shall elect members of the Association who have applied for admission under the provisions of the constitution and by-laws and shall have power to expel any member whenever, after trial, in their judgment it is for the best interest of the Association to do so. They shall faithfully carry out all resolutions voted by the Association, appoint such regular and special committees as may be necessary and make an annual report to the Association upon the standing and progress of its work. At each annual meeting, however, the members of the Association shall elect an auditing committee, consisting of three persons, not necessarily members of the Association, who shall not be members of the Board of Directors, and whose duty it shall be to examine and report upon all books and accounts of the officers for the ensuing year.

SECTION 11. ORDER OF BUSINESS.

1. Reading of minutes of various meetings.
2. Report of Secretary.
5. Unfinished business.
7. Election of Officers.
These by-laws may be amended or altered by a two-thirds vote of the active members present at any annual meeting.

Meetings of the Association shall be governed by Roberts' Rules of Order.

The name of this association shall be Breeding Association.

The purpose of this association shall be to improve and upgrade our dairy herds by the exclusive use of pure-bred sires of the Breeds. It shall have power to buy, own, sell, exchange, and to transact any and all other business necessary for the successful execution of its purpose. Its business shall commence and the period of its continuance shall be years. The principal office of business shall be in the

The capital stock of this association shall be $2,000.00 divided into 1000 shares of $2.00 each, payable at such time and in such manner as the By-Laws may direct. The capital shall be used in the purchase of pure-bred sires of the Breeds and any other necessary expenses. When necessary, an assessment may be levied pro rata on each share.

The officers shall consist of President, Vice-President, Secretary, and Treasurer, and one Director from each breeding block. These officers shall be the managing board and shall have the power to appoint officers and fill vacancies. Until the first annual meeting, the following persons shall constitute such board:

President
Vice-President
Secretary
Treasurer
Directors

There shall be a regular annual meeting of the association held on the of each year and such special meetings as may be called at various times and places determined by the managing board.

The election of officers shall be held at the regular annual meeting and such elections shall be by ballot. The term of officers shall be one year or until their successors are elected and qualified.

Any dairyman in the vicinity of this association may become a member and may be entitled to its benefits and privileges upon being accepted by the Board of Managers, paying for stock in proportion to the number of his cows, and agreeing to comply with the Constitution and By-Laws. Each member in good standing shall have one vote.

This constitution may be amended by a majority vote of the Board of Managers with the concurrent vote of two-thirds of the members present at the annual meeting or at a special meeting called for that purpose.

The By-Laws may be amended by vote of a majority of the members present at the annual meeting or at a special meeting called for that purpose.

A bull may be bought as a calf, but shall not be used for service until twelve months of age, nor for more than one-half the service required of a mature sire until two years of age. Sires purchased shall not be closely related.

(2) Copy of Constitution used in the Bull Association at Milaca, Minnesota.
One sire shall be purchased for approximately every seventy cows. All bulls bought shall have satisfactory pedigree and registration papers, and shall be bought subject to the state regulations regarding disease. No bull or any other animal shall be purchased from any herd in which abortion has been prevalent at any time during the previous two years.

The Board of Directors shall designate the places for stabling the bulls and such places shall be upon premises free from disease and in clean sanitary surroundings. Each block director shall be responsible for the proper stabling and care of the bulls in his block. He shall see to it that the bull is kept in a strong, vigorous, and healthy condition, on sufficient and suitable ration and with sufficient yardage to afford ample exercise in the open air.

The bull shall not run with the herd and shall not serve more than two cows in any one day nor more than fourteen in one week. The keeper of the sire shall be paid such amount as may be agreed upon by the managing board.

Each block director shall inspect the herds in his block at least once in each two months and make report to the secretary of the association in case of any improper condition. Should any infectious or contagious disease appear in the herd of any member, he shall report the fact at once to the block director under penalty of $10.00 fine, and shall forfeit the right to the services of the bulls of the association until such time as his herd is declared free from disease by a competent veterinarian. Only one satisfactory leap shall be permitted at each service. The keeper of an association bull shall not allow him to be used for service of cows which do not belong to members of his block association without written permission from the Board of Directors signed by the President and Secretary. The same permission shall be necessary in case a member wishes to breed any of his cows to bulls other than the association bulls. Only members of the association shall have the use of the association bulls. Cows shall not be bred in less than six weeks after calving and heifers shall be bred to calve at not less than twenty-four months of age.

ARTICLE 3.

The association shall be divided into sections or blocks and the members of each respective section shall be those living nearest together or most conveniently associated. Approximately seventy cows shall constitute a section. The different sections of the association shall be designated by the initial of the breed and by number as G.1, G.2, etc., and H.1, H.2, etc. One sire shall be placed in each section. At the expiration of two years, sires shall be exchanged from one section to another, sire in section 1 going to section 2, sire in section 2 going to section 3, etc. This exchange shall be made every two years. Cross breeding and inbreeding shall not be practiced. A service fee of such amount as the Managers’ Board may designate shall be charged for each cow served and must be paid in cash at the time of service.

ARTICLE 4.

The members in charge of sires shall keep record of all services, and all fees collected shall be turned over to the treasurer at least every three months, together with a record of the cows served, date of service, number or name of the cow and the name of the owner. The loss of a sire through death or other cause shall be made good by the purchase of another one of the same breed by the association.

ARTICLE 5.

All members shall report to the Secretary of the Association at the end of each year, all calves born of either sex during the year and sired by the association sire. The Secretary of the Association shall hold all papers of registration, keep record of placement of sires in the different sections and their exchange, and keep a memorandum of all calves of either sex born in the association.

CONSTITUTION AND BY-LAWS FOR A COW-TESTING ASSOCIATION. (3)

Articles of Association.

We the undersigned, desiring to become incorporated under the provisions of Act No. ............ (of the public acts of ............), and the acts amendatory thereof and supplementary thereto, do hereby make, execute, and adopt the following articles of association, to-wit:

ARTICLE I.

The name by which this association shall be known in law is ............ Dairy Testing Association.

ARTICLE II.

The purpose for which it is formed is generally to promote the dairy interests of its members, and particularly to provide means and methods for improvement of the dairy qualities of cows and for the testing of the cows of its members periodically.

(3) Taken from B. A. I. Circular, No. 179.
ARTICLE III.
Its principal office and place of business shall be at _________

ARTICLE IV.
The number of its directors shall be _________

ARTICLE V.
The directors for the first year of its existence are as follows _________

ARTICLE VI.
Any person may become a member of this association and be entitled to its benefits and privileges upon being accepted by the board of directors and upon complying with the requirements of the by-laws.

By-Laws.

ARTICLE I. MEETINGS.

An annual meeting of this association shall be held at a place to be designated by the board of directors, in _________ on the _________ Day of _________ in each year, at 2 o'clock P. M., for the purpose of electing a board of directors, and for the transaction of such other business as may lawfully come before said meeting.

The president shall call one meeting each month for the purpose of discussing topics of interest to dairymen and shall at each meeting appoint a committee of three members who shall prepare a program for the next meeting. No member shall be obliged to serve two months in succession on this committee.

Special meetings may be called by the board of directors or by the president, and notice thereof shall be given by the secretary, by mailing to each member a written or printed notice thereof at least five days prior to such meeting. Such notice shall state the object of the meeting, and no other business shall be transacted thereat.

ARTICLE II. BOARD OF DIRECTORS.

Section 1. The board of directors shall be elected at the annual meeting, the first election to be held on the _________ Day of _________, A. D., _________

Section 2. The board of directors shall have the management and control of the business of the association, and shall employ such agents as they may deem advisable, and fix the rates of compensation of all agents and employees.

Section 3. Whenever any vacancies occur in the board of directors by death, resignation, or otherwise, the same shall be filled without undue delay by the majority vote of the remaining members of the board. The person so chosen shall hold office until the next annual meeting or until his successor is elected and qualified.

Section 4. The board of directors shall meet on the first _________ of each month, at such hours and in such places as they may by resolution determine.

Section 5. A majority of the board of directors shall constitute a quorum at all meetings of the board.

ARTICLE III. OFFICERS.

Section 1. The officers of the association shall consist of president, vice-president, secretary, and treasurer. The offices of secretary and treasurer may be held by the same person. The officers shall be elected by the board of directors from their own number by a majority vote of the whole number of directors. The first election shall be held immediately after the election of the board. Subsequent elections shall be held annually on the day of the regular meeting of the board next ensuing after the annual election, the day to be fixed by resolution of the board of directors.

Section 2. In case of death, resignation, or removal of any officer, the board shall elect his successor, who shall hold office for the unexpired term.

ARTICLE IV. MEMBERSHIP.

Any person acceptable to the board of directors may become a member upon paying a membership fee of 25 cents.

ARTICLE V. DUES.

Each member shall pay a fee of 25 cents annually on or before the _________ Day of _________ and, in addition thereto, shall pay quarterly dues to cover his share of the expense of cow testing, in proportion to the number of cows he has subscribed, the amount of such quarterly dues to be fixed by the board of directors, and paid as specified in a contract to be made for this purpose between the members.

Testing and record keeping of cows in addition to the number subscribed shall be paid for at the rate of $ _________ for each cow per year.

No member shall be allowed to participate in the election of the board of directors who shall not have paid his annual dues in advance.

ARTICLE VI. AMENDMENTS.

These by-laws may be amended or added to by a majority vote of all the members present at the annual meeting or at a special meeting called for that purpose.