SEPARATION AND CREAMERY WORK.

Where the milk is separated on the farm and the cream delivered to the creamery, the separator and room where the separating takes place should be kept clean. The practice of washing the separator once a day, or less often, is one not to be recommended. The quality of the cream under such conditions is not good, and the cream outlet of the separator is likely to become partially clogged, which causes more of the fat or cream to go out the skim-milk outlets, thus causing a double loss. The separator parts are more easily washed if done as soon as possible after each time of using. The parts having milk on them should be placed in luke-warm water at once after separating, and if a little washing soda be added, the bowl, etc., will wash more easily. A very good plan is to put the bowl, discs, cream and skim-milk spouts, float, etc., in a milk pail, or other vessel, and allow them to stand in luke-warm water until they can be washed. This is usually the women's work, and they are often too busy to attend the washing of the separator parts early in the morning or at once after the night milking, especially when separating takes place before supper, as is the case on many farms in winter.

The cream should also be cooled at once, and before mixing with the cream of previous separations. This is the point where trouble arises for the buttermaker who is taking in cream only, or mixed lots of cream and milk. If the cream, while yet warm, be added to lots already cooled, the warm cream starts fermentations in the dormant cream, and although chilling again renders the bacterial life sluggish, their products, or what Lloyd calls their "residual material," is present, and causes the bad flavors with which the buttermaker has to contend at the creamery. He has the same trouble as with the old-milk cream. In principle the causes are identical. Delivery of cream ought to take place at least twice a week, although there is not the same danger in once-a-week delivery of cream as with once-a-week milk, because the conditions are less favorable for bacterial growth, especially in rich cream, as compared with milk.

At the creamery, the buttermaking room ought to be at a comfortable working-room temperature, say 60 degrees to 65 degrees F. This is best obtained by the use of steam heat from the boiler. Stoves are mussy and do not heat the whole room.

All winter cream should be pasteurized, in either a continuous or "flash" pasteurizer, or in one of the more modern "holder" type. The "flash" pasteurizers should heat the cream from 180 degrees to 185 degrees, while 140 degrees to 145 degrees will be high enough for the "holder" plan. No buttermaker can expect to make a uniformly high quality of butter from winter cream without pasteurizing. A good culture as "starter" is also an aid in getting improved flavor. The buttermaker who does not understand pasteurization and the making and use of a pure culture is behind the times. Cold-storage butter can easily compete with most of the fresh winter-made goods, because of lack of care on the farm and lack of skill in the creamery.

The temperatures for churning, washing and working butter need special care in winter, when the tendency is to have these too low, which produces an insipid flavor, and a short, mealy texture.

H. H. D.

Our English Correspondence.

FEEDING BRITISH DAIRY CATTLE.

Dairy cattle are receiving all round attention in the old Land at the moment. All the experts, newspapers and otherwise, are doling out advice by the square yard. We are all going back to the land, according to our political leaders. Dukes are offering to the Liberal Government some of their forest land at ten dollars an acre, or, as one man puts it, at a sum less than prairie land is bought in Canada. The politicians are appealing to the cow as the Old Country's salvation; hence everyone is not only eating "cow," but reading it at every meal. We are being "spoon fed" by the Board of Agriculture as to how to correctly look after the winter wants of dairy stock. True, our Board issues some very valuable information as time passes, and I understand the demand for it is becoming a post-office burden.

Winter is coming on with us and the correct feeding of dairy cattle at such a time, is a subject not out of place. In drawing up the rations of a cow, say, weighing about 1,232 lbs., a Shorthorn of average size, and giving two gallons (20 lbs.) of milk per day, such a cow will require a ration per day of about 12 lb. starch-equivalent, including 2 lbs. of digestible albuminoids. For cows giving more (or less) than 2 gallons of milk, the allowance of concentrgted foods should be increased (or reduced) at the rate of about 2 lbs. to 3 lbs. for each gallon of milk. As a rule, the amount of any one oilcake or similar meal included in a ration should not exceed 4 lbs. or 5 lbs., or 3 lbs to 4 lbs. where butter is made.

For each 112 lbs. live weight above (or below) 1,232 lbs. the ration should be increased (or decreased) by about 2 lbs. of hay or 3 lbs. of straw, or such amount of other foods as will supply about .1 lb. of digestible albuminoids and .7 lbs. starch-equivalent.

In Britain the basis of nearly all rations for dairy cows is formed of roots (mangels, swedes, cabbages, etc.) and fodder (hay and straw). A big range may be allowed with respect to the quantity of roots given. Up to 70 lbs. a day may be an economical allowance if roots are plentiful, but it is doubtful if this should be exceeded. When wet grains can be had readily they may be used both in winter and summer in moderate quantities, say, up to about 28 lbs. per day, and may, to a considerable extent, take the place of roots.

The allowance of fodder per day may range between 14 lbs. and 25 lbs., and of this not more than half need be hay. Experiments show that when hay is fed in quantities of 20 lbs. or more the cost of the ration is out of all proportion to the return obtained in milk. When milk records are kept, the farmer should endeavor to group his cows and feed the concentrated foods according to milk yield. A milk record is valuable not only as a guide in breeding, and as a means of detecting the poor milker, but it is also the first step in a rational system of feeding. A saving of two cents per gallon in the cost of feeding will amount to 300 dollars in the winter, six months, with a herd of fifty cows averaging two gallons per head per day, a very handsome return on the small extra expenditure involved in labor and outlay.

The diet should never become monotonous; occasional changes of food during a long winter are advantageous, but these changes should be effected gradually. Swedes, turnips, cabbage, rape, kohl rabi, mangels, carrots and parsnip, all afford suitable green or succulent winter food for cows. For practical purposes these foods are much alike in nutritive qualities. Cabbages, carrots, and mangels are probably the best where first-rate butter is desired, care being taken, in the case of cabbage, to remove the dead and bruised leaves before feeding. Potatoes, either raw or steamed, are a suitable food for cows; they are much richer in carbohydrates than the other foods named. Raw potatoes should not be given near calving time. A mixture of two or more concentrated foods is usually more serviceable and more economical than one foodstuff alone. In selecting the concentrated foods, due regard must be had to their possible influence upon the flavor of the milk, or more particularly the flavor, appearance and texture of the butter.

The British Board of Agriculture lay down that cow-houses should be kept at a temperature of about 56 degrees to 58 degrees F. The ventilation should be ample, but not such as to give rise to cold drafts. It is better for the general health of the cows that the house should be cool and well ventilated, rather than warm at the expense of ventilation. The milk yield will not suffer unless the cows experience actual discomfort from exposure to chilly drafts.

SOME IDEAS ON FATTENING.

We are also entering upon those days when cattle fattening for our Christmas shows is being taken in hand seriously. The fattening of full-grown animals is mainly a process of converting food into body-fat, very little albuminoid matter being contained in the fattening increase. The additional food required in excess of the maintenance ration (i. e., the ration required to keep the animals in "store" condition) may, therefore, consist largely of digestible oil, carbohydrates, and fibre, though a certain minimum weight of digestible albuminoids is necessary.

Animals that are in poor, lean condition at the commencement of fattening should receive a more liberal supply of albuminoids for a few weeks than those which start in fair condition, in order to ensure that the fleshy tissues shall be fully developed and made capable of storing up large quantities of fat. In order to obtain the best results in fattening, it is necessary that the activities of the animal shall be confined, as far as possible, to the consumption of food. Facilities for exercise should, therefore, be restricted, and such provision made for the comfort of the animal as will allow of its resting contentedly almost continuously. Good housing, an abundant supply of litter, freedom from disturbance, and strict adherence to a time-table, so that feeding, removal of manure, etc., are carried out at the same time, and in the same order day after day, contribute very largely to success in fattening cattle

The growth of young animals is essentially a rapid production of muscle and bone, and the prime consideration in making up the food ration must be to ensure a sufficiently liberal supply of digestible albuminoids, and of the bone-forming mineral ingredients (lime and phosphates). Further, any food given during the early months of the young animal's life must be, like milk, easily digested. The quantity of food required by the young animal increases, of course, with growth, but not at the same time. The amount of growth produced by a given quantity of food steadily diminishes as growth progresses.

The rations of fattening cattle are usually composed mainly of roots, oat straw, hay, and an allowance of cake or meals which is periodically increased as fattening progresses. On suitable rations, the live weight should increase at an average rate of about two lbs. per day, this rate being, indeed, often exceeded by good animals. Assuming that the ration includes not less than about 14 lbs. of coarse fodder, the rate of increase mentioned will require for a bullock weighting 1,000 lbs., the daily supply of about 28 lbs. dry matter with a starch-equivalent of 18 lbs., including 1.6 lbs. of digestible true albuminoids (or 1.9 lbs of digestible crude albuminoids). The amount of digestible oil included in the ration should be about three-quarters lb., and the digestible carbohydrates will then be about 16 pounds.

For these interesting figures one has to thank our Board of Agriculture for their instructive statement recently made upon the subject of fattening.

London, England. G. T. BURROWS.

Cream Testing.

Editor "The Farmer's Advocate":

In your issue of Oct. 30th there appeared a letter on "What Should the Cream Test," which should be digested and understood by all patrons of creameries. Many farmers send their cream and try to compare results with the churn, and yet do not know how to calculate the butter-fat after being given the number of pounds of cream and the test, not to speak of such things as the over-run, moisture test, etc.

Now, I speak from the standpoint of one who has bought cream and tested all summer, and have made several comparisons with patrons who were churning to determine their over-run and to see if our test compared favorably with their test.

Let us take one concrete example. One patron, whose ability as a buttermaker no one would question, in August, churned, according to my weight and test, 24 pounds cream, testing 30 per cent. I figured that she should have 8.6 pounds butter, giving her an over-run of 20 per cent., as follows: 24×30=7.2; 20 per cent. of 7.2=1.4; 7.2+1.4=8.6 butter. I found, after deducting weight of crock, that she had 9 pounds 10 ounces, or 9.6 pounds butter. What was her over-run? Let us see. She had 7.2 pounds butter-fat. 9.6–7.2=2.4 pounds butter more than butter-fat. Then if on 7.2 it was 2.4, on 100 pounds it would be 100×2.4÷7.2=33 1-3 per cent., or her over-run.

Another patron churned 10 pounds butter, put it in a crock, traded it at the local grocery and departed, rejoicing in the fact that she had made more by making butter than by sending her cream. After she had left, the grocer packed the butter in a tub, and showed me the water in the crock and asked what he should do. I asked the weight of the water and he found there was 22 ounces. This was in July, when without proper conditions, it is hard to make firm dairy butter, but this lady was paid 22c. a pound for water, and who suffered? It is clear if it had been sent in her cream to the factory it would have tested nothing and brought no returns.

Another point, there are various reasons why cream will vary in percentage of butter-fat. I have before me a chapter taken from "Canadian Dairying" on this subject, which, together with the letter, deserves attention from the farmer. It gives several reasons why cream will vary in percentage of butter-fat. My point is this, cream will vary according to conditions as much as six or eight points in one week. Frequently farmers churn the fore part of the week and send the cream the latter part, and then compare. I had one case where I had more butter-fat than the farmer had butter.

With this in view, let us see "what the cream would test" in the aforementioned letter, taking an over-run of 33 1-3 per cent. 30÷100×31=9.3; 33 1-3 per cent. of 9.3=3.1; 9.3+3.1=12.4 pounds of butter, instead of 11.1, as it would be with a 20 per cent. over-run. Of course, not knowing facts, above may not be correct, but from facts gathered this summer, the over-run would be nearer 33 per cent. than 20 per cent.

By all means let us have "a square deal" on the testing question; but besides the legislation on this point, let us also have legislation on the limiting of dairy butter to 16 per cent. as well as that of creameries. This may not be practical, but as an alternative let the farmer who is suspicious secure a four-bottle Babcock tester, a copy of Bulletin No. 205, or Dairy School Bulletin; let him visit the local District Representative if he is too suspicious of the creamery and there get a demonstration on testing, and