

The Dairy.

Feeding Value of Whey.

In the Canadian cheese factory system sufficient attention has not been paid to the profitable utilization of the by-product—whey. What is its feeding value? or, how can it best be handled? are questions entirely ignored as a rule. At the Wisconsin Experiment Station, during the fall and winter of 1890-91, four trials were conducted for the purpose of ascertaining the value of sweet whey for pig feeding. Director W. A. Henry draws the following conclusions as the result:—

1st. We were not successful in maintaining pigs on whey alone.

2nd. Pigs fed on corn meal and shorts with water required 552 lbs. of the mixture for 100 lbs. of gain.

3rd. When whey was added to the corn meal and shorts mixture, it produced a marked saving in the amount of grain required for good gains. This was true for mixtures varying from two pounds of whey to one of grain, up to ten pounds of whey to one of grain.

4th. It was found when using whey as a partial substitute for grain, that 760 lbs. of whey effected a saving of 100 lbs. of the corn meal and shorts mixture.

5th. Using these figures, if corn meal and shorts are valued at \$12 per ton, when whey is worth 8 cents per hundred pounds, at \$15 per ton for the corn meal and shorts, whey would be worth 10 cents per hundred weight.

6th. Shorts, pea meal and oil meal, or like feeds, should be mixed with whey for growing animals. Some corn may be fed at all times, the proportion increasing as the animal approaches maturity.

In 100 lbs. of average milk 12 or 13 lbs. are solids, the balance water. In cheese-making the casein is coagulated by the rennet, so that nearly all of it is recovered; most of the fat is also supposed to go into the cheese. The albumen, a valuable food product, remains in the whey, as does most of the ash and sugar, also a trace of casein and a small percentage of fat. Though the bulk of whey is water, yet the solids which it does contain are almost perfectly digestible, according to Prof. Henry, and have a high nutritive value. Judging from its composition it is an incomplete food in itself. Hence it is necessary to combine with it other foods, as the experiment shows. Assuming 100 lbs. of milk, containing about 13 per cent. of total solids, there would be about 90 lbs. of whey remaining, 10 pounds going into the cheese. The solids contained in that whey would be about as follows:—

Casein .1, albumen .7, fat .4, sugar 4.3, and ash .6.

Prof. Henry suggests, with apparent reason, that the whey fed with the meal increased the availability of the ration more than the solids of the whey added. That is, if the meal has a certain value itself, and the whey a certain other value itself, the combination of the two has a higher value in feeding than the sum resulting from adding the value of the whey to the value of the meal. At the rate coarse grains have been selling in Ontario the past season it would probably be a fair valuation to put it at 10 cents per 100 lbs. But that is in a perfectly sweet condition, and not further diluted with factory washings or left in the filthy whey tank, as is too commonly the rule, until sour, if not half rotten. The bulletin before us contains no information as to the value of sour whey, though that is the condition in which 99 out of 100 farmers use it. That its value is greatly reduced may fairly be assumed from the factory washings, if not from the souring. It, therefore, seems clear, apart from the pollution of

milk cans used for carrying home sour whey, and consequent injury to the quality of milk and cheese, that to secure the full value from whey it should be fed in the vicinity of the factory, but at such a distance and under such conditions, as will not contaminate the factory atmosphere. At the Tavistock cheese factory, now the seat of the Western Ontario Cheesemakers' Dairy School, this problem is completely solved. Messrs. Ballantyne & Bell, who own the factory, manufacture the cheese at so much per pound (2 cents), and retain the whey, with which they fatten from 400 to 450 hogs every summer. It is run through pipes to a large tank at the end of a long, well-lighted, well-ventilated, and clean swine building. Ordinarily the pigs are fed all they can drink in the morning and at 4 p. m., with a mixture of bran, shorts, ground peas, and oil cake, alfalfa (green) being also fed in season. When whey is plentiful they get a drink at noon as well. The system works very well. Cheese of the finest character are turned out, commanding a high price. The net return to the patrons for their milk last year was nearly 73 cents per 100 lbs. All the manure produced in feeding the hogs is given to the farmers of the vicinity for hauling it away. The plan is worthy of consideration by factorymen and patrons in other localities. The hogs fed are usually fall or early winter litters purchased in spring, or as the factory season goes on, and Messrs. Ballantyne & Bell, no doubt, realize a good profit in feeding them.

"Non-Exercise" of Dairy Cows.

In view of the prominence that has been given lately in certain quarters to the idea of "non-exercise" for dairy cows, the FARMER'S ADVOCATE deemed the question of sufficient importance to secure an expression of opinion regarding it from a number of our readers. City milkmen may deem it profitable to run a cow simply as a milk-producing machine without special regard to the ultimate effect of continuous housing upon herself or her progeny. Farmers and breeders must view the case from a different standpoint, and in order to present the subject before our readers in the light of practical experience as far as possible, the following questions were sent out:—

1. Do you practice "non-exercise" of dairy cows, and to what extent?
2. From experience or observation, what has been the result?
3. Considered as breeding animals, and also for use in practical dairying on the farm, do you approve the continuous housing of dairy cows? If so, under what conditions?
4. Can the daily exercise of a cow in pasturing be considered as a safeguard against possible evil effects arising from being tied in stable continuously four or five winter months?

At the time of this issue going to press the following replies had been received, indicating that the question is likely to excite no little interest, but no more than its importance warrants. Whatever may be said *pro* and *con*, this much is certain, that the constitution of the cow must be well-guarded, for if that be destroyed her usefulness, either for breeding or practical dairying, is gone. We bespeak for these letters a careful perusal:—

MRS. E. M. JONES, JERSEY BREEDER, BROCKVILLE.

I am so situated that I have no opinion in the matter whatever. My pasture is a great deal too far away, added to which it is not very good, but I have no alternative but to use it.

1. I do not believe total absence of exercise conducive to the health or well-being of a dairy cow, nor do I practice it.

2. Have had no experience, as I always turn my cattle out every day in winter that weather will admit, and while in stable they are so tied as to allow them the utmost possible freedom in the way of moving about.

3. Not approving of the continual housing of cattle, I have not tried it. I do not mean that my cattle are out all the time, far from it. In summer they are out day and night; in spring and fall are out all day and housed at night; in winter are housed all the time, but we endeavor to turn them all out once a day to stir round and exercise their limbs. This period of exercise varies from half an hour to three or four hours, according to weather.

4. The summer's exercise of a cow going to pasture should not be considered a safeguard against absolutely close confinement all winter. It would be a feast or a famine. Cows do not require

much exercise, but they do need some. I think, however, that most people walk their cows to death. If pasture is so very good that cows can soon fill themselves they can afford to go a longer distance to it than to a poor pasture where they have to keep on their feet all day hunting for food.

R. J. GRAHAM, BELLEVILLE, SECRETARY CREAMERIES ASSOCIATION.

In reply to yours of 6th inst. would say have had some experience with dairy cows in nearly every form. *Re* "non-exercise," I am not in favor of it, but prefer during the housing season to let my milking cows have exercise in the yard every fine day for about two hours. Do not allow beefing cattle out at all. A milking cow will not have the same bright, healthy appearance, nor will their appetite be as good when constantly housed, also they will become stiff in front, and their hoofs will get long and sometimes break off up in the quick of the foot. Have tried soiling cows against pasturing; divided herd equally (30 in each) for one season. The cows that were soiled were kept considerably cheaper, but did not thrive or milk as well, and I have discontinued the practice. Can not say from personal knowledge whether a cow would fully recover on pasture from six months confinement or not, but certainly would prefer not to get her in that condition.

JAMES DRUMMOND & SONS, MONTREAL, Ayrshire BREEDERS.

1. I always let my cows out in winter on fine days once a week from half an hour to an hour, according to the weather, but give them no water outside.

2. From experience I find that they are much healthier and feed better when they get a little run out.

3. For breeding I believe in giving them a good deal of exercise, but not on too cold days. They don't require so much exercise when giving milk. I do not approve of continuous housing, for I do not consider they are so healthy nor the milk as healthy as when getting a little exercise and fresh air once or twice a week on fine days.

4. I don't think that the exercise cows get on pasture is a safeguard against any evil that may arise from cows confined for four or five months in winter.

SMITH BROS., CHURCHVILLE, ONT., HOLSTEIN BREEDERS.

1. We have practiced non-exercise of dairy cows with some half dozen head for a period of from two to four months at a time.

2. The results in producing milk and butter were better than we ever obtained with exercise. However, we prefer exercise in a comfortable, well-ventilated place.

3. We do not approve of the continuous housing of breeding animals or of dairy cows, because (1) it requires too much work in summer when so much other work must be done; (2) it is not so healthy, as stables in summer are not so easily kept clean and sweet; (3) it tends to lessen the breeding qualities of cows.

4. Some cows are of a roaming disposition, and with such confinement is injurious, and pasturing for some months can make up only in part for the injury received while continuously stabled. Others stand it without any noticeable injury and seem contented and satisfied, and the pasturing seems to make up fully any injury they may have received. Good pasture with plenty of shade, fresh water and pure air, with the privilege of quietly roaming about is far the healthiest place for any kind of animals.

W. C. EDWARDS & CO., ROCKLAND, ONT.

1. Our dairy cows are Ayrshires and Jerseys. We put them in stables in November, and do not let them out at all during the winter excepting for an hour or two a day on very fine days.

2. The result is that our cows milk very much better than if allowed to run out every day irrespective of the condition of the weather.

3. Our reason for letting our cows out for a short time on the very fine days is because we keep them for breeding as well as for dairy purposes, and our opinion is that breeding cows are the better of some exercise when it can be had. If we need our cows for dairy purposes only we would tie them in at the time of regular housing in the autumn and would not let them out till spring, and, we are sure, with much greater profit than if we allowed them to go out daily.

4. We cannot see how summer pasturage and the exercise resulting therefrom could overcome the evil results of being tied up for five or six months in winter. But our opinion is that there are no evil results, except, possibly, on the score of breeding.

JOHN GEARY, "BLI BRO STOCK FARM," LONDON, ONT.

1. Yes; during the past five years I have kept from 100 to 150 dairy cows continuously housed from November 1st to middle of May.

2. In favor of the course which I have been pursuing.

3. Yes; in comfortable, warm, clean and well-ventilated stables. Each animal ought to have plenty of room to lie down comfortably, well-bedded, and I consider it essential to health that the curry comb be used at least three times a week.

4. Yes.

We would be pleased to hear from other readers of the ADVOCATE who have had practical experience bearing upon the foregoing questions. Make your communications to the point, and brief, such as the foregoing.