

Feed According to Production.

A business, if it is properly managed, is pushed to its fullest capacity. Each machine in a manufacturing plant turns out as much of the finished product as it is capable of turning out, and to do this it must have the required raw material in proportion. When cutting hay or grain on the farm, the horses are crowded up to the standing crop so as to cut a full swath; that is, the machine is fed all that it will take, or a quantity corresponding with its capacity. Perhaps no other living animal is more comparable with inanimate machinery or with business management than is the dairy cow. She is in a sense a machine, and to a larger degree than some seem to think, her output depends upon her feed; but there is another way of looking at it, viz., the amount of feed which may be profitably given the cow depends largely upon her production. The amount of food must naturally be regulated according to the yield of milk. A cow giving 60 pounds of milk per day requires more feed than one giving 20 pounds per day. Yet there are scores and hundreds of herds in the country in which each individual animal gets the same amount of feed, regardless of the amount of milk given. Like the machine, there is a limit to profitable consumption with the cow. If a cow gives three times as much milk as another on the same amount of feed, and the cow giving the larger quantity is fed sufficient to maintain the animal body without loss, the cow giving the lesser amount must make poor use of her food, must waste considerable of it in digestion, and must be an unprofitable dairy animal. Where all cows are fed alike, some of the cows must get an insufficient quantity and others must be overfed, very few in the herd getting the right amount for best results. The starved or partially starved animal must have a weakened mammary gland, and the decrease in milk flow is accelerated thereby. This not only has a detrimental effect upon the cow herself, but exerts a marked influence upon her progeny. The mammary gland of an overfed cow becomes fat, and in this way is the cow's productiveness injured, as well as that of her offspring.

When a half-dozen men sit up to a table, no two will consume the same amounts and reach the same degree of satiety. What satisfies one is only an aggravation, so to speak, to another. Nutrition or feeding should, then, always be individual; that is, food should be fed to the cows proportionate to the amount of milk given. Provided the cows are in good, thriving condition, the quantity of food given should be such that they neither gain nor lose in flesh.

Investigations carried out by Kellner showed that 1½ to 1¾ pounds of protein, and a starch equivalent of from 4½ to 6 pounds, are necessary, in addition to the nutrients supplied, to maintain life, for the production of some 22 pounds of milk. It may not be practicable in large herds to feed each cow a different amount, according to her milk flow, but this may be approximated by dividing the herd into groups, each individual in a group giving nearly the same amount. It is a comparatively easy matter to group the cows with respect to production, and thus with respect to feed. Every herd of any size must contain several animals which stand practically the same as regards production. These do all right fed the same quantities. But every herd must also contain groups of animals vastly different as to production. There is the 3,000-pound cow, which should be discarded, the medium 5,000 to 6,000-pound cow, the 8,000 and 9,000-pound cow, and perhaps the 11,000 and 12,000-pound cow. And there may be a few record-breakers above this amount. Grouping the cows according to production for feeding purposes, while not exactly individual feeding, is very near it, if the grouping is properly done, and cannot help being an improvement on collective feeding. It stands to reason that it takes more feed or energy to produce 12,000 pounds of milk than it does for 6,000 pounds, and that the cow producing the latter quantity requires more than the one from which only 3,000 pounds is taken.

Of course, this applies only when the cow is in milk. It has been found that, when cows are dry, a ration which contains ¾ pound of digestible protein and a starch equivalent of 6 pounds per 1,000 pounds live weight, is sufficient to maintain body weight and supply enough heat for the body. Pregnant cows require a little more digestible protein for the development of the fetus. A calf weighing 80 or 90 pounds at birth contains about 16 to 18 pounds of protein, and for the formation of this, about 25 pounds of extra protein are required in the cow's food during the last five or six months of pregnancy, which amounts to only

about two ounces, or a little more, daily. During the last stages of pregnancy, it is well to cut the bulky food of the ration down, in order to relieve pressure on the abdominal wall and lessen the danger of abortion.

During the summer months the cows are usually on pasture. This is the part of the feeding which cannot very handily be controlled according to flow, but, as the pastures dry off considerably in late summer, and supplemental feeding must be resorted to, this gives a fair chance to control feeding, even in the summer, in the best managed herds.

Feeding must also be done with a view to the quality, as well as to the quantity, of the finished product. Dirty mangers, musty food, and rank-growing, acrid or strong-scented herbage, have a very bad effect upon milk and butter, and too much care cannot be exercised to eliminate all such conditions from the feeding of dairy cows.

In feeding, it must also be remembered that a milk cow requires more mineral constituents in her diet than the beef animal does. Kellner estimates that a 1,000-pound cow, giving 20 pounds of milk per day, requires 3½ ounces of lime and 2½ ounces phosphoric acid, and higher yields of milk require proportionately larger quantities of mineral matter. Good hay, clover or green food usually amply supplies this need. These substances are necessary to promote growth of bone, and young cattle and heifers stand in especial need of them.

The success with the herd depends very largely upon the success of each individual going to make up the herd, and the success of the individual depends on the feed and care given, such feed and care to be regulated to suit the individual, not a general average for the entire herd.

Co-operative Breeding Associations.

Members of cow-testing associations are reminded that, while systematic weighing and testing of each cow's milk is the first step towards definite herd improvement, other measures are necessary, if a thoroughly profitable herd is to be obtained and maintained. In many cases the record of milk and fat serves to point out that some cows are only fit for beef.

If the herd is to be improved to any considerable extent, there should follow careful attention to the comfort of the cows, and a study of the feed question, so as to give each animal the most favorable conditions under which to produce milk.

It is impossible, however, to lay too much emphasis on the wisdom of breeding dairy cows to a first-class, pure-bred dairy sire. In many cow-testing associations the time is fully ripe for members to organize Co-operative Breeding Associations whereby good males may be purchased. Each sire may then be available for herds in which the total number of cows is from 40 to 70. In two years, or when their heifers are old enough to breed, the sires may be exchanged from one section to another, and again after another two years. Thus, if there are three sires in the Association, they may be used for six years with this system of exchange, without any inbreeding; if five sires, ten years.

It is far easier for a few men to club together to co-operate, and buy a good bull, than for one man to take all the risk and expense.

By the use of the pure-bred sire, suitable to the needs and taste of the district, an immediate and substantial increase to each man's income may be expected. An extra 800 or 1,000 pounds of milk per cow is not too much to look for (which no scrub or dual-purpose male would ensure), so that the association can well afford a good price for the right animal.

This will help the man away in the back district just as much as, perhaps more so than, the man nearest the market centers. Now is the time for him to seize this opportunity offered by practical co-operation. His stock and his farm will quickly increase in value if he bestirs himself in this direction.

Members should arrange to meet immediately and organize a co-operative breeding association, which promises new life and vigor to any district.

In the Province of Quebec there already exists an Act under which such associations may be organized. All members of cow-testing associations, officers or members of Farmers' Institutes and Farmers' Clubs, officers and members of Dairywomen's Associations, and owners of cheese factories and creameries, are invited to interest themselves in securing immediate organizations.

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POULTRY.

Handling and Marketing Eggs.

The 1911 Yearbook of the United States Department of Agriculture discusses at some length the loss due to bad methods of handling eggs in the Middle-West States. The losses are due to practically the same causes there as here. As the bulk of Canada's eggs are produced by farmers, as is the case in the States discussed in the Yearbook, and as conditions are much the same, our poultrymen would do well to read the following, selected from the Yearbook, and act upon some of the suggestions offered.

In spite of the fact, however, that prices for eggs are better than they were formerly, the producers are not receiving as much for their eggs as they should, considering the ultimate prices paid by the consumers of these eggs. This is not the result of any combination on the part of buyers to keep prices down, for competition is usually sharp enough to cause as much to be paid as the buyers can afford. The real reason lies in the fact that the system of marketing and buying eggs in this section is faulty, and causes a good deal of preventable loss and deterioration. This is mainly because no incentive is offered for care and expeditious handling of the product. In other words, the careful farmer who markets good eggs, as a rule gets no more for them than his careless neighbor who markets poor ones. As a result of this loss, prices paid to producers must be depressed to cover it, and this accounts for the difference between the prices paid for these eggs and the prices charged the consumers.

At first glance, it might be thought that this loss and deterioration was slight and of minor importance. Quite the contrary, however, is the case. From a careful study made of the situation, it appears that the annual loss resulting from these sources in the egg trade of the United States totals about 15 per cent. of the value of the product, or \$45,000,000. In the State of Kansas alone, where the investigations of the Department have been principally carried on, the annual loss is estimated at more than \$1,000,000. The total receipts of three Kansas egg-buyers during July, August and September, 1909, were 706,569 dozen. At 15 cents a dozen, the value of the total receipts would be \$105,985.35. On the basis of 6 cents a dozen less for seconds and checks than for firsts, the loss due to this cause would be \$5,191.26. Of the receipts, 66,449 dozen rots were an absolute loss of \$9,967.35. The total loss, therefore, from eggs thrown out and those deteriorated in quality was \$15,158.61, or 14.3 per cent. of the original value.

To explain the reason for this loss and deterioration, it is necessary to outline briefly the usual method of marketing eggs in this section. The eggs, as previously stated, are produced on the general farm. The income from these is considerable and very welcome, but is, after all, incidental. The care and attention given the fowls and the product are, therefore, usually incidental, also. The farmer gathers the eggs whenever convenient—sometimes each day, sometimes two or three times a week. The eggs are brought to the house and kept until there is a sufficient number to take to the village, or until the farmer makes a trip to the village for some other purpose and takes the eggs along. No particular attention is given to the conditions under which the eggs are kept in the meantime. They may be put in a pantry or cupboard of the kitchen, where the temperature is comparatively high and where the eggs are bound to undergo considerable deterioration in quality or to reach a more or less advanced stage of actual spoiling. Even in these cases, where the importance of a low temperature is realized, and an effort made to secure this by placing the eggs in a cellar, there is a likelihood that the cellar may be damp, and the eggs in consequence become moldy. Likewise, no particular effort is made to obtain clean eggs by proper attention to the nests and by frequent gathering, or to separate the clean from the soiled eggs when taking them to market. Whenever a nest of eggs is discovered in the weeds or about the barn, they are usually added to the eggs in the market basket, without question as to whether they are partly incubated.

As a result, the farmer may start for town with a basket of eggs, part of which are perfectly fresh and wholesome, part of them dirty or smeared, and part of them shrunken or stale, or even wholly spoiled. During the drive to town, it is a common occurrence for the eggs to be exposed to the direct rays of the sun for an hour or two, and subjected, therefore, to a temperature greater than the normal temperature of incubation, 103 degrees. These eggs the farmer takes to the village store, and receives for them a certain price per dozen, which is usually given in trade. The village merchant is not a dealer in eggs from choice, but rather because he feels it necessary to take the eggs, in order to keep the trade of the farmer. If he does not take the eggs, he fears