PRESENT METHODS OF BEEF PRODUCTION.

II.


FATTENING CATTLE.

Of the 509 correspondents from whom replies were received in this inquiry, 53 percent are mere feeders, who buy all the cattle they finish for market; 12 percent are breeders, carrying all their cattle from birth to maturity or, as in a few instances, disposing of them as feeders instead of finishing; 35 percent are both feeders and breeders, but in more than seven cases out of ten of these, only a small fraction of the cattle are raised, most of them being purchased to fatten. This circular is a report only of that part of the investigation dealing with the fattening of cattle for market as distinguished from maturing them from birth. Subjects closely related to the fattening process, such as the kinds of feed used, their preparation, and feeding equipment, as well as other phases of beef production, will be reported in following numbers of the series.

Note.—This is one of a series of papers based upon reports received from 509 cattle feeders in Illinois in reply to a list of 100 questions sent to each. Part I., Circular No. 79, "Stockers and Feeders," will be mailed upon application. For list of questions see Circular No. 85.
MARGIN REQUIRED.

"What margin over cost price do you consider necessary in order to make your feeding operations come out even, on a basis of 35 cent corn and $8.00 hay, under average conditions of buying and selling your cattle; that is, that you shall neither gain nor lose by the enterprise?"

388 replies to this question give answers varying from 50 cents to $2.50 per hundredweight. 40.5 percent name $1.00 per hundredweight; 69.5 percent of all the replies lie between 75 cents and $1.50; 18.3 percent are below 75 cents, and 12.2 percent above $1.50.

"What margin over cost price will give you a satisfactory profit?"

365 replies to this question give answers varying from 50 cents to $3.00 per hundredweight. 5 percent of these name 75 cents per hundredweight or less; 34 percent name $1.00 per hundredweight; 30 percent name $1.50; 16.4 percent name amounts between $1.00 and $1.50; 3 percent name $1.75; 9 percent $2.00; and 2.6 percent from $2.00 to $3.00. The question of margin required in fattening steers appears not to be well understood by many feeders. For a full discussion of the problem the reader is referred to Bulletin No. 90 of this Station.

SEASON PREFERRED.

40 percent of our correspondents state they can fatten cattle to the best advantage and with the most profit in summer; 26 percent favor the fall season; 20 percent prefer spring; and 14 percent, winter.

In order to avoid misleading conclusions, such as might be drawn from the above summary, the further question was submitted, "Have you found winter feeding profitable?" 61 percent answer affirmatively, 39 percent negatively.

A question as to the time of year at which cattle are put on full feed brought forth replies for each month in the year. September, October and November lead with a total of 51.5 percent of the replies; March, April and May follow with 23.8 percent; the remainder being scattered throughout the other months. It is noticeable that the number of replies for each month increases regularly from June to October and from January to April, while a regular decrease is noted from October to January and from April to June. Less regularity is found in the time of year preferred for finishing cattle. Thus 14 percent aim to finish in December, 13 percent in January, 9.5 percent in February, 10 percent in March, and from 5.7 to 7.7 percent, or an average of 6.7, in each of the remaining months of the year. In other words, 46.5 percent are marketed between December and March, in-
elusive, and 53.5 percent are rather evenly distributed throughout the remainder of the year.

**TIME REQUIRED TO GET CATTLE ON FULL FEED.**

One-third of our correspondents take thirty days for getting cattle on full feed. About one-third take 15, 20, or 25 days. About 12 percent take 35 or 40 days. 12 percent take less than 15 days, and 8 percent more than 40 days. The shortest time mentioned is 1 day, this method being followed by 7 out of 416 correspondents. The longest time noted is 100 days, only one correspondent recommending this starting period, and only two others give more than 60 days.

**LENGTH OF FATTENING PERIOD.**

Two inquiries were made on this point. In reply to the question, "How long do you plan to feed?" 26.5 percent of our correspondents answered 6 months; 23.5 percent, 5 months; 12.5 percent, 4 months; 12 percent, 7 months; 9 percent, 8 months; 9 percent, more than 8 months, and 7.5 percent 3 months or less. The longest period mentioned is 15 months. Only one percent of the replies mention 12 months or more, and only 1 percent less than 3 months.

"As a result of your experience what do you consider the best length for the fattening period? (This refers to the number of days on full feed.)" 27 percent favor a period of 5 months; 21 percent, 4 months; 17.5 percent, 6 months; 16.5 percent, 3 months or less; 10.5 percent, 7 months; 7.5 percent, 8 months or more. Only 1 percent favor more than 10 months, and only 3 percent less than 3 months.

**NUMBER OF FEEDINGS PER DAY.**

In response to an inquiry as to the best number of feedings per day for steers in the feed lot no correspondent mentions other than two feeds per day.

**AMOUNT OF FEED PER HEAD ON FULL FEED.**

The results pertaining to the kind of feed used and its preparation will be reported in full in a following circular. The following is a summary of the amounts fed to yearlings and two-year-olds in summer and winter, respectively.

1. **Yearlings in winter.**

Of the 139 replies, 25 percent report feeding all the corn the cattle will eat; 14 percent feed less than one peck of corn or its equivalent; 25 percent feed one peck of corn or its equivalent; 15 percent feed \( \frac{1}{2} \) bushel, 8.5 more than one peck and less than \( \frac{1}{2} \) bushel; 4 percent feed \( \frac{1}{2} \) to \( \frac{3}{4} \) bushel; 2 feeders recommend 1\( \frac{1}{2} \) lb. shelled corn or its equiv-
alent per 100 lb. live weight; 8 men mention feeds other than corn, as follows: \( \frac{1}{4} \) bushel corn and oats; \( \frac{3}{4} \) bushel corn and oats; \( \frac{3}{4} \) to \( \frac{5}{4} \) bushel corn and oats; \( \frac{3}{4} \) bushel corn, 3 lb. bran; \( \frac{3}{4} \) bushel corn, 4 lb. cottonseed meal; \( \frac{3}{4} \) bushel corn and some bran; all the corn, oats and bran they will eat; all the corn and oats they will eat.

2. Yearlings in summer on grass.

Of 76 correspondents 17 percent feed less than one peck of corn or its equivalent; 45 percent feed one peck; 8 percent feed \( \frac{3}{4} \) bushel, 12 percent feed \( \frac{1}{2} \) to \( \frac{3}{4} \) bushel; 12 percent feed all they will eat; 5 correspondents mention feeds other than corn as follows: \( \frac{1}{2} \) bushel corn, 3 lb. cottonseed meal; \( \frac{1}{2} \) bushel corn, 6 lb. bran or oats, 4 lb. oil meal; \( \frac{3}{4} \) bushel corn and some bran; \( \frac{3}{4} \) bushel corn, oats and bran (2 parts corn, 1 part oats and bran); \( \frac{1}{4} \) bushel corn and oats, 5 lb. oil meal.

3. Two-year-olds in winter.

Of 219 correspondents, 5 percent report "All they will eat"; 2 percent, less than one peck of corn or its equivalent; 5 percent, one peck; 5 percent, more than one peck and less than \( \frac{3}{4} \) bushel; 20 percent, \( \frac{3}{4} \) bushel; 17 percent, more than \( \frac{3}{4} \) bushel and less than \( \frac{5}{4} \) bushel; 39 percent, \( \frac{5}{4} \) bushel. 1 feeder gives \( \frac{1}{4} \) lb. corn per 100 pounds live weight of cattle. 11 correspondents mention feeds other than corn, as follows: \( \frac{1}{4} \) bushel corn, 6 lb. cottonseed meal; \( \frac{1}{4} \) bushel corn, 6 lb. oats or bran, 6 lb. cottonseed meal; \( \frac{3}{4} \) bushel corn and oats (\( \frac{3}{4} \) corn); \( \frac{3}{4} \) bushel corn; 4 to 7 lb. bran; \( \frac{3}{4} \) bushel corn, 5 lb. cottonseed meal; \( \frac{3}{4} \) bushel corn, oats and bran (\( \frac{3}{4} \) corn); \( \frac{3}{4} \) bushel corn, 15 lb. oats, 2 lb. oil meal; \( \frac{5}{4} \) bushel corn, 5 lb. bran; \( \frac{3}{4} \) bushel corn, 2 lb. bran; all they will eat of corn, oats and bran (\( \frac{3}{4} \) corn); all the corn they will eat, 5 lb. bran, 5 lb. oil meal.

4. Two-year-olds in summer on grass.

Of 154 correspondents, 3 percent feed less than one peck of corn or its equivalent; 19 percent feed one peck; 9 percent feed more than one peck and less than \( \frac{3}{4} \) bushel; 21 percent feed \( \frac{3}{4} \) bushel; 16 percent feed more than \( \frac{3}{4} \) and less than \( \frac{5}{4} \) bushel; 17 percent feed \( \frac{3}{4} \) bushel; 13 percent feed "All they will eat." 5 feeders mention grains other than corn, as follows: \( \frac{3}{4} \) bushel corn, 10 lb. oats, 3 lb. oil meal; \( \frac{3}{4} \) bushel corn, 6 lb. oats or bran, 2 lb. cottonseed meal; \( \frac{3}{4} \) bushel corn, 3 lb. cottonseed meal; \( \frac{3}{4} \) bushel corn, 4 lb. cottonseed meal; \( \frac{3}{4} \) bushel corn, oats and bran (\( \frac{3}{4} \) corn); \( \frac{3}{4} \) bushel corn and oats.

In considering the above summaries it should be borne in mind that many of the feeders who do not mention other grains than corn use supplementary grains, and that the replies are in most cases expressed as the equivalent of the ration in corn. Also, many who name the approximate weight of feed used follow the practice of giving such
amounts as the cattle will eat, and the figures given are in most cases estimates of the amounts actually eaten.

It is seen that in general heavier feeding is practiced in winter than in summer on grass. This difference is much less marked, however, in the case of yearlings than with older cattle. It is apparent that the common rule "a half bushel of corn to a full feed," places the average much higher than that followed in common practice.

**DAILY GAIN ON FULL FEED.**

260 correspondents report the average daily gain of cattle on full feed. The average of all replies for cattle in summer on grass is 2.7 pounds per day. In winter the average is 2.23 pounds per day.

**FEED REQUIRED FOR 100 POUNDS GAIN.**

It is a common saying among cattle feeders that a bushel of corn will produce five pounds of beef. In order to place our correspondents on record in this matter they were asked "How much grain and how much hay do you estimate it takes on the average to produce 100 pounds of gain on (1) calves in winter, (2) calves in summer on grass, (3) yearlings in winter, (4) yearlings in summer on grass, (5) two-year-olds in winter, (6) two-year-olds in summer on grass.

The most striking feature of the replies to this, as to many of the questions here discussed, is the wide variation in the replies. The need of more careful observation and more systematic methods in feeding is here strikingly shown. For calves in winter, the average amount of corn named in 41 replies is 111/4 bushels, the highest amount 20 bushels, and the lowest 4 bushels. For the same in summer, the average amount named in 31 replies is 10.3 bushels, the highest 16 bushels, and the lowest 4 bushels. For yearlings in winter, the average amount named in 47 replies is 15.3 bushels, the highest 30 bushels, and the lowest 5 bushels. For the same in summer, the average amount named in 37 replies is 13.1 bushels, the highest 25 bushels, and the lowest 5 bushels. For two-year-olds in winter the average calculated from 110 replies is 18.5 bushels; the highest 40 bushels, the lowest 4 1/2 bushels. For the same in summer, the average of 85 replies is 14.6 bushels, the highest 37 bushels, and the lowest 6 bushels. Stating the above results in other terms and using the averages given above, a bushel of corn fed to calves in winter produces 8.88 pounds gain, calves in summer 9.97 pounds, yearlings in winter 6.53 pounds, yearlings in summer 7.6 pounds, two-year-olds in winter 5.4 pounds, and two-year-olds in summer 6.8 pounds.

It is clear that in the majority of cases more than 5 pounds of gain
are expected from a bushel of corn. We find that younger cattle in general return relatively a much larger gain for the feed consumed than older cattle. It is also seen that a bushel of corn is more efficient in producing gain in summer on grass than in winter.

Turning to the figures relating to the amount of hay required for 100 pounds gain, when fed with the amount of corn named above, we find for calves in winter an average of 378 pounds, the highest amount mentioned being 1000 pounds and the lowest 150 pounds. For calves in summer on grass the average amount is 267 pounds, the highest amount 1000 pounds, and the lowest 50 pounds. Only 8 replies give the amount of hay fed to calves in summer on grass. For yearlings in winter the average amount is 517 pounds, the highest 1600 pounds, and lowest 100 pounds. For yearlings in summer on grass the average amount is 219 pounds, the highest 750 pounds, and lowest 50 pounds. Only 8 correspondents state the amount of hay fed to yearlings in summer on grass. For two-year-olds in winter the average amount is 473 pounds, the highest 1100 pounds, and lowest 100 pounds. For two-year-olds in summer on grass the average is 128.4 pounds, the highest 400 pounds, and lowest 15 pounds. Only 16 replies were received to the latter question.

Much greater variation is found in the replies upon which these averages are based than in the case of the amounts of grain as reported above. It is much more difficult to estimate the weight of hay than of grain. As it is usually fed in large quantities, in racks or mangers, kept before the cattle continually, and with more or less waste, no large number of exact replies to such a question as this is to be expected. So far as these averages can be relied on, no definite relation is shown between the age of the cattle and the amount of hay eaten for 100 pounds gain in winter feeding, excepting that the calves clearly require less relatively than older cattle. In summer on grass the calves seem to receive more hay for 100 pounds gain than yearlings, and yearlings considerably more than two-year-olds. The small number of estimates given on the latter point makes the average of doubtful value. It is noteworthy, however, that hay is fed along with grass and grain in quite a number of cases.

In general it may be said that the amounts of feed named here as being required for 100 pounds of gain on cattle are somewhat less than the amounts commonly stated. Thus, a frequently repeated rule for calculating the cost of gains on fattening steers in the feed lot is 1000 pounds of grain and 500 pounds of rough feed. The reports here sum-
marized on this point give an average of 924 pounds of grain and 428 pounds of hay.

Regulating the Roughage.

92 percent of our correspondents allow the steers all the roughage they will eat during the fattening period. Only 8 percent limit the amount of roughage.

41 percent of those who reply make a practice of varying the kind of roughage in order to make the steers eat a large amount. The remainder, 59 percent, do not follow this practice.

Number of Cattle Fed Together.

"How many steers do you run in a feed lot together?"

Of 417 feeders who answer this question, about one-third feed from 25 to 50 head in one yard, and one-third from 50 to 100; of the remainder, about one-half keep less than 25 and one-half more than 100 head in one yard. It should be added that the replies in most cases correspond to the total number of cattle handled by the correspondent. That is to say, as a rule all the cattle are fed in one yard, and the exceptional instances are those in which more than 100 cattle are fed, in which case the number recommended is usually 100 head or less. One of the most successful cattle feeders in Illinois reports that two carloads should be the maximum number fed in one lot, and that one load is preferable, his thought being that cattle are more quiet in small numbers and in uniform grades.