

THE ART OF STEER FEEDING

BY

A. L. COTTRELL.

## The art of Feeding Steers

We say art of feeding because we intend to treat the subject from the standpoint of the successful administration of the details which go to make the business profitable. We say that successful steer feeding is an art which cannot be attained by all, since a successful feeder must be acquainted with animals, feed, markets and above all must be possessed of rare insight and judgement that will enable him to solve many problems that arise.

Cattle feeding has been indulged in from time immemorial. We are also told of the killing of the fattened cattle on the return of prodical. In early biblical history the burnt offerings were made from the fattlings of the flocks and herds. Although no record is given as to the particular manner of fattening yet feeding must have been carried on in some form. The feeds used at that period were probably barley, flax and other grains that were native of that country. Some of the tribes of Isreal were noted for their large herds and flocks and must necessarily have had some method of feeding.

In modern times the business has become one of enormous magnitude involving millions of dollars worth of property and has for its ultimate end the furnishing of food for millions of people. Texas alone, according to the census of 1900, had 9,595,611 head of cattle, and a greater majority of the states having over half a million head within their borders. Thus the boundless resources of this business. The net worth of this industry amounts to startling figures. These statements give us something of an idea of the extent of responsibility that rests on those engaged in the occupation of steer feeding.

The practical destination of all cattle is the block and as to the degree of excellence with which they should meet this end is determined by the feeder.

The kind of steers to buy or raise depends upon the situation of the feeder. But it is safe to say, buy or raise the ones that are the most profitable. It is a recognized fact among cattle-men that the "best" are the ones that are the most likely to pay. This fact is substantiated since ranchmen all over this land are gradually breeding up their herds, and working for a higher and better type. A great deal of money has been made on thorough bred, grades and scrubs, all having their place and share. In days gone by the scrubs claimed the prominence but they have been gradually replaced by the grades and purebreds. As to their selection we will state further on. But by all means buy or raise the best you can.

When shall I buy? When the price of cattle is such that you can probably invest, or when you can make a good market for your feed thus saving the trouble of hauling the crop to town and saving the manure and waste for the enrichment of your land. It is not usually a safe plan to buy when a boom is on and when prices for feeders and fat cattle are about equal per pound. All such business should be done after careful study of the market outlooks for feed and feeding.

**THE FEED LOTS:-** In selecting feed lots care should be taken to choose a place where sanitary conditions may be preserved. In our western country a south slope, steep enough to allow perfect drainage and protection from the western winds. Such a place is healthy, dries off quickly, and gives the cows a suitable place to bask in the sun on warm bright days which is particularly conducive to good gains. A board or steer shed on the north side of the lot gives good protection during storms. With a good tight fence and plenty of good water this makes an ideal place. If you are situated, as some are, in a creek bottom of timber land the feeder can often take advantage of this natural protection. One of the best feed lots the writer ever saw was in

a clearing in the heart of the woods where about ten or fifteen acres of timber had been cut and a good shed built and situated on a gentle slope. These condition indicated protection from cold winds and snow in winter, shade in hot weather, and plenty of sunshine. Some of the eastern feeders have brick paved their yards and sheds, while others feed entirely under covered yards. This method, however, is very expensive and usually practiced only when a limited number of steers are fed. The lots should be located, if possible, where they are easily accessible both to hauling feed and handling the cattle.

**FEEDING APARATUS:-** The aparatus for feeding should be as simple, durable and useful as can be made. Excellent bunks may be made of lumber having the following dimensions; 16 feet long, 4 feet wide, and 18 inches deep. The sides should be well braced and perpendicular and made of two inch lumber; the bottom should have a gentle slope to the center. For calves two and one-half to three feet high, and older cattle three to four feet is better. Scales are an unseparable adjunct to the feed lot, and he who intends to follow stock raising cannot afford to be without them. It is a hard proposition to gauge the amount of feed or determine the gain without keeping check with the scales. A man without scales is always working in the dark and does not know how much he is feeding, how his cattle are doing, and in other words is like a man trying to drive nails without a light on a stormy night. Wagons, forks, etc. are indespensable but need no further comment as their need and use is apparent.

**WATER:-** No animal can thrive well without plenty of good wholesome water. An average steer will drink from fifty to one hundred pounds per day. Since it pays such an important part in the health and well being of the individual it is abundantly necessary that it be supplied in abundance and in as palatable condition as possible. Running spring

water is the ideal but where that cannot be supplied other means must be employed. The usual method is by means of a windmill pumping it into tanks. In winter time the water should be kept from freezing by the use of a tank heater which may be purchased at a reasonable amount. These heaters are inexpensive both in original cost and keeping them in operation. The water can be warmed in this way much cheaper than by warming it with the feed consumed by the animal. It costs but a few cents to keep the fire going and often farmers use cobs and rubbish in this way, making no expense whatever.

Steel tanks are more durable and cheaper than wood tanks, yet water freezes quicker and gets warmer in the summer time in them than in the wood tanks. The writer prefers shallow tanks to deep tanks in that they are easier to clean, easier to heat in the winter, and the water is changed oftener thus keeping it fresher and purer.

**COOKING AND SOAKING FEED:-** Experiments carried on at different experiment stations almost unanimously discourage the practise of cooking or soaking of feed for cattle. In many cases it was found that cooking makes the feed less digestible as was demonstrated by cooking grain and hay for cattle. Where the hay was steamed a loss of sixteen percent of digestible material was incurred and in grain a loss of six percent in some cases. Prof. Sheldon of the Kansas Experiment Station says, "That figures taken from cooking experiments show as conclusively as figures can show anything that the cooked corn was less useful than raw corn and since an entire unanimity of results can only be explained upon the theory that the cooking was an injurious process so far as its use for food for fattening animals is concerned." The Ontario Agricultural College found raw peas to be worth 50% more for feeding purposes than cooked peas. " A general proposition may be stated that it does not pay to cook food for stock when such food will be satis-

factorily consumed without cooking." As there is considerable expense and the digestibility is often lowered.

Soaking feed always makes a source of loss in that protein compounds are easily dissolved and thus great loss may be incurred. In case of some grains and roughness soaking is practised in order to prevent the flinty hard articles from making sour mouths. Prof. Henry says, "Soaking can hardly increase the digestibility of feeds though it may indirectly do so by permitting better mastication and thereby more complete action of digestive fluids.

THE VALUE OF SHELTER:- The question as to how I will shelter my steers is one that comes to every feeder. In the west and south this problem is rather easily solved but in the eastern and central states this question is one of great importance. During a test made at the Kansas Experiment Station it was found that five steers fed in the barn 182 days gained 1421 pounds; five steers of equal quality fed in open lots with shed on the north gained in 182 days 1564 pounds, a difference of 143 pounds in favor of the open lot. In this case the steers in the open lot ate 844 pounds more corn per head but required less care and trouble in feeding. At the Texas Experiment Station when they conducted an extensive experiment with range cattle found that the bunch they fed without shelter made the poorest gains and were considered the best feeders at the start. These steers consumed ten percent more corn per head, ate three times as much hay than did those having shelter. The lot sheltered gained 173 pounds per head, while the unsheltered gained 150 pounds during the same time.

Sanborn of Utah says, "It looks as though the true method of wintering cattle consists in giving the freedom of warm quarters with liberty of outdoor runs at their pleasure."

It is a noted fact that it is impossible to obtain any very

successful results in feeding without making the animal as comfortable and happy as possible. To induce the rapid laying on of fat the steer must be cared for so that he will lay down as much as possible. This may be augmented by keeping them well bedded and the yards clean. The shed or barn should be warm, water proof, high and well ventilated but allowing no openings that will create a draft.

HABIT:- Regularity should be the motto of every feeder. Establish certain hours in which to feed and care for the steers. A clock cannot be more regular than a bunch of steers. The writer has noticed in feeding cattle that a variation of ten to fifteen minutes from the usual feeding time would cause considerable disturbance. The cattle becoming restless and uneasy often quarreling and hooking one another. It is noticeable how quickly steers will get accustomed to being driven over scales at certain times and often seem to be anxious for their turn to be weighed. You may have noticed often that a bunch of steers will be lying quietly in the sun of an afternoon up to within a few minutes of feeding time when without seeming cause they will all get up and go to the bunks, you will then observe that feeding time is near. As a rule cattle establish certain times to drink, in the feed lot this is after each feed and if the water is palatable will stand at the trough sup a little at a time in perfect contentment.

The moral to be drawn from this is, do every thing on time, every little factor counts in making good success. Be regular, thorough and neat.

HORN vs HORNLESS STEERS FOR THE FEED LOT:- An account was given in a prominent stock paper of a Kansas feeder who lately contributed several loads of western cattle to the Kansas City market, some of which he had dehorned and others still wearing their horns. This feeder states that those that were dehorned gained considerable over two

pounds per day per head while those wearing their horns made a trifle over a pound and a half per day although as good in every other particular. The latter he mentioned more shed room, were continually fighting and bruising each other, and on no account will he feed a horned bunch of cattle again. The practice of dehorning is growing in popularity among the feeders and with the exception of a few cases. One of these may be mentioned is where cattle are fed in summer time on grass in large bunches. It is claimed that if some measure is not taken the cattle will loose heavily by bunching in hot fly time. To prevent this several head of horned cattle are put with the bunch and do very effective work in keeping the cattle well scattered out.

At the Texas Experiment Station they found that cattle dehorned lost the first week but all came to feed at the end of that time. Also the lots running loose and not dehorned also lost. "The injury caused in dehorning is not to be compared with the injuries the cattle inflict on one another with horns when massed together." "A prominent stock man in Alabama says he believes the injury from hooking amounts to hundreds of dollars." Another point in favor of dehorning is that a great many more steers can be kept in a given area when dehorned, also a point of economy is involved in that more steers can eat out of the same bunk. Dehorning is done almost fearlessly, is inexpensive and a very safe operation care taken if it is in the summer time to keep the flies out of their heads.

**THE INDEX OF THE FEED LOT:-** By this is meant the condition of the feces. Every feeder recognizes that an animal to be doing its best must have perfect digestion as indicated by the character of the droppings. So important is the factor that the entire operations of feeding are based upon condition of feces. The animal when doing its best gives off a waste material which has a rather doughy texture



which when passing has a glistening appearance and ~~pop~~<sup>drop</sup> into a neat pile. The aroma given off from the fresh feces of a healthy animal is not particularly unpleasant and is an excellent guide to the inner condition of the individual. The whole excretory product should be such that it will not soil the tail or regions about the anus, or even soil the animal if he happens to lay down. A good feeder can tell the instant he goes into the feed lot whether the steers are doing well by the aroma that greets his nostrils. Scouring, the pest of the feed lot, is the most formidable enemy the feeder has to deal with, ~~due~~ principally to over and injudicious feeding. Prevention and cure are maintained by change or limiting the quantity of feed. .

#### WHY WE MIX ALL THE FEEDS TOGETHER FOR OUR FATTENING STEERS:-

Several feeders have asked us why we mix our grain and hay together for our fattening steers. Others, on looking over our experimental steers and lots at the Kansas station, have asked if it was a practical proposition to cut hay for ordinary feeding purposes.

In answering these questions, we can say that our objects in mixing the hay and grain are:

First - To aid in the digestion of the food.

Second - To save feed, and keep the animal in better condition.

We cut the hay because it is more easily mixed with the grain and also saves considerable waste which usually occurs where the roughness is fed in its natural state.

The above are the practical and simple reasons that we can give and I wish to prevent a further scientific reason which goes to substantiate these arguments. We find that during the process of digestion in cattle that the food passes through the four stomachs of the animal. Their description and functions are given in Chauveau's Comparative Anatomy as follows: The first stomach-rumen or paunch-

is a sack occupying three-fourths of the abdominal cavity, having a capacity of 50 to 60 gallons. Here the nutriments taken during feeding time are kept in reserve and whence they are again carried into the mouth during rumination, after having been more or less softened. This receptacle has extremely few glands and is merely for the purpose of holding food.

The second stomach or reticulum is a honeycombed-like receptacle, which participates in the function of the rumen, particularly in regard to liquids, and plays the part of a reservoir, the solid substances in it being diluted with large quantities of water.

The esophageal groove carries food into the third stomach-omasum the substances swallowed the second time and those substances which the animal injects in small quantities during the first act of swallowing the food. Here the food, through the aid of the manifolds is pressed and attenuated for the action of the fourth stomach, which is the true stomach, called abomasum. This stomach is charged with secretions of gastric juice and here we have the greater amount of absorption and digestion, and the three other stomachs acting as preparatory departments for this true stomach.

We found by slaughtering several animals last spring, which had been fed for the occasion, that where the grain was fed separately that there is a tendency for such feed to pass directly from the paunch through the other stomachs without further mastication, whereas the grain fed thoroughly mixed with the roughness was found generally disseminated throughout the whole contents of the paunch and if rumination took place stood a good chance of being thoroughly ground before entering the remaining stomachs. In the first place the grain entered the smaller stomach before being thoroughly masticated and before it has been softened to any degree. The coarse, flinty particles

of grain passing through the further processes of digestion have a tendency to irritate the passages and as a result more of the grain is rejected with the feces and we often have bad cases of scours where heavy reeding is indulged in.

Where we feed grain with the hay, but a very small percentage of the grain is undigested, and there is a great deal less danger of getting the cattle too loose. One hog to five had of cattle fed in this manner can scarcely pick out a maintenance ration from the droppings.

It costs thirty cents per ton to cut the hay with an ordinary ensilage cutter. It is then easily handled, easily fed and mixes well with grain. Several of the large feeders in this vicinity have adopted this method of feeding and have found it very satisfactory and state that the cost of cutting is more than paid for by the better results obtained.

Indiana Experiment Station found that other things being equal steers fed cut hay will make a better growth than those fed whole hay. In this experiment of 100 days the gain from feeding cut hay was nearly 50%. Few experiments have been carries on to test the value of cutting hay for stock although it seems of very great importance from an economical standpoint considering that there is so much less waste in handling the feed in this manner. At the Kansas Experiment Station we found that there was surprizingly little waste when cattle were fed cut hay in bunks. The course parts of the hay are either crushed or cut in such short pieces that the steer readily eats the whole amount. Cut hay also mixes with grain much more readily than whole hay.

WHAT AGE IS THE MOST PROFITABLE STEER FOR FEEDING PURPOSES:- Prof. Henry says, " Excluding birth weight the steer maintains a practically uniform rate of gain until he becomes two years old. While this is

true in relative gain in weight, we have shown that the cost of producing gain the second year is about double that of the first, and for the third the cost is about three times that of the first year. Recognizing these facts the stockmen who grows the cattle he feeds should place them on the market at as early a date as possible other conditions being equal." Prof. Henry estimates the cost of keeping a steer until twelve months old and one weighing 700 pounds at that time, at \$29.00. A steer twenty-four months old weighing 1600 pounds at a cost of \$79.00. Cost of steer from twenty-four to thirty-six months old 2200 pounds to 160.07. The profit on these steers are estimated as follows: twelve months old steer \$6.00; twenty four months old steer \$49.70; thirty-six months old steer \$18.93. These figures were given by Mr. Gillett a noted feeder of the past. We take note that these steers must have been a great deal better than ordinary cattle as is shown by their weight. In these days the prices of grain interest, and prices of fat cattle were higher than at present,-but the lesson taught still stands.

The present market seems to be tending as did the hog market to a younger, earlier maturing, smaller animal. This steer must be compact, dress a very high percent, and be an excellent feeder. The writer predicts that as soon as the "tooth" of the beef eating population is cultivated to appreciate the younger, quick, maturing, tender juicy meat it will no longer accept any other. The local demand will be for steers weighing from 700 to 1000 pounds, and with the exception of the export market no heavy cattle will have to be fed to supply the demand of the market.

These facts alone do not have the most important bearing on when shall we market our stock, we must consider the amount of food per stated gain. In feeding baby beef from six months to two years

old we find that it takes only 450 to 550 pounds of grain per 100 pounds gain where as in mature cattle it takes on an average of 1000 pounds of grain per 100 pounds of gain. Thus an advantage gained in the saving of grain. The reason given for this is that it takes more of the food to build up the broken down tissue, less energy to supply and thus more feed may be as fat in the carcas. Other advantages in feeding younger cattle are that you can turn off more each year, keep more cows, less risk, get quicker returns and saves time in handling. The disadvantage in feeding young cattle are, the market for baby beef is not yet established firmly enough to consume such a product from all feeders. Younger cattle are also harder to ripen for market and the feeding period is necessarally longer.

FREQUENCY OF FEEDING:- Prof. Henry says, " There is nothing helpful on this point from experiments, and when we turn to feeders for light we find a diversity of opinion as to the proper practise. It is reasonable that young animals should be fed at least three times a day while those approaching maturity and not heavily fed are amply provided for in two feeds. Maturing cattle prosper and probably do their best when supplied with grain but once a day with roughage to run to at pleasure. It is certain that many of the best feeders in the west supply grain but once a day. The once fed steer goes to the trough with paunch well emptied and appetite at best, filling himself to the utmost, he has ample time for remuneration and subsequent digestion." The joint may also be demonstrated by the fact that young calves raised for show purposes or where raised by hand are fed three times a day for two or three weeks and seem to thrive ever so much better than when fed only once or twice per day. The reason being that the calves stomach and digestive aparatus at first requires frequent and small amount of nourishment. As the calf grows and the digestive aparatus grows larger then

the animal can take more imbibition and handle it easier.

**SALTING THE STEERS:-** A great deal has been written of late on how salt should be given to the fattening steers some claiming that they should be limited as to the amount, others stating that they should be fed as much as they will eat having it in a place that is accessible at all times. The writer agrees with the latter idea and holds that if salt is supplied regularly and constantly the animal is healthy will take no more salt than is required by the system, whether it be rock salt or granular salt. It is noticed that as steers advance in the fattening period the amount of salt required by the animal increases. As a nutritious food seems to increase the appetite for salt the steer will drink more water than necessary sometimes causing scours. Prof. Henry recommends one to one and two-thirds ounces per day per 1000 pounds steer according to the time of fattening period, the later period requiring the greater amount.

**VARIETY OF FEEDS:-** As with man so with cattle a variety of feed is very acceptable as well as profitable. The advantages gained are, maintenance of a good appetite, succulence make the ration more appetising and on the whole will give the best returns. A variety is usually fed to show animals and those that are being forced for market such a ration often consists of corn, oats, bran, oil-meal, various roughness and usually ensilage or roots to give succulence. At the Kansas Station we have feed as high as eight different grains in a mixture with several different kinds of forage in the same ration with excellent results. A noted feeder who had exhibited and undefeated champion was asked what he fed his pet, he said, " Ask me what I haven't fed him and I could perhaps be able to answer you." Thus the value of a variety of feeds in a ration for growing or fattening cattle. As to gain in steers anything above two pounds per day for a period over 120 days is considered

a good gain.

GETTING STEERS ON FULL FEED:- This is one of the problems that confronts every breeder and it represents a very serious one indeed. The old idea was that steers should not be brought to full feed from one to two months and still held by many and for the inexperienced feeder it is perhaps the best method. The time varies considerable as to whether the steers have been fed grain previously or whether they have just come from pasture or rough feed. The latter idea advances that it is possible to get a bunch of steers on feed in two weeks if care and attention are given. The method requires much skill and experience, and cannot be practised successfully by all feeders. Any sudden change should be avoided after the feeding has commenced, make the changes gradually and cautiously after carefully observing the conditions of the steers. The rapidity of bringing to full feed depends also on the length of feeding period. If short get on feed as soon as possible, if the period is to be long take plenty of time. Prof. Henry says, "The gourmand steer is content with uniformity in his rations and if not led to anticipate unusual attention is satisfied with a limited bill of fare provided always the supply is ample.

#### CONCLUSION.

In conclusion we will say that after careful study of experiments and data on steer feeding, that the industry is just on the verge of a wide field of investigation and the problems to be solved are so numerous that cannot be anticipated as yet. Experiments along this line have been conducted with such a limited number of animals that individuality played too conspicuous a part in the results. Data under these circumstances cannot be taken as conclusive and therefore many of the tests heretofore conducted must needs be tried over again on such a scale and under such conditions as will make the conclusions

a definite basis for further operations. The writer believes the business of feeding steers for the various markets is one of the most honorable, interesting and profitable occupations in which a man can indulge, and that by careful study and perseverance a man can build a happy prosperous home and be so supplied with the essentials of life that in his last days he can look back over his past work and say:

"I had steers that made such beeves,  
I bought my wife such comforts these,  
A balanced ration they had for feed,  
And I'll get more steers of that same breed.  
Ha! Ha! Ha! my wife and me  
Old fat steers don't I love thee."