

the age of five months it is receiving 16 to 20 pounds daily, depending upon the size of the calf.

FEEDING GRAIN.

A calf will begin to eat a little grain by the time it is two or three weeks old. After it is a few days old, grain should be kept before it, and a little put into its mouth immediately after it has finished drinking its milk to aid it in learning to eat. The grain should always be fed dry and never mixed with the milk. In order that grain be properly digested it is necessary that it be chewed before it is swallowed. Probably the best time to feed the grain is just after the milk has been fed. The calf's appetite is very keen at this time, and it will take to the grain readily.

A good grain mixture to use until the calf has learned to eat well is crushed oats. Up to the age of three months it is well to give the calf all the grain it will eat. At that time it will be eating two or three pounds daily, and may very well be limited to this amount until weaning time.

FEEDING HAY.

The calf will begin to eat hay at about the same time as it does grain, and some should be provided for it to nibble. For the young calf, clover or mixed hay is as good as any. It occasionally happens that where alfalfa hay of the best quality is fed immediately after the milk and grain, a calf will gorge itself to such an extent that impaction of the stomach may follow and prove fatal. When very palatable hay is fed, it is well either to supply it in limited amounts, or to keep it before the calves all of the time so that they will not gorge themselves at any one time.

FEEDING SILAGE.

Silage may be fed with safety to the young calf, and is very much relished by it. It is well to pick the pieces of ear out of the silage fed a young calf. In using silage avoid overloading the calf's digestive system either by offering even only a small amount or supplying it in the middle of the day.

WATER AND SALT.

It is a mistake to assume that a calf does not require water because it is receiving skim-milk. The calf should have water accessible at all times, as it will drink considerable despite the fact that it is receiving a large quantity of milk. It is also quite necessary that the calf be provided with salt. It requires salt besides its regular feed, the same as does an older animal.

WEANING.

Six months is a very good age at which to wean a calf, though there is no reason why the feeding of milk should not be prolonged beyond this time if skim-milk is abundant. A calf can be weaned in three or four days' time by gradually reducing the amount fed.

SCOURS.

Scours in calves are by far the most common source of trouble in calf raising. If a feeder is able to avoid the occurrence of scours in his calves, it is very seldom that other ailments will annoy. Scours in calves are of two kinds: White scours or scours from indigestion. The common cause of scours is indigestion or inflammation in the stomach. This may be brought about by a large variety of causes, but in any case the aim of the treatment should be to remove the source of the inflammation. As in most other ailments, half the battle in curing scours is to begin treatment as soon as any trouble is noticed. The calves should be watched closely and treatment administered upon the first indication of scours. Treatment should always begin by cutting down the ration, thus giving the calf a chance to rid itself of the irritating material. The milk should be cut down at least one-half, and in severe cases withheld entirely. In most cases after one or two feeding periods have passed, the calf will appear normal, and full feeding can be gradually resumed. In more obstinate cases it may be necessary to administer a physic of two or three ounces of castor oil given in a little milk. After a calf has suffered with scours, feeding should always be light for a few days until the calf regains its strength.

To avoid scours it is essential that the condition of the milk be controlled. Milk should always be fed sweet if good results are to be obtained. While it is known that healthy, vigorous calves may be raised on sour milk, it is not a good policy to try to feed it, because it is often impossible to obtain properly soured milk. Milk that has been allowed to stand around until it is half rotten is quite different from normal sour milk, though it may have a sour taste, and it is almost sure to cause trouble if fed to calves. Sweet milk is very much more dependable in quality, and should, therefore, be used exclusively.

Scours are often caused, no doubt, by a dirty condition of the feeding pail or trough. Clean milk or milk out of unclean vessels will cause trouble. It is best to give the calf pails that

same treatment and attention accorded the regular milk pails. They should be kept sweet smelling.

Milk should always be fed at a temperature near that of blood heat, or between 95 degrees and 100 degrees F. This is the temperature at which the calf would receive the milk if it were sucking the cow. Cold milk taken into a young calf's stomach so chills it that digestive processes are checked for a time, and digestive disturbances are liable to follow. Calves that have reached the age of two and one-half or three months may be fed milk somewhat colder than 95 degrees, but in any case the temperature should be constant, and a calf should not receive warm milk at one feed and cold milk at the next.

Probably the most frequent cause of scours is overfeeding. When properly fed the appetite of the calf will be more keen after taking its milk than before. It is impossible to satisfy a calf's appetite for milk without overfeeding it. Overfeeding at any particular feed is best guarded against by actually weighing the milk at each feed or measuring it in a vessel sufficiently small to avoid guess-work. Weighing is to be preferred, as the foam which occurs on separator milk makes accurate measuring difficult.

If several calves are being fed in the same pen it is best to have ties of some sort for them so that each calf may receive only its apportioned feed. For this purpose small, rigid stanchions are the most convenient. If the calf is kept tied until after the grain is eaten, there is less likelihood of it forming the habit of sucking other calves' ears.

On skim-milk fresh from the separator there is always more or less foam. Large quantities of this foam fed to a calf will cause it to become bloated, and may even cause sickness. The little that the calf will ordinarily receive with its milk will cause no trouble.

Dirty, muddy or uncomfortable quarters are favorable to scours. Calves should not be turned out into muddy or wet lots where they will not have a dry place in which to lie. In fact, young calves up to three or four months of age will thrive fully as well in a roomy, clean and well-lighted stall as on pasture. The young calf should be especially protected from quick changes in temperature and cold drafts, which are liable to bring on pneumonia.

VIGILANCE ON THE PART OF THE FEEDER.

One very important rule to follow in calf feeding is to be constantly on the lookout for disorders. Prevention of sickness is far better than curing it. The feeder should always observe the keenness of the calf's appetite and the character of the dung. At the slightest hint of any disturbance, the amount of milk should be cut down.—E. G. Woodward, of Nebraska Experiment Station.

How to Handle Dairy Utensils.

Dairy operations constitute a phase of agriculture to which science is rendering no small amount of assistance, yet there are a few little things in connection with the work, requiring only semi-scientific explanation, that are not executed generally to the best advantage. Keeping the utensils sweet and clean is a long, long stride toward good products. We have seen industrious dairymen labor conscientiously to do the work properly, but their efforts were robbed of their due reward because some step in the operation was not executed in accordance with the principles underlying that particular move. For instance, in a painstaking way boiling water is often poured into pails and crocks to rid them of remaining particles of milk or cream. The motive is good, but the manner of doing it is very unwise. If luke-warm water be used first it will cleanse the utensil much more effectively, and if this step be followed by a liberal use of boiling-hot water, then the container will be sterilized to some extent from all germs which might be lurking in obscure places. The peculiar effect of hot water upon the milk or cream makes it difficult to remove it from the hollows or creases in the vessel. This principle applies to all dairy utensils.

In preparing a churn for use hot water should be used first. The churn should be well scalded, and then cooled down before using. The water of high temperature will destroy the molds that may be growing on the wood, and it will close the pores of the wood so the cream or butter will not adhere to it. By cooling the churn the temperature of the cream will not be raised while churning and yield soft, greasy butter. After the butter has been taken from the churn rinse with warm water to remove any buttermilk that might remain in the pores of the wood. Follow this with hot water to remove any fat that might have lodged within. It is never well to use any soap or soap powders in the churn. Dairy washing powders or lime water are preferable. To keep the churn free from taints or odors, a small handful of lime is often allowed to remain in some water in the churn. A small quantity of lime water in the last rinsing is also beneficial. One of the essentials in good butter

making is to allow no odors or taints to exist in any utensils connected with the operation. The proper use of deodorants and water will result in an improved product.

HORTICULTURE.

Apple Production.

Unless we are mistaken there will be less said this winter about over-production of fruit than has been the case during the last two or three years. Nothing changes the critic quicker than a change of conditions. A bumper crop of apples in 1914 set every one to talking over-production and low prices. A short crop in 1915 with prices ranging high has served to put a quietus on the cry. We still contend that there is very little danger of over-production of the best varieties of apples. Those who have watched the markets this fall have noticed that Northern Spys, McIntosh Reds, and Fameuse have been unusually high. It is simply a question of quality. It is seldom, indeed, that any market is glutted with the very highest quality product, no matter what class of farm output this is, and it is just as true of apples as it is of any other farm produce. Seasons of big crops and low prices have a tendency to cause those having orchards, but who are not orchardists, to neglect their trees and each year of neglect means fewer apples in the future. We have noticed many orchards this fall in which pruning has been sadly neglected, and through some of the young plantations cattle and sheep were roaming, and the trees were rather a sorry sight. The man owning this class of orchard will not very soon be a great factor toward over-production. The point we wish to make is that there are three or four or five varieties of apples which will sell at a price which will return a profit to the growers whether production is high or low. There is always premium placed on quality, and the man who plants the best varieties, and through cultivation, spraying, fertilization, and careful picking and packing puts the very best quality of fruit on the market, will surely find ready sale. It is too bad that orchards are neglected because of the cry of over-production; because, in some instances, of a poor selection of varieties which might be overcome by grafting; and because, as the case with the general run, of sheer carelessness. We would not be afraid to plant an orchard in 1916, and if we were doing so we would make an early selection of the stock before it had been culled over. In planting we would not put in trees older than two years of age if we could possibly get them of this age.

Seeds.

On different occasions we have seen roots grown from home-grown seed, and in almost every instance they compared favorably with other roots grown from imported seed. There is a danger that seeds may be dear, owing to scarcity, next spring and the spring following. We would advise growers who can do so to select medium-sized roots of typical shape of the variety and sound, and put them away in a cool end of the cellar ready to be planted next spring, to produce seed for the following year; and we would advise also that purchases of root and garden seed be made early in the season, as the best selection is then available, and there will be less danger of disappointment, due to not being able to obtain desired varieties and new virile seed.

Fruit Growers' Convention.

The dates for the annual meeting of the Ontario Fruit Growers' Association have been set for January 19, 20 and 21, at the Carls-Rite Hotel, Toronto. Some good addresses are on the program, and lively discussions are promised. No fruit grower can afford to miss this convention, as matters of importance are always brought up in these annual meetings. Remember the dates.

POULTRY.

The Early Bird Digs Up the Money.

Editor "The Farmer's Advocate": I would like to have a dollar for every time I've answered that question. In order to show that there is, I propose to tell the story of a big English farm on which I have been lately working, and which may encourage somewhat some of the doubting Thomases.

The farm itself is of 80 acres. It stands on the low hills overlooking the Lancashire coast of the Irish Sea. It is wind-swept. The soil is heavy clay. Just south of the famous English Lake District are the hills of Cumberland and Westmoreland. It gets its more than full share of the rain that descends so plentifully upon the said hills. There is not an acre of arable land on the farm; all is meadow and pasture, yet

it supports a pig; 2 horses, these last the two ten and study of his incubator-house. A long, low, of the surface of 150, 250 and total of 12,000 hatching season one man to 1 January, and chicken factory; the chicks will large brooder-fer they have the business w order to save transferred from which a hurri and over the was thrown to came outside very laborious guard against when funds pe the ordinary h in each house. a big, special in which the c about two mo placed in color large pasture when the pulle ter quarters, breeders or for

The laying 40, each divide one holding al fowls. They fronted with Dropping board of sand, over six inches at l chaff, and as i it becomes heav give them mor the pens in bar tanks mounted over the top,

All the birds and trap-nested White and Black. Some of them eggs in their fi on the place. investment of \$ ness. Next ye There is no Simplicity cha But mind you, knocking around out of late-ha chick that dig is run on a syst admire the syst possible. The well handled. method and ha be got by a similarly.

Lanark Co.,

During recent has had the eff geese and other per pound, and for turkeys. T practiced very owy, no doubt dency for them crops. Howev overcome by the furnishing the birds.

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It is time no up the birds w spring. As a g with from two geese should not and the mating sible, for, if th and fairly well March. By com that they shoul a warm place a from drafts and allowed out for during the day. ing the winter t