

thirty months." "How often did you feed a barrowful?" "Three times a day." "How much was in the barrow?" "I do not know, I think about three bushels." The audience, which had listened to the dialogue with intense interest, now saw the joke, and burst into roars of laughter, for four and a half bushels per head per day to young feeding steers was quite as much in proportion as the six bushels to the 2,500-pound bull.

Substitute for Milk in Feeding Calves.

To the Editor "Farmer's Advocate":

Doubtless some of your English readers will recollect that about the year 1864 or 1865, a terrible plague, or rinderpest, broke out amongst the cattle in England, which was of such a virulent and deadly nature that treatment was quite useless once a beast was attacked, the consequence being that very few cattle were left alive in the country, but in the Sister Isle (Ireland) there was fortunately no outbreak, and Irish cattle took a jump to more than double their former price.

Before this calves, especially males of common stock, were not considered valuable enough to justify the trouble of rearing them, and thousands of new-born calves were knocked on the head at birth, but when, owing to scarcity, cattle took a rise in price, people who before destroyed their calves turned their attention to rearing them, and to discovering a substitute for milk, so that they could sell their milk and rear the calf at the same time. I am aware of several substances being tried, amongst them being clover hay boiled, and the liquor given to the calves. This did fairly well, but the best results were had by using cocoa. Cocoa shells were selling at the time from three to four cents per pound, and many people used it instead of tea or coffee. The treatment of cocoa-shells is alike, whether intended as a human beverage or calf feeding. The process is to put about a quarter of a pound of the shells into a kettle holding about two gallons of water; fill the kettle with water, bring it to a boil, then place it on the back of the stove, where it can simmer for about two hours or longer, then pour off enough for one meal, sweeten with sugar until it is about the same as new milk, then add about one pint of skimmed milk, or less will do if that much is not to spare. The kettle need not be emptied, indeed it is better not, but put a little more shells into it, and fill the kettle with boiling water, and let it boil and simmer as before, and by this means the calf's feed is always ready. I experimented with this substance myself a couple of years ago, and I intend to do the same this season.

The calf I experimented with was from a good grade Shorthorn cow and a pure-bred Shorthorn bull. It was not on account of the scarcity of milk, but for the purpose of demonstrating to

some of my neighbors the benefit of the cocoa. I first procured twenty pounds of shells from the T. Eaton Co., of Toronto, at three cents per pound, and put two large fistfuls into a number nine tin kettle full of water, and treated as above (I may say that I fed the calf on full milk for two weeks), I then drew off enough liquor for one meal, made it as sweet as new milk, and then added one pint of skimmed milk, and when cooled

[For the benefit of those who may not have seen the 1898 report of Experimental Farms, I give Mr. Shutt's report in full]:

COMPOSITION OF COCOA SHELLS.

"This is a waste or by-product from the cocoa and chocolate factory. A sample received from Halifax, N.S., with a request for a report on its feeding value, furnished the following data:

	Per cent.
Moisture	5.12
Albuminoids (flesh-formers)	16.42
Fat	12.92
Carbohydrates, sugar, etc.	45.43
Fiber	13.17
Ash or mineral matter	6.92
Fertilizing constituents—	
Nitrogen	2.63
Phosphoric acid	.98
Potash	2.59

"The analysis makes clear that it contains a high percentage of albuminoids, and is also rich in fat—two of the most important constituents of a feeding stuff, providing it is fairly digestible, a point upon which we have no information, save that cocoa butter or fat is readily assimilated—this refuse material is a concentrated feed of high order. If ground to the condition of fine meal, I am of the opinion that its digestibility would be much increased, and that it would prove serviceable as furnishing a part of the concentrated portion of the ration. The quantity that could safely or profitably be fed per diem would have to be ascertained by actual experiment; probably about two pounds per day, with other meal, would be the limit. Again, it is not known whether it would impart any flavor to the milk or butter produced, but we would not expect to find any, if used in the amount already indicated.

"Attention is directed to the richness of this material in fertilizing constituents, more especially nitrogen and potash. These, for the most part, would be recovered in the solid and liquid excreta of the animals to which it is fed."

The above report, just quoted, will go a long way in proving my contention that a decoction of cocoa is the best substitute for milk to feed to calves. Since Mr. Shutt made the above report I had some correspondence with him on this same subject, and I am certain that any one interested writing him will receive more information on the subject. I may say in conclusion, that the 20 pounds of cocoa shells sufficed to feed the calf until weaning time, with the addition of five pounds linseed meal—or an outlay of eighty-five cents.

J. J. SHAIL.

Farm.

Farm Improvements at Small Cost.

Beginnings are important periods in the history of any undertaking, and anyone who starts on a farm with the intention of making a success has advanced many steps towards that goal if he outlines and adopts a definite plan regarding buildings, etc. This done, each improvement will fit in its proper niche as part of the original plan, and can, as circumstances permit, be constructed without weakening the usefulness of any previous undertaking. It is very important too that the adaptability of a soil for certain crops, and the market for farm products, be early considered. Thus it is that a farmer living a long distance from a railroad can more profitably raise cattle than wheat. Again, a man whose farm is not as productive as he desires, can, by stock feeding, add fertility to it, whereas if he grew wheat continually for sale he would soon exhaust a soil already low in plant food.

Thoroughness in every detail, whether it be soil cultivation, animal feeding, or the keeping of the farm free from weeds, is another long step toward the desired goal. Beautifying the home surroundings by setting out wind-breaks and small-fruit and ornamental tree plantations also is a strong improving factor that will well repay in succeeding years. All wooden buildings should be painted, not for appearance sake alone, but because increased durability sufficient to more than pay for the extra cost will be given. Machinery, implements, stock, etc., all require care and housing at certain times, and if such is not given them the owner suffers financially, and marks of permanent improvement are to that extent lacking. Good wells, suitable fences and a well-tended garden are individually evidences of advancement, that, although not costly, yet mark the pulse of progress. Literature of the right stamp is worthy of a place, and good agricultural papers, if read, are by no means the least important handmaids which the farmer has to help him toward success at small cost.

The name and P. O. address on a post card will bring a sample copy of the "Farmer's Advocate," free, to your friend or neighbor who would appreciate and be helped by a really first-class agricultural paper.



MR. WILLIAM LINTON.
President-elect of the Dominion Shorthorn Cattle Breeders' Association.

to blood heat fed it to the calf. I continued with this until she began to eat coarse feed and chew her cud, when I began to add a little well-boiled linseed meal. She was never troubled with scours, was always hearty, and was admired by all who saw her, and some people, who did not know how she was fed, thought she was let run with the cow. A neighbor bought her, and some time after, she having her first calf, he decided to go to Manitoba. I offered him a good price for the heifer, but he would not sell her.

Mr. F. T. Shutt, the Chemist of the Central Experimental Farm, in his annual report for 1898, in dealing with the subject of cocoa shells, says



CORONATION, IMP., [354].
Two-year-old Shire stallion. Winner of first prize and championship, Canadian Spring Stallion Show, Toronto, 1903.
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