

advisable practice is to let the calf feed three times a day. This not only aids in the digestion of the food, but it has the tendency to develop a quick action of the digestive organs, and to avoid a large development of the bulk of them. Thus it is immediately seen that there is a distinct difference between the feeding of a heifer calf and a male calf, and to some extent between the beef breeding heifer and the dairy one. The former is not called upon for a large quantity of milk, but what it gives must be rich; while the latter is expected to give a large quantity in preference to a smaller quantity, although it may be less rich in fat. The whole feeding of the beef calf is directed to encourage a strong appetite, a strong digestion, and a large growth of flesh on small, fine but strong, solid bone.

"Consequently the beef calf is permitted to suck the dam, or if the dam has not milk enough a nurse cow is employed, the intention being from the first to develop a large appetite, and an active digestion; but at the same time to restrict the growth to those parts of the frame where the best meat is made. This is secured of course by the right breeding first, because like produced like, but the feeding is to be studied from this point of view and with this intent. But care is to be taken that the digestion is gradually stimulated so that the most nutriment may be turned to growth and yet the digestive organs are not overtaxed. The feeding is therefore begun moderately and very carefully and cautiously increased up to the ultimate ability of the calf to digest its food.

"A sucking calf should gain three pounds a day for the first month, two and a half a day for the second and two pounds a day for the third, and continuously until the growth demands suitable increase. This might seem to require a large quantity of milk to supply materials for this growth, but it is the fact that milk is not very much different in composition from flesh, for while it has eighty-six or seven per cent, of water in it yet flesh has seventy-seven per cent. of water in it, and the whole calf—solid bones included—has sixty per cent. of water. But food is not all used up in making flesh. As has been shown, a large proportion of it goes to make heat and support every action of the body not only motions of the limbs, but every pulsation of the heart and expansion of the lungs, and it is only reasonable that for each pound of gain of a young calf eight or nine pounds of the new milk of the cow is to be supplied. But it must be considered that there is a large evaporation from the skin of an animal, and there must be a sufficient supply of liquid to wash—as may be said—the system and consequently the young calf should be supplied with water as freely as it will take it, but the water should be pure and fresh, and not over cold in the winter, and as the calf grows it will be a help to add to the water a safe quantity of oil meal jelly, made by pouring boiling water onto linseed oil meal, and mixing a safe quantity of it to the milk. This may be used with good results in the

rearing of calves under all circumstances as a substitute for milk, of which the supply is short.

"Weaning a calf is to be done with caution lest a check, which may easily be severe, may be given to the young animal. The beef calf is to be crowded. It is the cheapest way of making the animal. Every pound at the beginning is worth two further on, for an animal will grow, as money will at compound interest, and the larger the early addition may be the greater the future ones will be that the increase in the food is to be small and steady intervals, so that the digestive organs will gradually become used to the ration and will also become strengthened by this safe use.

"As soon as the calf will eat it some flaxseed meal will be found the best and safest food. It is easily digested and its effect on the bowels is somewhat laxative, but only healthfully so. Cotton seed meal is not a desirable food for young animals. The gluten and starch feeds, fed in due, safe moderation, beginning with half-pound feeds come next to the linseed meals, whether full seed ground or the oil meals, of which the old process is preferable.

"This is most preferable at the first feeding when the proportion of protein in the food is much larger than at any other time in the life of an animal. For instance, an animal at two months weighing 150 lbs. will need as heavy rations in proportion to its live weight as a full-grown animal. Seven pounds of grain food daily is not overmuch for an animal of three hundred pounds, and twelve pounds is needed for one of five hundred pounds, and sixteen pounds is needed for a day's ration for one of seven hundred pounds. These are the minimum rations for growth only.

"At the early ages the proportion of the protein, or flesh forming elements of the food, are most wanted for the development of the vital organs, which are growing in a young animal, but have made their growth in one full grown, and future progress in growth depends to a very large extent on the ability of the vital organs to breathe, and to sustain the activity of the body. The large heart and lungs and the full development of the digestive apparatus of course must be necessary to the full growth of an animal.

"As the young animal grows it becomes a question of what kind and condition the feed should be. On the whole there is nothing better than grass in the summer, and corn, with corn stover, in the winter. And the results of many tests have shown that cornmeal and shredded corn fodder, have made the cheapest 2-year-old meat. At the Kansas Experiment station it was shown that 1,334 lbs of cornmeal and 350 lbs of stover made 100 lbs of gain, while 1,418 lbs of ear corn and 472 lbs of stover were required to make the same gain. On a second trial 971 lbs of grain and 200 lbs of stover made the same weight as 771 lbs of cornmeal and 200 lbs of stover. As a rule every saving of muscular and nervous action in feeding and digestion of food counts to the increase in weight of flesh. Thus, ground food and shredded fodder are more

economical feed than whole food, and shredded fodder is more economical feed than whole food, which requires the most muscular exercise to prepare it for digestion."

The New Peach Pest.

Prof. Lochhead, after investigating the new peach pest on the farm of Mr. Gordon Ball, reports as follows:

"The cause of the injuries to the peaches at Mr. Ball's is the Rose-beetle or Rose-chaffer (macroductylus subspinosus), a yellowish beetle about half an inch in length, with long, slender legs of a pale red color. Fully one-third of the peaches in one of Mr. Ball's orchards are destroyed. Large, open wounds are made on the sides of the undeveloped peaches, which soon fall or begin to rot. Ten of these rose-chafers were counted on a single peach. Fortunately these pests are local, and so far as can be ascertained are confined to one or two orchards. Their usual food plants are roses and grapes, but occasionally they overrun orchards and destroy most of the crop before action can be taken. When observed in time they can be prevented from doing serious injury by jarring them into funnel-shaped cans or sheets in early morning, while they are drowsy, or by the timely use of Paris green. Trees which have been whitewashed often escape. The eggs are laid in July, an inch below the surface of the ground, and the larvae or grubs feed on the roots of plants, chiefly grasses, until cold weather sets in. In spring the pupa is formed, and the adult emerges in June."

An Experience in Lamb Feeding

Prof. W. J. Kennedy, of the Illinois Agricultural College, gives the following account of an experiment in lamb feeding:

Two senior students of the Illinois Agricultural College desired to carry on a feeding experiment in connection with the experiment station for their graduating thesis. It was decided that they should conduct a lamb feeding experiment to determine the relative value of the various feeds for fattening purposes, as to the relative gains made from each, and also the quality of flesh produced. About the first of February we received from Chicago 16 high grade Shropshire lambs, a very uniform lot. They were divided into lots of four each. The lots were uniform in regard to quality and the weight of the lambs, averaging 252 lbs. per lot. They were fed on trial rations for about ten days until all the lambs were perfectly contented in their new quarters and taking their food nicely. Lot one was fed on corn meal and clover hay. Lot two was fed on shelled corn and gluten meal (2 parts corn and 1 part gluten meal) and clover hay. Lot three was fed on corn and oats, equal parts, and clover hay. Lot 4 was fed on oats and clover hay. The students did all the work themselves. Fed the animals, weighed them and looked after