151 QUESTIONS
on CATTLE FEEDING
and MARKETING

New Delhi
AGRICULTURAL EXPERIMENT STATION———
AGRICULTURAL EXTENSION SERVICE, cooperating
IOWA STATE COLLEGE AMES, IOWA
Contents

Page

321—PLANNING THE FEEDING PROGRAM
Why farmers feed cattle

322—High- and low-profit years
Business trends affect feeding profits
Sources of cattle profits
How important is “margin”?  

323—How much margin is needed?
How to plan a feeding program

324—Six things to consider
Cattle should fit your feed

325—How many cattle do you need?
How much feed will it take?

326—Do you buy, feed or sell best?

327—What are your risks?
“Outlook” can help in planning

329—How good should you make them?
Going from “good” to “choice” takes feed and time

330—Effect of type, breeding, age and condition on cattle gains

331—A program to use roughage and market in spring

332—Marketing roughage in a longer feed
A good heifer calf program
Some short feeding possibilities

333—Yearlings to winter and feed on grass

334—Calves, yearlings, steers or heifers for feeding on grass

335—Making “good” beef on grass
Handling cattle on bluegrass pasture

335—SELECTING AND BUYING FEEDERS
Decisions buyer must make

336—Buying job important
Three points in good buying
Feeder cattle grades

Page

337—Feeder grades not well standardized

338—Standard U. S. feeder grades

342—Skill comes with practice
“Grade” vs. “outcome”

343—Seasonal trends important
Best time to buy

345—Feed situation influences buying time

346—Where to buy feeders
Sources of feeder cattle

347—The country dealer

348—Cooperative feeder buying

349—Direct buying

350—Feeder auctions
Obtaining native cattle
Buying on central markets

351—The inexperienced buyer
Details to watch in buying feeders

352—FEEDS AND FEEDING
“Feed nutrients” needed

353—“Nutritive ratios” for fattening cattle
What is a balanced ration?

354—Suitable cattle feeds
Good feed combinations

355—Feed requirements change as cattle fatten

356—GRAINS AND GRAIN SUBSTITUTES

356—What is a “full feed” of corn?
Replacement value of other feeds
Barley, wheat and oats for cattle

358—Value of rye and hominy feed
Molasses and its use in cattle feeding

359—Feeding corn silage

360—Corn cobs for fattening cattle

362—Hog “pickup” following cattle
White vs. yellow corn
Feeding value of soft corn
363—Figuring value of high-moisture corn

363—PROTEIN SUPPLEMENTS FOR CATTLE
Why need protein supplements? Amount of supplement needed

364—What proteins are worth
365—Substituting urea for proteins
366—Standard oilseed meals compared
What about mixing proteins? Time to start protein feeding

367—Feeding proteins on grass
Use of dehydrated alfalfa—It pays to feed minerals
Simple mineral mixture for cattle

368—Possible vitamin troubles
368—PREPARATION OF FEEDS
Preparation of corn
370—Grinding or chopping fodder
The silo and the cattle feeder
Whole, ground and chopped hay

371—ROUGHAGES AND PASTURES
Importance of roughages
Comparison of roughage values
Legume and grass silage

372—FEEDING CATTLE ON GRASS
Grass vs. drylot feeding
Rate and method of feeding grain

373—Types and kinds of pasture compared
374—Starting grain-fed cattle on grass
375—Essentials for good grass gains
The cause of bloat on pasture

375—THE FEEDER AND HIS CATTLE
Care of cattle on arrival
376—Prevention of sickness and loss
377—Baking soda may help
Vaccination against shipping fever
Other causes of death losses

378—Bloat in the feedlot
Foot-rot prevention
379—Fighting flies and parasites
Care and regularity in feeding
380—Using fall feed
Starting cattle on feed
382—Starting cattle on new corn
383—Turning into the cornfield
Starting cattle on the self-feeder

384—How often to feed
Dehorning cattle

385—Mechanical curriers
Breeding feeding heifers
Does it pay to spay?

386—Importance of salt
Water requirements
Bedding is needed

387—LOTS, SHELTER, EQUIPMENT, LABOR
Lot and shelter space needed
Paving feedlots

388—Feed bunk dimensions
Shelter needed
Self-feeders practical
389—Ways to feed hay
Feedlot fence
Shade helps gains

390—Saving labor in feeding

391—PROBLEMS IN CATTLE MARKETING
Marketing problems defined
Factors feeder can control

392—What determines the price?
393—Short-time price fluctuations
The feeder's defense

394—Available market outlets
How Iowa cattle are sold
How cattle prices are made

395—The best way to sell cattle
396—Direct marketing expanding
Why feeders sell direct

397—Choosing the best market
398—Selling on yield and grade
Importance of good marketing
The question and answer method has been used in the preparation of this little book, not because this was the easy way to write it, but because most of us seem to look at our problems one at a time.

The 151 questions included are not all that might be or have been asked me. But they are the ones that have been brought to me most frequently at feeders’ meetings and by mail in recent years. Some are fundamental; others are perhaps of minor importance but apparently of general interest.

You will find that many of the questions deal with marketing. We are thinking now of marketing in the broader sense—the purchase of cattle as well as the sale. With these questions on marketing are many others relating to feeding and management.

No claim is made for originality in the answers. They are gleaned from experimental trials, experience, observation or whatever reliable sources might be available. Frequently they have been “lifted” (usually without credit) almost word for word from other publications.

Your questions and our answers are presented informally, in related sections, and are indexed; we hope this will make them easy to find. We also hope they will be of some use, particularly to the inexperienced cattle feeder.

Rex Beresford
1. Why do farmers feed cattle?

The obvious answer is that they hope to make a profit above the cost of the cattle and the value of the feeds used. A number of other perhaps equally important factors help keep men in the feeding business.

(1) Cattle feeding can be made to furnish a market not only for corn but for large amounts of roughages, crop residues and pastures and forage that are hard to market in any other way. Because you can use roughage in cattle feeding, it is possible to maintain good crop rotations. These rotations with the manure provided from cattle feeding make for high crop yields and conserve the soil. There is a lot of truth in the remark of the cattle feeder that on the average he didn’t make much money feeding cattle, but had to feed cattle in order to make money farming.

(2) While average gross returns per $100 worth of feed fed to cattle are less than from hogs or from dairy cows, the larger amounts of feed used and volume of business done, the quicker turnover, the greater flexibility of the enterprise, relatively lower labor and equipment requirements and possible seasonality may combine to bring greater net farm income where some cattle are fed than where all the farm resources are used in more intensive enterprises.

(3) Cattle feeding usually fits in well with hog raising—and farmers generally make money on hogs.

(4) While, on the average, direct cattle feeding profits are not large, good profit years come often enough to keep a man trying!
2. How often do the good years show up?

The really good seasons seem to come along just a little oftener than the really bad ones. In the past 35 years the top years for cattle prices and feeders' returns were 1919, 1928, 1935, 1938, 1946, and the "granddad" of them all, volume considered, 1947. The really tough years were 1921, 1933, 1936 and 1944, and none of the price-controlled war years were too good.

Up and down cycles in cattle numbers have been fairly regular. Profit cycles have been much less so, because they are affected not only by supply of cattle but by such things as drouths, wars, and general price level trends.

3. How do general price and business trends affect cattle feeding profits?

Profits come easy in cattle feeding as in most other lines during long-continued upswings in business, employment, wages, income and price levels. It is during downswings that the going gets tough.

4. Where do profits in cattle feeding come from?

Strictly speaking, all direct returns come from two sources — the spread or margin between buying and selling prices, and the gain in weight. More broadly, profits come from a combination of sound planning of the feeding program, proper timing, shrewd buying, skillful feeding and smart marketing.

5. What do you mean by "margin" or "spread," and how important is it?

To use the term exactly, "margin" should cover all the costs of the feeding enterprise, including first cost of cattle, feeds, interest, labor, depreciation and overhead. In common usage, however, margin means the difference between buying and selling prices, and it is so used here.

It is rarely possible to feed cattle profitably without a reasonable margin. It can be done sometimes, especially with calves or even yearlings when feeds are relatively cheap and cattle prices high: On the other hand, high feed prices
may make weight gains cost more than they bring so that "margin" becomes the sole source of possible profit.

6. How much margin do you need to break even?

There is no safe rule-of-thumb margin figure. Required margins vary widely with the different kinds and grades of feeders; with varying relations of feed and cattle prices, length of feeding period, the skill of the feeder, feeding conditions and a number of other factors.

When feed costs are the same, the better grades of cattle can be handled on less margin than the plainer kinds, because of higher expected selling price for the gain in weight. While big cattle at times can get by on less margin than light ones, because of the greater initial weight on which the spread applies, usually most of the profit on the big cattle must come from margin.

Here is how to arrive at the required margin:

Figure the pounds of gain required to change a given feeder into a finished marketable steer. Estimate the amount and cost of feed required to do the job, plus the necessary allowance for risk, interest and other overhead charges (usually about 15 percent of feed costs). Add your first cost of the steer to the feed, overhead and marketing costs, and divide by your final weight. This gives you the required break-even price. The table under question 10 will be of help to you in doing this.

7. What do you mean by a "cattle feeding program"?

Some in-and-out feeders work on a catch-as-catch-can basis trying to take advantage of such factors as cheap feeder cattle, a big corn crop, or expectation of a high fat-cattle market. The trouble with the in-and-outer is that he is too often in when he should be out, and out when he should be in.

The majority of the regular and more successful feeders follow pretty regularly year-to-year feeding programs which they have found best adapted to their average conditions. Of course, they have to change their plans to meet broad
changes in conditions, as well as make quick shifts to meet emergencies. But beef cattle are adaptable “critters,” and good cattle feeders are resourceful men.

8. What are the main factors to be considered in determining the program a feeder should follow?

(1) The kinds, amounts, proportions and relative prices of available feeds which the feeder wants to market through cattle.

(2) The time or season in which he wants to market his cattle.

(3) The feeder's relative experience and ability in buying, feeding and selling.

(4) The amount of risk he can afford or is willing to take.

(5) The comparative availability and price of various kinds and grades of feeder cattle.

(6) The outlook—that is, the feed situation and price level, supply and demand prospects, employment and business situation, and the trend or direction of the general price level.

9. Why “get cattle to fit your feed”?

The first question in planning your feeding program is, what feeds do you have that you want to market through cattle?

Are you interested chiefly in finding profitable use for hay, or a silo full of corn silage? Is pasture utilization your problem, or are you mainly concerned in using your corn? What kinds, amounts and proportions of feeds do you want to use? It is smarter and easier to get cattle to fit the feed than to try to make the feed fit the cattle.

Most successful farmer feeders feed cattle primarily for the purpose of marketing the feeds they produce. The number and kind of cattle they buy is decided largely by the feeds to be used, both kinds and quality.

The really smart feeders build their feeding program around their roughage supply, with corn an important but secondary
consideration. They try to get cattle suited to their roughage situation. They buy no more than they have roughage for. They have on hand or in sight enough corn to finish whatever program they start. This forehandedness avoids getting caught with feed gone, advancing feed prices, and forced marketing of unfinished cattle. It helps get the best possible returns from the feeds they have.

10. How many cattle do I need to use my feed—or how much feed will I need for my cattle?

A study of farm business association cattle feeders’ records showed that it took the following average amounts of feeds or their equivalents for the various listed feeding programs.

Some feeders were much more efficient than the average. Others were well below average. Feeders who used silage

<table>
<thead>
<tr>
<th>Kind of cattle</th>
<th>Mostly Drylot Feeding</th>
<th>Pasture Feeding</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>To gain lbs.</td>
<td>Corn br.</td>
</tr>
<tr>
<td>Good to choice 2 yr. 880 lb.</td>
<td>320</td>
<td>49</td>
</tr>
<tr>
<td>Common to med. 2 yr. 860 lb.</td>
<td>260</td>
<td>33</td>
</tr>
<tr>
<td>Good to ch. short-fed yrling 670 lb.</td>
<td>370</td>
<td>50</td>
</tr>
<tr>
<td>Good to ch. long-fed yrling 600 lb.</td>
<td>490</td>
<td>64</td>
</tr>
<tr>
<td>Common to med. long yrling 660 lb.</td>
<td>300</td>
<td>37</td>
</tr>
<tr>
<td>Good to ch. str. calves 440 lb.</td>
<td>560</td>
<td>63</td>
</tr>
<tr>
<td>Good to ch. heifers 420 lb.</td>
<td>390</td>
<td>44</td>
</tr>
<tr>
<td>Good to ch. yrling 650 lb.</td>
<td>430</td>
<td>50</td>
</tr>
<tr>
<td>Medium yearling 600 lb.</td>
<td>300</td>
<td>32</td>
</tr>
<tr>
<td>Good to ch. str. calves 450 lb.</td>
<td>550</td>
<td>52</td>
</tr>
<tr>
<td>Medium str. calves 420 lb.</td>
<td>430</td>
<td>41</td>
</tr>
</tbody>
</table>
or made more use of pasture saved on corn. Better gains and quicker finish came with use of higher than average protein feeding. Longer feeding and higher finish took relatively more corn.

11. What do you mean by "timing" and why is it important?

Most successful feeders choose cattle and feeding plans to fit their proposed marketing time. They winter-feed plain or medium cattle for the late winter or spring markets. They head choice long-feds for summer and fall, and short-feds for fall and early winter.

Seasonal price trend charts are not infallible guides. Seasonal highs and lows in prices for the various grades do not always fall on the same dates each year nor show the same spreads in prices of between grades, but the seasonal trends on both feeder and fat cattle are regular enough so that the feeder who goes with them rather than against them is right much more often than wrong. The two graphs showing the 11 years' seasonal price behavior of the four grades of slaughter steers at Chicago and of good to choice and common to medium feeder cattle at Omaha are worth a good deal of study by the careful planner. (Pages 343, 345.)

12. What does experience, knack or know-how have to do with deciding your program?

Some good judges and shrewd traders make most of their money the day the cattle are bought. Some poor buyers are such good handlers and feeders that they can feed themselves out of a hole. Some make their money mainly by smart marketing. The man who can do all three is the cattle feeding wizard of his community.

The good feeder may work best with better grade calves or yearlings where good feeding and management really count. The smooth operator who can buy and sell may do best with quick-turn cattle if he can afford the risk. The common or garden variety of farmer-feeder who perhaps mistrusts both his buying ability and feeding skill, but does
have a lot of roughage and a little corn he wants to market through cattle, is pretty safe with the common or medium grades headed for spring market.

13. What are the risks in cattle feeding?

Some people say that cattle feeding is not a business, but a disease or vice—something within the law in which you can engage if your wife objects to poker or the races, but risky. It is true that there are risks in cattle feeding as in practically all types of agricultural enterprise.

In addition to the usual risks from disease, lightning, fire and theft, there are some others perhaps more important. The big risk lies in the field of price: whether the cattle will sell with enough margin to cover first cost, feed, operating and overhead expenses.

Risks vary with the weight, grade and kind of cattle, and the feeding program. Usually there is less risk in calves or lightweight cattle than in heavier. The note at the bank is smaller, though on occasion the longer time involved in their feeding adds an element of time risk. Plainer grades of cattle usually cost less, are fed more cheaply and for relatively shorter time, and so involve less risk. Better grade short-term, heavy cattle require large investment and expensive feeding, and profit or loss depends almost entirely on margin between buying and selling prices.

When the going is good, these cattle are most profitable of all. But no one who cannot afford occasional loss should feed them. You and your banker will have to be the judges as to how much risk you can afford. The banker may not always be too good a counselor, as "cattle paper" is of good repute so long as the prospect has the feed.

14. How important is outlook, and how and where can reliable information be obtained?

Future cattle markets depend mainly on the two factors of supply and demand, and on general price level trends. No one knows when he embarks on a feeding venture just what
these factors will do to him. The best anyone can do is to gather and weigh all available information as to trends, make as complete a picture of the situation as he can and then try to "cut his coat according to his cloth."

Here are some of the things for you to watch:

(1) The feed situation; a big corn crop plus average or better roughage production means heavy purchases of feeder cattle and heavy marketings later on.

Add to plentiful feed supplies a currently successful feeding year—and caution is indicated. That combination boosts feeder prices and brings heavy marketings of fed cattle when the fresh crop of cattle is ready.

Large feed supplies tend pretty quickly to increase not only fat cattle marketings but marketings of competing meats as well, particularly pork. So feed supply is one of the main things to watch.

(2) Current reports of feeder cattle movements: Government reports are a good source of information on this. They show direct, central market and total shipment of feeders into the eight Corn Belt states on a monthly and cumulative basis. They give a breakdown on weights and kinds going out of four central markets on a weekly and cumulative basis. They keep you up to date on prices and on spreads between grades, weights and kinds.

All this helps in figuring what the other fellow is buying. This can help both ways—at the start and again at selling time—because of lessened competition if we take the kind the other fellow doesn’t want.

(3) The outlookers in Washington and we at Iowa State College frequently guess wrong as to how far prices may go, but we have a fairly good record on direction. Usually our facts are fairly straight and you can start with them and go on from there in drawing your conclusions.

(4) Supply is never more than half the picture, and demand is influenced by many things. But employment, wages, national income, and indications of the general direction of
business and price levels up or down are matters of real importance to the cattle feeder.

15. How long shall I plan on feeding or how well shall I finish my cattle?

This depends a lot on the kind of cattle, the price of feeds, proposed time of marketing and on what you want to gamble the market will do.

Here is the formula for figuring the answer on any lot of cattle:

Estimate the present weight and per head value of your cattle. Estimate the amount and value of the feed it will take and the gain you will get by the proposed 30- or 60-day longer feeding. From these estimates you can figure what price the cattle will have to bring to make it pay to feed on. Then make your bet.

Example: You have 1,000-pound steers grading "good" and worth on the present market $17 per hundredweight or $170 per head. To go 60 days and put on 140 pounds additional weight it might take 25 bushels of corn at $1.25, or $31.25; 100 pounds supplement at $3; 150 pounds hay, $.90; and salt and minerals, $.30—or a total feed bill of $35.45 per head. So in 60 days your 1140-pound steer costs you $205.45 and you have to get $18.02 per hundredweight to break even, plus whatever you need for overhead and risk. In times of high feed costs it usually takes a combination of rise in grade and a market advance to justify going beyond low choice slaughter grade.

16. How much feed and time does it take to go from "good" to "choice"?

A study of Corn Belt feeding records showed this: A 400-pound choice feeder calf full fed 6 to 7 months doubled in weight and reached good slaughter grade. It took 3 months longer feeding and three-quarters as much total feed as had been used for the first 400 pounds to put on the additional 200 needed to make him grade choice.

With yearlings a full-fed 650-pound choice feeder took 120 to 130 days to put on the 280 pounds required to make a good
slaughter steer. It took 80 to 90 days additional feeding to put on the additional 170 pounds needed to make him grade choice, and 80 percent as much total feed to put on the last 170 pounds as it took for the first 280 pounds.

Choice 2-year-old feeders took 80 to 90 days to make the 200 pounds of gain required for good slaughter grade. It took 80 days more and 1 1/3 times as much feed to go the next 150 pounds that changed them from good to choice slaughter grade.

17. What difference is there in the ability of different grades and types of cattle to make use of feed?

Gaining ability and efficiency in the use of feed are inherited to a considerable degree. There is wide variation between cattle of apparently very similar types on these characteristics. In general, however, stretchy, good-boned cattle eat more, gain faster and make more efficient use of feed than do fine-boned pony-type cattle of similar age.

Plain or off-bred cattle, if roomy, thrifty and not stunted, may gain about as well as better bred ones, especially on a short feed. But they may put it on in the wrong places!

18. What difference is there in efficiency in the use of feed in cattle of the same breeding but different ages?

With cattle of the same type and breeding and fed to about the same grade or finish, calves are the most efficient users of feed. A 3-year trial at Nebraska showed it took 25 percent more feed for yearlings and 50 percent more for 2-year-olds per hundredweight of gain than for calves.

Old cows were "hay burners" and took twice as much feed per pound of gain as did their yearling heifers. But older cattle can handle some types of feed such as stalk fields, whole corn fodder or coarse hay better than calves do.

19. What kind of cattle make the best gains on grass?

Big thin cattle make the most gains per head and improve fastest in condition. Yearlings are second and calves are last
on these points. But on the basis of gains per 1,000 pounds of starting weight and per acre of grass or feed units used, calves are first, yearlings second and 2-year-olds third.

20. In what condition should cattle be to make best use of grass?

So called "green" cattle, relatively thin, make best gains and best use of grass regardless of weight. Cattle too well wintered, or fleshy, had better be fed grain from the start and pushed along if turned on grass.

Yearlings or big cattle with too much condition had better be finished in drylot and the grass used some other way. Calves can stand relatively more flesh, or condition, and still do all right on grass and grain combined.

21. It's November first. It looks as if I'd have 60 or 70 tons more silage and 10 or 12 tons more clover hay than I'll need for my milk cows, and 400 or 500 bushels more corn than I'll need for the hogs. I've never fed cattle. I can't afford to risk too much, but I'd like to try a few. I want to winter feed and be sold out in time for spring work. What and how many should I get?

Better cut your teeth on some plain cattle. You might try 700- to 850-pound steers or perhaps 600- to 750-pound "heiferettes." Bigger, rough, plain steers would do. All of these can be made to fit the feed and the marketing date. Color and shape are not very important for this deal, but the purchase price is. For good-doers, pick cattle with bone and middles.

Better talk it over with your commission man or feeder dealer and let him get them for you. Or, if you want to learn it all at once, you can pick up some sale-barn cattle. Feed first for cheap roughage gains with 18 to 25 bushels of corn at the finish. Get sold out by May 10. Fifteen to 20 head will use your feed, depending on starting weight and condition.
22. This fall, I'll have some stalk fields, 150 tons of corn silage, 25 tons of alfalfa hay and can get what corn is needed, but I'm mainly interested in marketing the roughage. I want to winter feed and can go as long as necessary but have no grass to use. What would you suggest?

If you want to save on corn and quit feeding in spring you might try around 40 to 45 head of medium to good 750- to 800-pound steers. Let them glean the stalks. Full-feed silage and 3 to 5 pounds of hay all the way, with little or no corn the first 60 to 90 days. Then work onto a full feed of corn. Figure 25 to 30 bushels per steer. Use plenty of protein (1½ pounds per day). Sell by June 10.

If you can go until July or August you might try 600- to 700-pound good to choice yearlings instead. Handle them the same way until the silage is gone, then finish on corn and hay to midsummer. It will take 40 to 50 bushels of corn per steer. The longer you go the more it will take—about 10 to 12 bushels for each extra 30 days.

23. I have some oats, enough corn and plenty of good legume hay. I can't stand too much risk and don't want to feed too far into hot weather. What fits this situation?

Good to choice heifer calves 325 to 400 pounds weight use oats better than any other kind of cattle. Figure 10 to 12 bushels of oats and 18 to 20 bushels of corn per head. Feed the oats and hay first, then work onto corn and cob and finally shelled corn by February or March. They should be ready to go by late spring or early summer. You will need pretty good shelter and lot conditions.

24. It's late August or September. Looks as if I'll have a couple thousand bushels of corn more than I'll need to finish out the hogs, and maybe 20 to 25 tons of hay. I expect a good market until the first of the year. I can afford to risk a little. Want to be sold out and go to California right after New Year's. What should I buy?
(a) You might try yearling heifers, good or better grade, 600 to 675 pounds, to full corn feed for 90 to 120 days. You have feed to handle perhaps 40 head.

(b) Or you could handle 35 head of 900 to 1,000 pounds or heavier, good to choice fleshy steers for a 60- to 100-day full feed.

Don’t monkey with stalk fields or fall pasture too long with either of these. Better study the outlook, watch the market and sell when the cattle are ready. If it doesn’t pan out, don’t ride a little loss into a big one by hanging on too long. These are “poker” cattle. If you make a profit it will mostly come from margin. Most years it’s the early bird that catches the profit on these deals.

25. It’s March or April. I have cleaned out my winter-fed medium cattle at a profit. There’s not much spread on the market between medium and choice slaughter steers. I have some corn and a little hay left. Looks as if well finished cattle may be scarce this summer. What’s a good bet?

You might buck the packers for some good “shapy,” half-fat or warmed-up 900- to 1100-pound steers that you can raise a grade or two in 70 to 90 days of full feeding and take advantage of the widening spread between grades that comes in the summer. Don’t get caught with poor doing or burned-out cattle. Again it’s a speculative enterprise.

26. I have 40 acres of good brome-alfalfa pasture for next spring and I want to make the most of it in producing finished beef for next fall or early winter. I have stalk field, some fall pasture, 80 tons of brome-alfalfa hay and 1,500 bushels of corn. What are some of the possibilities?

First choice would be 30 to 35 good to choice thin yearling steers, 550 to 650 pounds. I would let them clean up stalk fields and fall pasture, winter on hay with a little corn and cob meal to gain $\frac{3}{4}$ to 1 pound per day. Then I would pasture 60 days without corn, feed corn and cob on grass until grass
was done, with 70 to 90 days in drylot to finish. Or you could graze without grain until new corn was ready and drylot for 90 to 120 days.

If you want to finish earlier you can feed corn all the way on grass with only 30 to 40 days drylot at the finish.

27. How would steer calves work for this grass program?

Steer calves don’t do as well at cleaning up stalk fields and fall pasture, and they take more grain and better care than the yearlings to winter well. Also they tend to grow rather than fatten on grass alone. They should be fed more corn in the winter and fed corn straight through on grass if they are to be ready by December. They work all right if you are set to take care of them and make more pounds of beef per feed unit than yearlings or older cattle.

28. What about big steers to use grass?

Big, 900-pound, green cattle bought in the spring or bought at 800 to 850 pounds in the fall and wintered cheaply will fatten more on good grass alone than will either yearlings or calves. Their growth is more nearly made so they tend to turn grass into fat. They can be carried on grass alone until July or August, or even later if it is good grass, and be given a quick finish for November or December market.

29. How about heifers for a grass program?

You can’t make use of a full season of grass as well with heifers as with steers. But some men make them work out pretty well. Light yearling heifers wintered cheaply or bought out of the southwest in the spring will work out well if you are sure not too many calves will show up. You had better feed corn straight through and finish for 20 to 30 days in drylot by August or September before they lose their shape. The same program works fairly well for heifer calves—grain all the way on grass with a short drylot finish.
They should be ready to go 6 weeks to 2 months ahead of similar steer calves.

30. I have a lot of pasture, a good deal of hay and very little corn. I don’t want to fool with a cow herd. What kind of program fits this situation?

Better try the Missouri plan. Buy good or good to choice calves or thin yearlings in the fall. Winter on hay and pasture saved for winter plus protein supplement. Graze all summer and finish with 10 to 15 bushels of corn and sell at good grade. If you started with calves, winter again, graze the second summer, short-feed and sell. Some of our southern Iowa grass men are doing a good job of marketing pasture this way. It takes a good all-season grass to do this job well.

31. I have a lot of pretty good bluegrass pasture. Cattle seem to make good gains on it in spring and early summer, but slow down in July and August on grass alone even though there is lots of dry grass left. Total season’s gains don’t add up too well. Should I feed “cake” or grain to keep up the gains?

The best part of a straight bluegrass crop, so far as cattle gains are concerned, is usually harvested by mid-July. The protein content goes down and the grass gets less palatable, so that cattle eat less of it when it gets dry, and gains slow down until fall growth starts. If you are going to finish out your cattle, better start corn and protein feeding on pasture or put them in the lot on feed when grass gains slacken. If you are going to sell them as feeders, 1 to 2 pounds of protein cake per day on pasture will help through the slack pasture period. Sudan, lespedeza or other supplemental pasture may be the answer, or perhaps you need a pasture improvement program that will get some legumes in with your bluegrass.

SELECTING AND BUYING FEEDER CATTLE

32. What are the decisions a feeder buyer must make?

Having decided on a feeding program and the kind of
cattle to be fed, the feeder's next job is that of obtaining
the cattle. He must decide on when, where and how to buy.

33. How important is the feeder buying job?

A good buying job puts the cattle feeder well on the way
toward successful feeding operations. A poor one can be
a handicap hard to overcome. Most of the money lost in
cattle feeding is lost the day they are bought.

34. What are the essentials in a successful feeder buying
venture?

1. It's important that you get the kind, age, weight and
grade of cattle you need to fit your feeding situation and
program.

2. Be sure you buy the cattle in line with going prices,
or "at the market" for their kind and grade.

3. Give weighing practices, fill or condition, health,
shrink, purchase and transportation costs all due considera-
tion in figuring your valuation or prices.

35. What do you mean by grades of feeder cattle?

Much progress has been made in establishing government
grades and in the grading of beef. Prime, choice, good, com-
mercial and utility carcass grades have been set up by U. S.
standards. Considerably closer and more elaborate grading
systems, but based primarily on U. S. grades, are in use
by slaughterers. But live cattle are not graded officially,
nor are they bought or sold on grade except as the buyer
estimates their grade out-turn in the beef as an important
factor in figuring their value.

Custom and the USDA agencies have established certain
designations and terms that are well understood by men
familiar with the markets.

These are a convenience in describing quality, quoting
prices and reporting the market. "Prime," "choice," "good,"
"medium" or "commercial," and "common" or "utility" are
the terms used in describing the relative desirability of
slaughter steers. These are based on the degree of quality, beef conformation, and condition or degree of fatness of the cattle, and imply that the carcasses obtained from them should be of corresponding grade.

Starting with the top, feeder cattle are listed as "fancy" or "select," "choice," "good," "medium" or "fair," "common," and "inferior" feeders. Theoretically cattle of the various feeder grades are supposed to make cattle of the corresponding slaughter grade when properly finished. But in practice feeder grades are based almost entirely on the apparent relative beef breeding, type, condition and conformation of the cattle.

36. Are feeder grades well standardized?

The USDA Market News Service endeavors to adhere strictly to its reporters' conceptions of the grades in its reports on all markets. But cattle grading is a matter of judgment and opinion. Unfortunately, also, grade ideas are not entirely uniform as between markets and sections of the country in other than government reports. Scarcity tends to weaken grade distinctions. There are some seasonal variations. Cattle graded only good in the fall may be rated choice on some markets in the spring. There are, of course, variations from low to high within a grade, and "liners" that might go either way.

Most feeder cattle transactions are individual affairs between the seller and buyer or their agents, and in most cases the question of grade as a technical item does not enter the deal. The buyer is interested not in the exact grade but in whether the cattle will do the job he wants done. The exception is in order-bought cattle where specified grade is a part of the contract or bargain.

A knowledge of grade terms, government standard grades as used in market reporting, and common trade variations of them is a valuable item in the successful cattle feeder's equipment.
Figure 1.

Feeder Steers—United States Grades

(Illustrations from USDA)
Figure 2.
Slaughter Steers—United States Grades.
(Illustrations from USDA)
37. How can one obtain knowledge and skill in judging of feeder and fat cattle grades?

It is practically useless to attempt to describe the cattle covered by the various grades. The preceding illustrations of the grades of feeder calves and slaughter steers, furnished through courtesy of the USDA, are of some help. But familiarity with feeder cattle grades and other indications of probable outcome can be obtained only through experience with the cattle themselves. Observation and study at the markets and packing plants, in your own and neighbors' feedlots, and at cattle and beef grading demonstrations, all will help.

38. Are outcome and ability to gain reliably indicated by feeder grade?

Not necessarily. Most cattle feeders can pick the best ones from a drove of finished steers. Few even among the old hands are as sure of themselves when it comes to picking feeders. No lot of cattle, however well sorted on the basis of grade, will feed out with complete uniformity. Ability to gain and develop satisfactorily is to a considerable extent inherited. From the standpoint of outward indications, ability to handle feed and to gain is tied much more closely with roominess, length and depth of barrel and ruggedness of bone than with standard beef conformation. Outcome from the standpoint of final slaughter grade is more easily estimated than is gaining ability.

A good many shrewd and experienced cattlemen make a practice of buying at the low end of the good or choice grades, but selecting as far as possible for signs of good doers with the expectation that they will be able to raise the grade of a fairly high percentage in the feeding process. Their idea is that they save some money and get few, if any, more feeding counterfeits than when they buy the tops.

It is this uncertainty of outcome of cattle of unknown origin that makes many feeders of better grade cattle willing to pay a premium for name brands and leads them to
Fig. 3. Seasonal movement of prices of fat cattle at Chicago, 1929-1940.

go back year after year to producers or sources of cattle that have done well for them.

39. When is the best time to buy feeder cattle?

The old answer to that one, "buy when they are cheapest," sounds pat, but may not be entirely true in all cases even if your crystal ball is working and you can call the turn exactly. Your feed supply and feeding program have to be considered. From the standpoint of both price and selection, the best time to buy feeder cattle in most years is during the season of heaviest marketing for the particular kind of cattle wanted. Weather and feed conditions as well as cattle numbers in the various sections of the range territory cause considerable variation in the number of cattle sold and in marketing procedures from year to year. But there is a rather definite pattern in the way range cattle come to town.

Dry cows and older steers are gathered first. Usually these kinds begin to come in late July and August from Kansas, Oklahoma and other southwestern pastures. In good grass years a high percentage are grass-fed and go
direct to the killers, but Corn Belt feeders may take a good many for a short feed and quick turn. The big cattle are followed more or less in order by yearling heifers, yearling steers, and finally by the calves and cull “wet” cows.

The seasonal marketing of the range cattle crop moves northward much as does the wheat harvest, but there are over 700 million acres of range-land pastures with wide variations in climate, altitude and feed, so there is much overlapping of marketings.

Increased production of winter feeds, wider use of protein cake, and increased acreage and use of wheat pastures and sorghums or row crops have tended to spread out marketings and make possible the purchase of almost any kind of cattle at a price the year round. This, together with changes in feeders’ programs, has resulted in considerable change in the seasonal feeder buying pattern. Where 20 years ago 74 percent of Corn Belt feeder purchases were made in the fall, 4 percent in winter, 19 percent in the spring, and 3 percent in the summer months, in recent years the percentages have run around 53 percent from September to November, 17 percent from December to February, 15 percent from March to May, and 15 percent from June to August.

There are still pretty clearly defined seasonal trends in feeder cattle prices. The chart (fig. 4) showing the 11-year average behavior of good and choice and of common and medium feeder steers on the Omaha market shows these trends. While counteracted to a considerable extent during long-time upswings in the general price level, and accentuated in periods of declining prices, there are pretty definitely lower prices in the fall and higher ones in the spring in most years on all grades of feeder cattle. The seasonal spread is greater on the lower grades than on the good and choice grades because of the increased competition from slaughterers for the limited supply of plain cattle in the spring as well as the demand from men with “grass fever” for cattle to graze.
In general the time to buy heavy steers or yearling heifers for a quick turn is in August and September. Yearling steers to clean up fall pasture and stalk fields and then be winter-fed are best bought in late September and October, calves in October and the first half of November, and plain cattle for winter feeding in November and early December. Those are the periods when such cattle are being marketed in largest numbers.

40. What factors other than seasonal supply and average seasonal price trends do you need to consider?

Individual feed situations may alter the picture for the buyer. The man with much early fall feed or unused pasture may do better to buy in August or September, or in July if a dry spot develops in some range area, than to let the feed waste while waiting for fall bargains which may not materialize.

The over-all feed situation may have an important bearing on price trends. In years of big feed supply, especially corn, early buying may be advantageous because a big corn crop increases and stretches out the demand for feeders.

In soft-corn years there usually is a rush to buy and a quick boom in short-turn cattle just after the first killing frost, with opportunity to make better buys later after the feed has been harvested. This is most likely to be true for
light cattle on a longer feed. In years of short corn crops, late-bought cattle usually are cheapest.

41. Should I buy cattle in the fall to graze or feed on grass next summer or should I wait until spring to buy?

On the average even the man who wants cattle primarily to graze or to feed on grass can do better by fall buying than by waiting until spring, provided he has the feed and facilities to winter them at reasonable cost. But wintering with no gain is an expensive operation under most conditions.

Sometimes big cattle intended for grazing may be wintered cheaply enough on stalk fields or other low-grade roughage to show a net saving as compared with spring prices, even though little or no gain is obtained. But with calves or yearlings, unless the cattle can be fed and cared for well enough to gain from $\frac{1}{2}$ to 1 pound daily, it may be cheaper to wait until spring to buy.

For example, 420-pound native beef calves were purchased at $14 per hundredweight in November 1945, for use at the Albia experimental pastures the following spring. They were wintered under not too satisfactory conditions to gain 26 pounds per head. When feed costs, death loss and labor were added to first cost, these cattle stood at 21 cents per pound the first of May.

42. Where and how should I buy feeders?

The question as to where and how best to buy feeders is perennial. There is no short answer except the obvious and unsatisfactory suggestion to buy the way you can get the kind of cattle you want under the most satisfactory conditions and for the least money.

43. What are the sources of feeder cattle?

There is a wide choice as to geographical sources of feeders. Of the 770 million odd acres of range and pasture lands in the United States, more than half is devoted mainly to the production of feeder livestock. In addition to the natives, or cattle raised on Corn Belt farms, feeder cattle
have come into Iowa from the ranches of Florida and south Texas, from those of North Dakota and Montana, and practically all the states between, as well as from Canada and Old Mexico.

More practically the sources of feeder cattle are the central markets and the directs which by-pass the central markets and come through country feeder dealers, feeder auctions, order buyers, and, of course, by direct purchase by the individual feeder from the producer. In recent years the percentage of feeder purchases coming into Iowa direct as compared to central market buying has run roughly 35 to 40 percent of the total feeder movement. The long-time trend is upward for direct buying. Years of big feeder supply in relation to the corn crop, coupled with falling prices, see more feeders coming through the central markets. Short supplies or strong demand sends more feeder buyers to the range.

44. What is a country dealer and how does he operate?

A sizable part of the feeder cattle coming into Iowa is handled by dealers who operate outside the central markets in various ways. In general they assemble orders, buy in quantity and shape up the cattle in lots to suit their patrons. Some operate mainly as order buyers, buying only to fill orders on hand or in prospect, on a fixed per-head fee or percentage basis. Others operate more speculatively, taking ownership in the cattle, assuming all risks and selling for what the traffic will bear. Such dealers often buy on contract from producers a considerable time ahead of delivery.

Many dealers are or have been experienced cattle feeders who have made contacts in certain range areas in buying for themselves, and gradually have expanded into buying for their neighbors and others in a rather restricted territory. A few operate on a much larger scale, maintaining a staff of buyers in producing territory, with sorting and sale yards and salesmen at points convenient to heavy feeding territory.

Most country dealers handle cattle mainly on the basis of range weights—that is, the buyer pays for the original weight
at the range loading point and stands the shrink or loss in weight incurred in shipping. The deal may include freight paid to the dealer’s yard or even to the buyer’s station or farm, or the freight may be added to the purchase price. These are points for the buyer to watch. But in the long run it makes little difference how they are figured so long as they are handled fairly. They are all part of the cost of the cattle and must show up somewhere, either “as is” or as part of a higher purchase price.

45. What about cooperative feeder buying organizations and feeder pools?

It has been the dream of both the feeder and producer that substantial savings might be made in such items as freight, yardage, commissions, fill and dealers’ margins if a cooperative direct-from-range-to-feedlot system that would function to the satisfaction of both parties could be devised. Attempts have been made to work out such systems. A number of difficulties, not the least of which appears to be human nature, have hampered their operation. One inherent difficulty is that the producer of feeders must (or at least greatly prefers to) gather and deliver his entire crop of a certain class of cattle, such as calves or yearlings, at one time. Moreover he has the excusable desire to know what he is getting for his cattle well in advance of delivery, and he wants his money on the barrel head when delivery is made.

On the other hand, the average feeder wants a certain limited number of cattle of a certain kind, grade and weight. He in turn desires the privilege of final inspection and sort before he pays for them.

So to stay in business most so-called feeder cooperatives have had to assume the functions and risks of feeder dealers and take ownership of the cattle for resale in lots to suit their customers. This makes it necessary to collect sufficient margins for sinking funds to take care of possible losses. It involves the establishment of yards and facilities for handling the cattle at points convenient to the feeding areas. For these
reasons most buying cooperatives have had to depend more on the extra services they try to render their customers than on the cash savings they have been able to make.

A number of cooperative commission organizations located in the central markets maintain order buying services or departments. They operate in various ways, such as assembling orders and buying or contracting cattle in central markets or elsewhere to fill orders as received.

Occasionally local groups of feeders have pooled their orders and selected a committee or engaged an experienced buyer to make quantity purchases direct from producing areas in whatever manner seemed most feasible. All of these schemes and methods have worked more or less satisfactorily at times. But the feeder's dream of a simple, money-saving, and universally satisfactory system of cooperative feeder buying has not been completely realized, for rather obvious reasons.

46. How does direct buying by individual feeders work out?

Many experienced individual feeders who feed considerable numbers of cattle, who have taken the time and effort to become familiar with certain producing areas and who have established contacts with producers, follow this method. In a number of cases mutual understanding and confidence have been established to the point where shipment is made without inspection. The feeder knows from experience the quality of the cattle and how they feed out, and has confidence in the producer's description as to quality, weight and grade. Satisfactory price is a matter of mutual agreement on the basis of the going market. Such an arrangement can be highly satisfactory to both producer and feeder.

On the other hand, probably the most unsatisfactory and expensive method of buying feeder cattle is that of the individual "vacation" buyer, unfamiliar with values, weighing conditions and shipping costs, who on a hurried trip induces the range producer to fill his one- or two-car order by over-bidding.
47. Are commercial feeder auctions good places to buy feeders?

There are wide variations in the set-up and methods of conducting commercial feeder auctions. Many are conducted on a consignment basis and on a satisfactory plane of sound business dealing. Others are involved in quite complicated speculative procedures. In general the auction atmosphere is not conducive to careful study and sound judgment on the part of the inexperienced feeder buyer. He may well stay away from them except as a spectator and an information seeker. For the experienced buyer and the "initiated" bargain hunter they may be satisfactory sources of feeders.

48. How can native cattle be obtained satisfactorily?

With the substantial increase in numbers and improvement in quality of breeding beef cattle in some sections of southern Iowa and in Missouri in recent years, native cattle have again become one of the good sources of feeder cattle, particularly of calves.

Considerable numbers of lower grade native cattle are available in many sections of Iowa for the feeder who is looking for that kind. Locating and assembling native cattle in numbers and uniformity desired is a problem. Usually the help of a local dealer or buyer is a time- and money-saver. Local or community auctions are another source.

A number of county or other area producers' associations have been set up in southern Iowa and in Missouri. Their functions are to improve the methods of production and the quality of the cattle, and to help in finding a market for the feeder cattle produced. A number of these organizations conduct feeder auctions on a quite satisfactory basis.

49. How can feeder cattle be bought on the central markets?

Conditions vary somewhat on the different markets. But in general cattle may at times be bought "out of first hands," that is, cattle consigned to a commission firm may be sold directly to a cattle feeder or his agent, or they may be bought from a feeder dealer who has previously purchased them on
the market or elsewhere and assembled and sorted them for sale as feeders.

Cattle may be bought by the feeder on his own, either from a dealer or from a commission firm which has cattle for sale on consignment. Or for a per-head or carlot fee he can engage the services of a commission firm, whose feeder buyer will give advice as to values, assist him in inspecting the available cattle, in making a selection, and in bargaining. He also will help in sorting, and arranging for details of weighing, shipping and payment.

50. How should the inexperienced feeder buyer go about the purchase of feeder cattle?

The inexperienced feeder buyer might well contact a reliable commission firm of his choice on his most convenient market. Then, preferably some time before he wants delivery of the cattle, he can visit the market and become acquainted with the feeder buyer of the firm. He can discuss with the feeder buyer his situation, feed supply and proposed feeding program.

He can go out in the alleys with the commission man, study the available cattle and become as familiar as possible with feeder grades, going prices and buying conditions. Then unless a satisfactory purchase can be made at once, he might better leave a conditional order and go home.

The commission man can telephone for final confirmation of the order when he thinks an advantageous purchase can be made. A good commission firm is glad to have such business, and the commission fee is money well spent for the service it buys.

A similar approach can be made with reliable interior feeder dealers. Many of these men will be glad to give sound and helpful suggestions to the new feeder who wants to learn.

51. What are some of the details to watch in buying feeder cattle?

Wherever or by whatever means the cattle are bought, the experienced buyer watches certain details:
There is only one basis of exchange fair to both buyer and seller—buy by the pound.

Weighing conditions are important. The matter of "condition" or "fill" is doubly so. For example: An 800-pound feeder steer with normal fill at $15 per hundredweight cost $120. The same steer with an additional 40-pound fill is worth no more to the feeder buyer than before, $120. This means that his per hundredweight value has dropped to $14.28.

The higher the feeder price level the more important the matter of condition becomes.

Health is important, and doubly so with calves or young cattle. Surveys indicate that death losses average from 1 to 1½ percent, mainly from shipping fever, and may run much higher on long-haul calves coming in under bad weather conditions.

Death risks are greater on late-bought cattle caught by storm in transit or at the market than on those moved in good weather. Watch out for coughs, humped backs, drooping ears, wet noses, labored breathing and slow movers among such cattle. Fight shy of stale, out-of-condition, overstuffed or sick cattle. Check for signs of lump jaw or goiter, pink eye, etc., that might have passed the inspector.

In serious drouth years so-called "dried-out" cattle present a problem. If the trouble has been mainly lack of feed, the cattle usually come out pretty well when given a chance. But long-continued lack of water apparently gives a more serious setback.

Buy out of first hands when possible.

Cattle received on contract or order should meet specifications as to grade and condition or be refused until adjustment is made. In brief, while cattlemen are honest as a rule, keep in mind the old point of law, "let the buyer beware."

FEEDS AND FEEDING

What do you mean by the nutrients in feeds?
A steer uses the corn, roughage, protein supplement and
minerals you feed him only as food nutrients to maintain his body processes and to produce growth and fat. The starch, sugar and oil, the carbohydrates and fats, and to some extent the cellulose or fiber, furnish the sources for heat, energy and fat.

The proteins are the growth makers and body builders. The minerals help build frame and maintain body processes. The vitamins are necessary to promote growth and maintain health and thrift. Water is required for the steer’s comfort and health. Without plenty of it he cannot make good use of feed.

53. What is nutritive ratio?

By nutritive ratio we mean the ratio, or proportion, of digestible protein to digestible non-protein parts of the ration. Fat or oil is considered to have $2\frac{3}{4}$ times the energy value of starch or other energy materials, so the fat content is multiplied by $2\frac{3}{4}$ and the result is added to the rest of the carbohydrates to get the total energy value.

The nutritive ratio is expressed in terms of the number of pounds or units of digestible energy value to each pound or unit of digestible protein. For example, shelled corn has a nutritive ratio of 1 protein to 10.3 energy units. That is, for each pound of digestible protein, corn furnishes 10.3 pounds of digestible carbohydrates.

54. What is the proper nutritive ratio for fattening cattle?

Practically, there is a good deal of latitude in this. Young cattle need relatively more protein, that is, a “narrower” ration. Mature steers require relatively less protein, since their growth is made; or, as we say, they can do with a “wider” ration.

The Morrison Feeding Standards suggest the practical range in nutritive ratios as follows:

For fattening calves 1:6.5 to 1:7.3
Yearlings 1:7.0 to 1:8.0
2-year-olds 1:7.5 to 1:8.5

55. What is a “balanced” ration?

A perhaps oversimplified but practical definition of a bal-
anced ration is that it is a combination of feeds which furnishes the right proportion of carbohydrates or energy materials, proteins, minerals and vitamins in usable and appetizing form to produce the desired results without excess or waste. In actual practice the ration must do this at the lowest feasible cost.

56. **How important is it to balance the ration for fattening cattle?**

"Saving" money by skimping on needed proteins, minerals and vitamins usually results in slower gains, higher feed costs, less finish and lower selling price. A reasonably well balanced ration is usually cheapest in the long run.

57. **Is it difficult to figure a balanced ration for cattle, or is it necessary to feed complicated, high-powered, expensive mixtures?**

No. For example, a combination of corn, clover or alfalfa hay, linseed meal, simple mineral mixture, salt and water will on the average produce as rapid gains and good finish as much more complicated combinations.

58. **What are some suitable feeds for fattening cattle?**

Yellow corn, the foundation of cattle feeding in the Corn Belt, is the main source of concentrated fat and energy for fattening cattle. It furnishes some vitamin A but is short on protein and minerals.

Legume hay furnishes proteins, minerals, vitamins, some carbohydrate and the fiber or bulk necessary to keep the steer's digestive system working properly. The other kinds of hay or roughage can replace legume hay when necessary if properly supplemented with lacking proteins, vitamins and minerals. Corn or other silages are a highly satisfactory part of many cattle rations.

Linseed, soybean and cottonseed meals are protein concentrates which carry some mineral, vitamin and conditioner values as well as considerable energy value.

59. **What are some good feed combinations?**

There is nothing mysterious about a good cattle fattening ration and no magic in any particular feed. The kinds and
proportions of feeds used can vary with the kinds of cattle being fed and the stage in the feeding process. Relative availability and costs of the various feeds may be the deciding factors.

There is an old Scotch saying that the good feeder always keeps his feed a little better than his cattle. Most successful farmer feeders build their rations and feeding plans around the roughages they want to use. They use the poorer and cheaper feeds first. For example, they start fall-purchased yearlings by letting them clean up available fall pasture and then move to the stalk fields when they are ready. Thin or "green" cattle gain well on such feeds. When the corn left by the picker and the best of the rough feed have been gleaned from the fields, the cattle are moved to the lot and fed silage or fodder and some hay with protein supplement, but little or no corn in the bunks so long as good gains continue. Full grain feeding is used only for the finishing process.

60. How do feed requirements change as cattle fatten?

As cattle fatten it takes not only better and more concentrated and higher cost feeds to make gains, but more in actual "feed units" or feed value. (A feed unit is the equivalent of one bushel of corn in total feed value.)

For example, composite experiment station records show that starting with a 640-pound yearling steer it took roughly 10 feed units to put on the first 100 pounds of gain. It took 12 to 13 units for the second 100 pounds, 14 to 15 for the third, 17 to 18 for the fourth, and 22 to 23 for the fifth hundredweight of gain. Roughage consumption goes down as the cattle fatten, and all the increase in feed units needed, and more, must come from the higher priced grain and supplement. So gain costs go up even faster than the feed units used per pound of gain.
61. What is a “full feed” of corn or other grain?

A full feed of corn is all you can get the steer to take regularly, along with the necessary protein and roughage, without going off feed. A rule-of-thumb full feed is 2 pounds of corn or its equivalent in other grains per head daily for each 100 pounds of live weight. When you get up to that point it’s well to make further increases cautiously. Some cattle will “stick” on a little less, others may take considerably more. Silage-fed cattle or those being fed heavily on hay take less corn. A steer being full-fed corn and cob meal usually takes 10 to 12 percent less corn than one on shelled corn. Big, short-fed cattle eat more per 100 pounds of live weight than calves or yearlings.

62. Is it possible or practical to replace all or part of the corn with other feeds in a cattle fattening ration?

The cattle feeding business in the Corn Belt is built largely on corn. The volume of feeding goes up and down with the size of the corn crop, and corn is usually the cheapest carbohydrate or fattening feed. But other grains and feeds can substitute for some corn when corn is scarce and the price relationship is right.

63. What are other grains worth in comparison to corn for fattening cattle?

<table>
<thead>
<tr>
<th>Feed</th>
<th>Weight per bu.</th>
<th>Percent of corn value per cwt.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shelled corn</td>
<td>56 lbs.</td>
<td>100</td>
</tr>
<tr>
<td>Barley</td>
<td>48</td>
<td>80 - 90</td>
</tr>
<tr>
<td>Wheat</td>
<td>60</td>
<td>100</td>
</tr>
<tr>
<td>Oats</td>
<td>32</td>
<td>70 - 75</td>
</tr>
<tr>
<td>Rye</td>
<td>56</td>
<td>70 - 80</td>
</tr>
<tr>
<td>Hominy feed</td>
<td></td>
<td>90 - 95</td>
</tr>
</tbody>
</table>

64. How can barley be used to advantage?

Crushed, cracked or rolled barley may be used satisfactorily to replace half the corn for fattening cattle. Feeding whole barley is wasteful. Fed as half the grain, 10 pounds of barley will replace 8 to 9 pounds of corn. Where it replaces only one-fourth the corn, barley may be worth as
much as corn. Where fed as the only grain to full-fed cattle, barley usually has been worth only 75 to 80 percent as much per pound as corn. Many fitters of show cattle believe that rolled or cooked barley tends to keep cattle smooth fleshed. This is hard either to prove or disprove. Cattle can make good use of "scabby" barley, that is, barley which is so bitter that hogs refuse to eat it.

65. How and in what amounts can wheat be fed?

At the same or a lower price per pound, wheat can replace all, or any part, of the corn for fattening cattle. It is best fed coarsely ground, cracked or rolled. When wheat is too finely ground, cattle do not like it, eat less, and apparently do not digest it well. Cattle do well on wheat as the only grain, but will eat a little more and gain and finish faster on a 50-50 mixture with corn. Wheat-fed cattle can do with a little less protein supplement than corn-fed cattle. Cattle can be fattened on whole wheat but they waste a lot of it.

66. What about oats for fattening cattle?

There is an old saying, "Oats for growth—corn for finish." Oats are worth more for starting calves or light cattle on feed than for use later in the feeding period. Heifer calves make good use of oats in larger proportion and longer than any other cattle. They can be carried on half oats and half shelled corn for 70 to 90 days and show about the same values per pound for the corn and oats. After that the oats should be cut to 1 to 2 pounds per head daily to be equal to corn. In larger quantities they are worth only 70 to 80 percent as much as corn. Steer calves can use some oats all winter, but oats are worth most if fed at not over 2 pounds per head daily after the first 60 days. It does not pay to grind oats for calves.

Big short-fed cattle do not make good use of oats in quantity. In a half-corn, half-oats ration, the oats are worth only 55 to 60 percent as much per pound as shelled corn for such cattle. One to 2 pounds per day are worth 70 to 75 percent
as much as corn. Oats should be coarsely ground if fed to big cattle.

67. What about rye?
Rye is the least appetizing of all grains. But if it costs 10 to 20 percent less than corn, ground rye can make up 25 to 30 percent or even one-half the ration to fair advantage, particularly with plain cattle or on short-feds. Long-fed cattle get tired of rye. Be sure rye is free from ergot if you are going to feed it to cattle.

68. How can hominy feed be used?
Hominy feed theoretically should have about the same value as shelled corn. But cattle do not eat it quite so well, and practically it is about equal pound to pound with corn and cob meals. Cattle eat it better mixed half and half with shelled corn or with corn and cob than where fed alone. It makes a good partial substitute for corn when it costs 5 to 10 percent less than shelled corn.

69. What is the value of molasses in the ration?
Feeding-grade black-strap molasses is practically a straight carbohydrate or corn substitute. Normally it is too high in price in relation to corn to be used in quantity. Many show cattle feeders and commercial feeders feed from 1 to 2 pounds per head daily or its equivalent in heavy molasses mixtures as an appetizer or conditioner. Experimental results indicate that it is easy to overrate the value of molasses even for this purpose. There is no magic in molasses, particularly when it is fed with a full feed of corn.

70. What is molasses worth to the cattle feeder?
Theoretically molasses furnishes only 67 percent as much energy value as an equal weight of No. 2 corn. Experimentally it has shown even less value.
Where fed in small quantities, 1 to 2 pounds daily with corn full-fed, it has been worth only about 55 to 60 percent as much per pound as corn. When fed with poor quality feeds it may increase feed consumption a little and thus increase gains. Another theory is that being readily available
and quick acting, it speeds up bacterial growth in the rumen and thus aids in the digestion of coarse high-fiber roughages such as cornstalks, cobs and straw. Where fed in larger quantities experimentally as a partial substitute for corn with coarse low-grade roughage, it has been worth around 60 to 65 percent as much per pound as shelled corn.

71. If the price is right, how much molasses can be fed to advantage?

If molasses can be bought at 60 percent of the price of corn per ton, you can feed up to one-fourth or even one-third of the total grain mixture as molasses to some kinds of cattle. When fed without grain but mixed with silage, chopped fodder or hay and plenty of protein, molasses has been fed as heavily as 10 to 12 pounds per head daily to big cattle with fairly satisfactory results.

72. What is the best way to feed molasses?

The easiest and most convenient, and also the most expensive way to feed molasses is in the commercial mixtures. The easiest way to feed it in quantity is by self-feeding; in a tank, or by up-ending the barrel in the feed bunk. Calves full-fed corn and self-fed molasses usually eat from 2 to 3 pounds of the latter per day. Yearlings eat from 3 to 4 pounds, and 2-year-olds from 4½ to 6 pounds. By limiting the corn, molasses consumption can be increased by about one-third, but the gains are cut down. Molasses feeding in fly time calls for plenty of fly control effort.

73. What is corn silage worth as a replacement for grain and hay?

As ordinarily used in cattle feeding, a ton of normal corn silage replaces about 6 bushels of corn plus 600 pounds of hay.

74. Can corn silage be used more heavily than this as a substitute for corn?

Yes. In time of need 2 bushels of corn can be stretched to do the job of 3 bushels in some kinds of cattle feeding.
This applies to the feeding of plain cattle or to the first 90 to 120 days feeding of better grade cattle on a long feed.

It can be done by full feeding the silage with a little hay, plenty of protein, and limiting or deferring corn feeding until gains begin to slow down. Then a short 30- to 50-day full feed on corn for the plain cattle and 90- to 120-day feed for the better cattle will usually give the necessary finish.

This plan can be applied in some degree to all cattle except fleshy short-feds.

75. Can cattle be fattened on corncobs?

The answer to that one depends a lot on what you mean by “fatten” and also on what you feed with the cobs.

There is a lot of carbohydrate, or fuel value, in corncobs, but it is mainly cellulose and fiber and requires special conditions for digestion and use.

Cattle fed cobs alone probably would slowly starve to death. But properly prepared and supplemented with protein and vitamin sources, and preferably with a little molasses or corn to make them more appetizing, and perhaps speed bacterial action, rations containing large amounts of ground corncobs have produced considerable gains on thin cattle for a time.

But cobs are bulky in relation to their net feed value. Large quantities must be consumed and cattle kept “full as ticks” to produce gains. After thin cattle have made their first easy gain, simple lack of capacity to handle enough cob makes further gain and finish a slow process if there is too much cob in the ration.

Bacterial action or fermentation plays a big part in the digestive processes in the rumens of cattle and other ruminants or cud-chewing animals. Apparently this is true both for energy and protein feeds. Properly conditioned, or given time in which to build up the necessary bacterial population together with enough protein or nitrogen, cattle can digest large quantities of the tougher carbohydrates, such as the
cellulose in straw, cornstalks and cobs. Presumably this is
done either through bacterial breaking down of the tough
fiber into simple forms that the cattle can use, or through
assimilation of the "spent" bacteria themselves and their end
products. Perhaps both occur.

In order to promote the necessary bacterial growth to do
this job, considerably more than usual amounts of protein
must be available. Where such low-vitamin feeds as cobs
or straw furnish the bulk of the ration, additional sources
of vitamins, particularly of vitamin A, must be supplied
through feeding of high-vitamin hay or from other sources.
Apparently the bacteria themselves produce even a surplus
of the B-group vitamins above the needs of the cattle. Pigs
find cattle droppings a good source of the vitamin B group.

The cobs in regular corn and cob meal when fed with
enough proper supplements have feed value and make a
bushel of corn so fed go farther than a bushel of shelled
corn, both with cattle and with the hogs following them. But
most feeders have found it desirable to add additional shelled
corn or switch to straight corn toward the close when high
finish is wanted.

The Ohio Experiment Station has doubled the proportion
of cob, with still greater cattle and hog gains per bushel of
corn fed. Figures consistently show about 1 pound additional
total gain per bushel of corn fed, where 14 pounds of ground
cob was added to each 70 pounds of corn and cob meal, and
fed with good hay and 2 pounds of oilseed meal per day.
But gains were slower, apparent finish not so high, and dress-
ing percentages lower than on cattle fed at the same time
on regular corn and cob meal.

The Iowa Experiment Station got similar results. But
when we figured the cost of preparing the cobs, plus slower
gains, and the lower selling price due to less finish and lower
carcass yields, we had less net return on the "added-cob"
cattle than on corn and cob meal or shelled corn-fed steers
of good to choice grade.

In Iowa, adding cob or replacing corn with cob is prob-
ably of value mainly in the feeding of plainer grades of cattle where high finish is unnecessary, or in early stages in the feeding of better grades. Even here the economic outcome depends on the relative cost of preparation of the cobs, the corn price level, and the roughage situation. At times there may be more financial advantage in replacing some scarce roughage with properly supplemented cobs than in attempting to substitute them for corn.

76. What is the “pick-up” value with hogs following cattle in the feedlot?

With heavy cattle full fed shelled corn, good lot conditions and sufficient protein on the side, hogs gain from 1.1 to 1.2 pounds per bushel of corn fed the cattle. With yearlings, hogs gain about .9 pound to 1 pound, and with calves hogs gain from .7 to .8 pound. When corn is fed as corn and cob meal, hog gains run a little less than on shelled corn.

77. What is the difference in feeding value between white and yellow corn?

The main difference is in vitamin A content. Cattle on a long feed on white corn or on 2- or 3-year-old yellow corn may show vitamin A deficiency disease unless they are fed on grass or are getting vitamin A from other sources.

78. What is “soft” corn worth for cattle feeding?

The dry matter in soft or high-moisture corn apparently is worth about the same as in an equal amount in sound corn for any kind of livestock that can handle enough of it to make good gains. Its high moisture and bulk are a handicap for hog feeding, but cattle can use it to good advantage. Big cattle and yearlings, because they have more capacity, do a better job with it than do calves. It is easy to be fooled on the value of soft corn. Its bulk and high moisture keep the scoop shovel busy.

Usually the most practical way to feed it is in the ear to yearlings or big cattle. For calves, it may be run through the silage cutter or roughage mill.
79. How do you figure the value of corns of different moisture content?

Unless corn has too much damage or spoilage, its feed value depends on its dry matter content. Turning it around, soft or new corn should be figured on the moisture content basis.

Here is a handy table to figure wet corn values to equal 15 percent moisture:

<table>
<thead>
<tr>
<th>Moisture percent</th>
<th>Shelled corn, lbs. per bu.</th>
<th>Ear corn, lbs. per bu.</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>56</td>
<td>68</td>
</tr>
<tr>
<td>20</td>
<td>59</td>
<td>74</td>
</tr>
<tr>
<td>25</td>
<td>63</td>
<td>81</td>
</tr>
<tr>
<td>30</td>
<td>68</td>
<td>88</td>
</tr>
<tr>
<td>35</td>
<td>73</td>
<td>96</td>
</tr>
<tr>
<td>40</td>
<td>79</td>
<td>103</td>
</tr>
<tr>
<td>45</td>
<td>86</td>
<td>111</td>
</tr>
</tbody>
</table>

**PROTEIN SUPPLEMENTS FOR CATTLE**

80. Why feed protein supplements to fattening cattle?

Feeding enough good protein supplement to balance the grain and roughage increases the rate of gain, gives quicker finish, cuts down on the corn and other feeds required per pound of gain and usually brings a higher selling price.

81. How much protein supplement should I feed?

The needs of fattening cattle for protein supplement vary with the age of the cattle, the kind, amount and quality of the roughage being fed, and the relative proportions of grain to roughage.

Rate of growth is more rapid in young cattle, so their protein needs are relatively greater. Three pounds of good alfalfa hay or 3 1/2 pounds of clover furnish about as much protein as a pound of one of the oilseed meals. So less supplement is needed where legume hay or legume silage furnishes most or all the roughage than where low-protein roughages such as corn or sorgo silage, fodder, timothy or other grass hays are fed.
Cattle being full fed on corn eat less roughage and so need more supplement than those eating less corn and more legume hay.

All types of good pasture are relatively high in protein in spring and early summer, and legume pastures are high in protein throughout the season. So, little or no supplement is needed on good grass, especially for yearlings or older cattle, unless it gets hard and dry.

Experience and experimental trials both show that full corn-fed, drylot cattle need about the following percentages of protein in the combined grain and supplemental feeds for good and economical gains:

<table>
<thead>
<tr>
<th></th>
<th>All-legume roughage (percent)</th>
<th>Half-legume roughage (percent)</th>
<th>Non-legume roughage (percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calves</td>
<td>12-13</td>
<td>13-14</td>
<td>14-15</td>
</tr>
<tr>
<td>Yearlings</td>
<td>11-12</td>
<td>12-13</td>
<td>13-14</td>
</tr>
<tr>
<td>2-year-olds</td>
<td>10-11</td>
<td>11-12</td>
<td>12-13</td>
</tr>
</tbody>
</table>

In practice the feeding works out much more simply than this may indicate. Since full-fed calves eat less corn per head daily than yearlings, and these less than bigger cattle, the same rate of protein supplement per head daily works out about right. For example, on a ration of corn and legume hay, 1 to 1 1/4 pounds of linseed meal per head daily is pretty close to right for all ages. On corn, corn silage and timothy hay, 1 1/4 to 1 3/4 pounds of supplement is needed.

82. How much can I afford to pay for protein supplement?

A summary of experimental trials and feeders' experience as well indicates that it pays to feed the supplement at about standard rates when a ton of oilseed meal costs no more than 100 bushels of corn. When supplement is relatively cheap it may pay to feed more.

For example, if at such comparative price levels it would pay to feed 1 1/2 pounds daily, it might pay to feed 2 pounds if the protein meal could be bought at a 20 to 25 percent relatively cheaper price. On the other hand, if the meal were out of line 25 percent on the high side, it might pay to cut
to \( \frac{3}{4} \) pound or 1 pound per head daily, except with calves or in finishing choice cattle.

To make it pay to feed at 3 pounds per head daily or above, the protein meals must be bought at no more than the price of corn per pound, and, of course, must be handled carefully to avoid scouring and digestive upsets.

83. How can urea or other synthetic nitrogen compounds be substituted for protein meals for fattening cattle?

We have been learning a lot recently about the value of synthetic nitrogen compounds and how to use them as partial substitutes for the oilseed meals in cattle fattening rations. Apparently they offer an inexhaustible, relatively cheap and effective means of stretching this usually costly part of the steer fattening ration. This is of growing importance as our livestock population increases faster than the protein meal supply and larger proportions of the meals are diverted to swine and poultry feeding.

In trials at the Iowa Experiment Station 1/10 pound of urea or 1.35 pounds of ammoniated molasses was fed with \( \frac{3}{4} \) pound of linseed meal to full corn-fed yearlings on a 170-day feed. Theoretically the synthetics in these combinations supplied the same amount of nitrogen or protein equivalent as the linseed meal. The results with the combination of linseed meal and either one of the synthetics not only equalled those of the check lot getting 1½ pounds of linseed meal but actually showed significant increases in daily gains. Going all the way and substituting 2/10 pound of urea for all the 1½ pounds of linseed did not work as well as the combination but gave only slightly less gain than the straight linseed.

There appeared to be definite advantage in combining linseed meal and the synthetic nitrogen compounds in the ration. Greater total feed consumption, faster gains, more efficient use of total feed and lower gain costs were obtained where half the total protein supplement requirements were supplied by the synthetics and half by linseed meal.

The disadvantages in the synthetic situation are that since the urea is poisonous in too large amounts, it requires com-
plete and careful mixing with other feeds to avoid “overdoses”; it can be used only by ruminants; its sale is restricted; and it can be obtained only in ready-mixed protein supplements or molasses mixtures.

84. What practical difference is there in the value of the standard protein feeds, linseed, soybean and cottonseed meals?

That depends on the kind of cattle, the length of feed and the other feeds to be used. Whichever furnishes the most protein for a dollar would be my choice for plain cattle or for feeding with a heavy silage ration. For better grade calves or yearlings or for choice short-feds, linseed meal has been worth 8 to 10 percent more than cottonseed meal.

Linseed meal has shown little advantage over soybean or cottonseed meals in rate of gain, but has given better appearance, higher yields and higher selling price in most experimental comparisons.

85. Is there much or any advantage in mixing oilseed proteins for cattle?

The answer is pretty definitely no. Mixtures are highly desirable for hogs and poultry. But cattle (ruminants) are able to rework and synthesize from simple proteins the protein combinations they need. As we mentioned earlier, they can even use small amounts of synthetic nitrogen compounds, such as urea, as a source to take care of part of their protein requirements. This presumably is accomplished through bacterial action in the rumen.

With a ration satisfactory in other respects, there is no need to put extra expense into ready-made mixtures or in mixing your own. A possible exception might be that when linseed meal is relatively high, you can mix one-third or one-half linseed with cheaper proteins, save some money and still get approximate linseed results.

86. When should protein feeding be started?

Usually it's good practice to start the protein when the cattle are started on feed rather than to wait until toward the close of the feeding period as some feeders do. This is
particularly true with calves. A calf just weaned needs extra protein more than at any other time. Many calf feeders start their calves on 2 pounds of protein meal for the first 30 to 60 days after receiving them and then drop back to 1½ pounds. It is good theory—and works well, besides.

87. Does it pay to feed "cake" or protein supplement on grass?

Protein feeding adds to the cost and gives little or no extra gain on lush spring and early summer pastures. It may help a lot when pastures mature and turn dry. Some feeders use cottonseed cake on new grass to "hold it together." A little hay usually does a better job at this. Feeding protein straight through on grass does result usually in a little earlier finish even if gains are no larger. Cake feeding on bluegrass from July on usually helps both gains and finish. It does not help so much on brome-alfalfa.

88. Is dehydrated alfalfa a practical and economical substitute for the oilseed protein feeds for cattle?

Apparently it can do the job when fed in sufficient amounts. Also it may combine satisfactorily with synthetic nitrogen compounds. Practical use will depend on relative costs.

89. Does it pay to feed extra minerals to fattening cattle?

Most of the minerals aside from salt will be obtained from the other feeds fed. A lot will depend, however, on where the cattle came from, the other feeds used, and where and on what kind of soils the feeds were grown. Our experience has been that it pays to self-feed a simple mineral mixture as insurance against any lack there might be. On the average this has resulted in enough increase in gain, better thrift and quicker finish to pay several times over for the cost of the minerals.

90. Is it necessary to feed complicated and expensive minerals?

Not in our experience. The minerals most likely to be lacking are salt, calcium, phosphorus, iron, manganese and iodine. In some sections of the country other so-called
“trace” minerals may be sufficiently lacking to cause serious trouble. Some of these are cobalt, copper and nickel.

Here is a relatively simple mineral mixture that has given as good results as any in our experience:

Common salt 20 pounds, ground raw limestone 50 pounds, steamed bone meal (feeding grade) 28 pounds, iron (ferric) oxide 2 pounds, manganese sulfate 2 pounds, potassium iodide $\frac{1}{4}$ ounce.

This mixture or one approximately the same is put out at a reasonable price by many feed manufacturers and feed mixers. Usually the individual feeder can buy it more cheaply ready mixed than he can buy the ingredients and mix them at home.

91. What vitamin deficiencies occur in cattle feeding and how may they be corrected?

About the only vitamin deficiency causing trouble in cattle feeding is occasional lack of vitamin A. Normally yellow corn and good quality roughage carry enough of this. But steers fed long periods mainly on 2- or 3-year-old corn and low quality roughage or hay that has been held over more than one season may show the typical symptoms of lack of vitamin A, such as night blindness, swelling of the legs and swelling in the flank and brisket. Serious long-continued cases may cause death, and carcasses of affected cattle may be condemned on slaughter.

A good many such cases occurred when AAA corn stored for a number of years was being used. Changing to new corn and good quality new-crop legume hay, or turning on good pasture, corrects the trouble if this is done in time.

The steer manufactures his own vitamin B supply in the rumen, and most rations carry a sufficient supply of vitamin C.

PREPARATION OF FEEDS

92. How should corn be fed to fattening cattle—as ear corn, shelled, ground shelled or as corn-and-cob meal?

There is no short answer to that one.
The average farmer-feeder feeds a lot of his corn that goes to fattening cattle as corn-and-cob meal. He has his own good reasons for doing so. Using his own tractor and grinder, his cost of preparation is little more than that of shelling. He likes the safety given by the bulkier corn-and-cob in starting and keeping his cattle on feed. He is not too certain whether the advantage comes from actual feed value in the cob, better digestion because of the bulk, or from the fact that a corn-and-cob-fed steer on full feed gets 8 to 10 percent less corn grain per day than a shelled corn-fed one and thus wastes a little less.

The farmer-feeder knows that a bushel of corn-and-cob goes further in producing pounds of beef than does shelled corn. He likes corn-and-cob, especially for feeding on grass. It "holds the cattle together."

In many cases his feeding program and the kind of cattle he feeds do not call for maximum gains and extreme finish. So he is a corn-and-cob meal feeder. On the other hand, the commercial feeder who must buy much or all of his corn shelled, who is interested in rapid gains, quick and high finish, and low labor and handling costs, sticks to shelled corn.

Actually some good feeders may use all four preparations on the same lot of cattle. They will start with new corn in the ear or run through a chopper, then switch to corn-and-cob meal when the corn is dry enough to grind; keep up corn consumption and gains by adding shelled corn to the corn-and-cob as the cattle fatten; then shift to straight shelled corn, and finally may even go to coarsely cracked shelled corn if it gets hard and dry in the spring or summer.

In general, experimental results back up farmers' practices. They show that corn-and-cob is safer and goes somewhat farther. Shelled corn increases corn consumption, gains and finish on long-fed cattle. If hogs are getting the "pick-up," there is no saving in grinding any but very hard shelled corn, and fine grinding is worse than none. It slows corn consumption, hinders digestion and wastes feed.

Hogs also get less pick-up following cattle on finely ground
shelled corn, so there is usually some loss in feed on both hogs and cattle.

93. Is it worth while to grind or chop fodder?

Grinding or chopping corn or sorgo fodder is an expensive process, much more so on some farms than others. Whether or not it will pay you will depend on your costs, your roughage supply and the kind of cattle you have.

If you have plenty of roughage and just want to use some fodder to bring yearlings or older steers along in early winter after they have come in from the stalk fields, it is doubtful if it will pay to put any grinding or chopping costs to it. But if the fodder must furnish most of the roughage for winter feeding, especially for calves, it is likely to pay to use the roughage mill. Calves can't do much with whole fodder. Chopping is less expensive and makes fully as good feed as finer grinding.

94. Is the silo a good investment for a cattle feeder?

Not every cattle feeder needs a silo, but a lot who do not have silos could use one or more to advantage.

If you have plenty of legume hay and pasture for your feeding program and are limited as to corn acreage, the silo might be of doubtful value to you. But if you need extra roughage, and are interested in stretching your corn acres to the limit in beef making, the silo can be a real help. You can get many more pounds of beef from an acre of corn fed as silage than an acre fed in any other way. Silage can fit into almost any type of cattle feeding program, but it is especially valuable in the feeding of the plainer kinds that do not need extreme finish and in the early stages with better grade long-fed cattle.

Since the back-break has been taken out of silage making, maybe it would pay you to look into this silage thing again.

95. What about whole, chopped and ground hay?

It seldom pays to grind or chop stored loose or baled hay. Chopping costs are too high. If hay can be chopped economically as it is made, there is considerable saving in storage
space and ease of handling, and some less waste in feeding. But full corn-fed cattle do not gain faster or do better on chopped than on loose hay of the same quality, although they do require a little less corn per pound of gain. Cattle that are full fed hay and limited on corn, feed and gain more evenly if the grain is fed mixed with chopped hay than if hay and grain are fed separately, since each steer has a more nearly even chance to get his full share.

ROUGHAGES AND PASTURES

96. **How important is roughage in cattle feeding?**

Most successful farmer-feeders build their feeding program around their roughage and forage supply. They feed cattle mainly because they have roughage to use. Plentiful supplies of good roughage and grass cut down on the grain and supplement required and on gain costs.

97. **How do common roughages compare in value?**

Almost any sort of roughage palatable enough that cattle will eat it can be used in feeding cattle provided it is properly supplemented. But the better the quality of the roughage, the easier it is to do a good job of feeding, and the less the need for expensive supplements.

After many years of checking, the Illinois Experiment Station gives the following estimate of comparative values of common farm roughages for feeding fattening cattle, when alfalfa hay is valued at $20 per ton.

<table>
<thead>
<tr>
<th>Roughage</th>
<th>Value per Ton</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alfalfa hay</td>
<td>$20</td>
</tr>
<tr>
<td>Red clover</td>
<td>18</td>
</tr>
<tr>
<td>Soybean hay</td>
<td>16</td>
</tr>
<tr>
<td>Lespedeza hay</td>
<td>15</td>
</tr>
<tr>
<td>Oat hay</td>
<td>15</td>
</tr>
<tr>
<td>Timothy hay</td>
<td>14</td>
</tr>
<tr>
<td>Prairie hay</td>
<td>13</td>
</tr>
<tr>
<td>Corn fodder</td>
<td>$15</td>
</tr>
<tr>
<td>Sorghum fodder</td>
<td>13</td>
</tr>
<tr>
<td>Millet hay</td>
<td>12</td>
</tr>
<tr>
<td>Corn silage</td>
<td>7</td>
</tr>
<tr>
<td>Corn stover (ears removed)</td>
<td>7</td>
</tr>
<tr>
<td>Soybean straw</td>
<td>6</td>
</tr>
<tr>
<td>Oat straw</td>
<td>5</td>
</tr>
<tr>
<td>Wheat straw</td>
<td>4</td>
</tr>
</tbody>
</table>

Brome-alfalfa or clover-timothy mixtures are worth approximately 15 to 20 percent less than the straight legume hays.

98. **How does legume or grass silage work in cattle feeding?**

A legume or grass-legume mixture in silage makes a somewhat different feed than corn or sorgo silage. It is higher
in protein and lower in energy value. It replaces hay rather than both hay and some corn. To get the same gain more grain must be fed, but a little less protein supplement is required than with corn silage. The vitamin, especially the carotene, content is so much higher that grass silage-fed cattle may kill with the typical grass-colored carcasses unless taken off the silage 6 weeks before slaughter.

**FEEDING CATTLE ON GRASS**

99. **How does feeding on grass compare with drylot feeding?**

Cattle full fed corn on good pasture eat less corn, require less protein supplement and gain at about the same rate as similar drylot cattle. But they take longer to reach desirable finish, make lower carcass yields and usually sell for less unless given a sufficient turn on dry feed before marketing.

100. **Is it better to full-feed cattle on grass, limit the corn to a half feed through the pasture season, graze without grain until midsummer and then feed corn, or to graze without grain until the pasture is done and then finish in drylot?**

There is no certain answer to this. All of these methods are used satisfactorily under the right conditions. Much depends on the weight and condition of your cattle, the kind of pasture, the season, the relative valuation you have to put on pasture as compared with corn, hay and protein feeds, and the advantage or disadvantage from the price standpoint in having your cattle ready to go early or late.

In general, well-wintered fleshy cattle might better be fed corn straight through the pasture season and pushed for earlier marketing, even though this means they will use less grass and take more corn.

Calves, because they tend to grow rather than fatten on pasture alone, need corn to push them along in condition if they are to reach desirable finish by early winter. Big, thin or so-called “green” cattle with most of their growth made tend to turn grass into fat and will do well on grass alone on good all-season pasture. To a lesser extent, the same is true of yearlings.
Experimental work has shown how to get maximum use of grass with a minimum of corn for each 100 pounds of gain. To do this, thin cattle should be grazed without grain as long as the grass is good and gains are maintained; grain feeding should start as soon as gains slow down. But it takes longer to reach desirable finish, and the financial outcome will depend largely on market behavior.

101. How do different types and kinds of pasture compare for growing and fattening cattle?

There is wide variation in the yields, palatability, protein and other feed value, length of season and seasonal quality of various kinds of pastures. These make big differences in the grass gains on cattle. Differences are less apparent where cattle are being fed grain on grass than where grazed without grain, but they are present nevertheless.

Apparently steers “belong to the union” and do not like to work more than about 8 hours a day at the grazing job. If the grass is plentiful, palatable, nutritious and easy to “harvest,” they fill completely in their allotted “working” time or less and make big gains. If it lacks in one or more of these essentials, the gains go down. Only real hunger will make them work longer hours.

For example: Cattle make excellent gains on a good bluegrass pasture in spring and early summer. The grass is abundant, palatable, easy to graze and high in protein and feed value. But by mid-July or earlier in the average season, the grass, no matter how abundant, becomes hard and “woody” and the protein content goes down. The cattle eat less of it, get less out of what they eat and make less gain, or none at all. Flies and heat affect midsummer gains, but changes in the pastures themselves are more important.

Most straight grass pastures have these shortcomings. The big advantages of grass-legume mixtures lie not alone in increased yields but also in longer season, greater palatability and higher continuous feed value.

Little experimental work has been done in comparing the value of different kinds of pastures for cattle being fed grain
on grass. Five years of trials at the Illinois Station comparing various pastures for yearling steers grazed without grain give some basis for estimating probable comparative value of the pastures.

**GAINS PER ACRE FOR THE PASTURE SEASON, YEARLING STEERS, 6-YEAR AVERAGE.**

<table>
<thead>
<tr>
<th>Pasture Combination</th>
<th>Pounds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sweetclover, red clover, alsike and timothy mixture</td>
<td>416</td>
</tr>
<tr>
<td>Alfalfa</td>
<td>383</td>
</tr>
<tr>
<td>Green oats</td>
<td>368</td>
</tr>
<tr>
<td>Brome-bluegrass</td>
<td>291</td>
</tr>
<tr>
<td>Bluegrass-timothy, red clover</td>
<td>273</td>
</tr>
<tr>
<td>Brome-alfalfa</td>
<td>259</td>
</tr>
<tr>
<td>Timothy</td>
<td>243</td>
</tr>
<tr>
<td>Timothy-red clover-sweetclover</td>
<td>222</td>
</tr>
<tr>
<td>Sweetclover (second year)</td>
<td>220</td>
</tr>
<tr>
<td>Orchardgrass-alfalfa</td>
<td>198</td>
</tr>
<tr>
<td>Sweetclover (first year)</td>
<td>170</td>
</tr>
<tr>
<td>Lespedeza</td>
<td>166</td>
</tr>
<tr>
<td>Bluegrass</td>
<td>157</td>
</tr>
</tbody>
</table>

These are Illinois figures and may not be applicable to all sections of Iowa. As a matter of fact, there is wide variation in the comparative values of various grasses and pasture combinations under the varying rainfall and soil conditions within Iowa.

Anyone familiar with the pasture crops listed realizes the limitations of some of them as to the time and length of grazing season available. The small grains, for example, have relatively short pasture seasons, but furnish immense quantities of high quality forage in season. In an 8-week grazing period, for example, rye pasture alone has produced over 190 pounds of gain per acre on beef steers. Relatively few Iowa cattlemen realize the tonnage of beef that can be produced per acre by pasturing green oats at the proper time. But the pasture season for oats is short and must be fitted into the rest of the feeding program to be worth while.

102. How can I get cattle that have had some grain started out on grass without too much shrink and lost time?

The ideal way to start grain-fed cattle on grass is to have a holdover pasture with a lot of old grass and turn them on early, as soon as snow goes off. They can be switched from this to brome-alfalfa or clover-timothy when such pastures...
are ready, without too much upset. Where cattle must go direct from feedlot to lush pasture, turn them on grass an hour or so the first day. Feed some good hay in the lot until they are used to the grass. It's not a bad idea to feed a little hay all season.

103. What are the essentials for getting good gains on grass?
   (1) Stretchy, good-boned cattle with room to handle grass.
   (2) "Green" cattle in not too high condition.
   (3) Good pasture and plenty of it. There must be grass enough so some will be wasted if you are to get the best gains.
   (4) Extra or emergency pasture or supplemental feeding if you run into a drouth.
   (5) Plenty of good water.
   (6) Spraying with DDT or even more modern fly killers every 2 to 4 weeks, depending on the rains. This is good for an extra quarter pound of gain a day during fly season.
   (7) Shade. Although not absolutely necessary, this is a real help in hot weather.

104. How can bloat on pasture be prevented?
   There is no 100 percent effective means. As suggested under bloat in the feedlot, the causes of bloat are chiefly mechanical. Extreme and rapid fill are the main causes. Anything which tends to slow this down will help.
   Some methods include feeding grass-legume mixtures which slow down the rate of intake; partial filling on dry hay, or hay and grain, before allowing on lush pasture; grazing an hour or two first on the bluegrass or other coarser pasture before allowing the cattle on legumes; keeping them moving frequently; or any other method that will slow down the rate of fill. So far no mixture or drug has been found that is of practical use in preventing bloat.

THE FEEDER AND HIS CATTLE

105. How should newly arrived feeder shipments be received and handled?
   Cattle arriving by truck or rail are tired. Most of all they need rest and quiet. A small lot with bedding and protection
from storm is the best place to hold them until they are rested and settled. A small pasture close at hand, securely fenced and with water available, is satisfactory for early-bought cattle in nice weather. But if you turn cattle immediately into a big pasture or stalk fields, it is hard to keep tab on them as closely as you should, and such treatment tends to keep them wild.

106. How should they be fed and watered?

See that all the cattle find water as soon as possible after unloading. Yearlings or older cattle being held in the lot for rest are best fed only good roughage the first week to 10 days. If they are to be started on feed soon and silage is to be fed, they may be given a chance to get accustomed to it by scattering a few baskets of silage in the bunks. But their main feed had best be hay. Mixed or non-legume hay is safer than alfalfa at the start. Calves may have 1 to 3 pounds of whole oats daily in addition to all the hay they will eat.

107. What can you do to keep down sickness and death losses?

Good care and conditions such as were outlined above are the best protection. Watch closely for signs of sickness, especially with calves. No one handles many cattle without some loss from disease and accident. Surveys indicate that average death losses run between 1 and 1 ½ percent on calves, around 1 percent on yearlings and a little under 1 percent on older cattle. Often losses run much higher than this, but the careful feeder may get by with considerably less.

Shipping fever and pneumonia are the chief causes of loss among feeder calves and yearlings. A sick calf may be spotted quickly by his drooping ears, rough coat, humped back, wet nose and sluggishness. Call a veterinarian at once if trouble shows up. Early treatment with sulfa compounds or other modern methods will help keep down losses from this cause.

Black leg is another calf killer. Unless you are sure calves
have been vaccinated before, it is good insurance to vaccinate against this disease once the calves are fully rested.

108. Does it pay to use soda in the drinking water?

Many feeders charge the water with bicarbonate of soda at the rate of 4 to 6 pounds for each 100 gallons of water for the first week or 10 days, particularly for calves or yearlings coming in after a long ship. There is some evidence that this may help ward off colds and shipping fever, but it is not a cure nor even a sure preventive. It does not cost much to try and it can do no harm.

109. Does it pay to vaccinate against shipping fever?

Feeder experience indicates that vaccination at the market, or at point of origin just before loading, with bacterin or anything more than serum, is of doubtful value, and may even increase losses. Vaccination 10 days or 2 weeks before loading has given much better results. Once the calves have arrived, a good veterinarian is in the best position to decide what should be done.

The so-called "big shot" or serum treatment, often given doubtful calves just before shipment from central markets, seems to be of some help.

110. What are some other causes of death losses?

One cause of loss much more common than is usually realized is the habit of some cattle of picking up pieces of baling wire, nails or other stray hardware. These collect in the rumen and may work through the walls of the liver, lungs or other vital organs. Autopsy shows that many cases diagnosed as pneumonia or other diseases come from this cause. Packing houses show some weird collections of such hardware taken from the digestive tracts of slaughtered cattle.

If the trouble is properly diagnosed in time, a rather complicated and expensive operation by a skilled veterinarian can remove the junk pile and usually save the patient. A more effective and less expensive plan is to keep as many as pos-
sible of these stray bits of metal out of reach of such collectors by carefully cleaning up the lots and fences. Particular care should be used in feeding of wire-tied baled hay.

111. **What causes bloat in the feedlot?**

Bloat is another common feedlot difficulty, although it does not cause as much death among cattle on feed as on pasture. Recent studies indicate that bloat comes mostly from mechanical causes rather than from the type of feed, except that appetizing and easily eaten feed which induces the steer to fill himself rapidly and completely helps set up the conditions which may induce bloat. A steer that gorges himself quickly and completely, then takes a drink and lies down to ruminate, is ripe for a case of bloat. The heavy fill blocks the passage through which accumulating gas normally escapes through the mouth. With no place to escape, the gas accumulates and bloat develops.

Many feeders believe that mixing the grain with roughage such as chopped hay or silage to slow down the rate of intake helps prevent bloat. It is believed also that the roughage helps stimulate muscular action of the walls of the digestive tract more than does the smoother grain. This helps force out the accumulating gas.

There seems to be a good deal to the theory. Some bloating often occurs where cattle are started on feed too rapidly, or with abrupt changes in feed. Occasionally a chronic bloater is found whose only cure is a quick trip to the packing house. Most of the mild bloaters are poor gainers, but occasionally one is found that gains well and whose main drawback is that he makes a nervous owner.

112. **What can be done for “foot-rot”?**

Foot-rot or foul-foot is an all too common trouble in muddy or infected lots, and it may be brought into clean lots by cattle that have picked it up in infected stock yards, cars or trucks. The cattle become sorefooted and lame, with swollen, foul-smelling feet.

Foot-rot can be cleaned up quite readily by treatment with
a saturated solution of copper sulfate. A common and effective method is to fix a shallow vat or trough of the solution at the tank or in the yard or shed so that the steers have to stand in it as they drink, or have to walk through it as they go to feed or shelter. A recently developed quick and effective treatment is injection by a veterinarian with one of the newer sulfa compounds. It is well worth using in severe cases.

113. Does it pay to fight flies and parasites?

Hot weather and fly time traditionally slow down gains and increase costs. The fatter and more nearly finished the cattle are, the more they are affected. Tests indicate that a thorough fly clean-up is good for a \( \frac{1}{2} \) to \( \frac{3}{4} \)-pound increase in daily gains in the feedlot. With the advent of DDT and perhaps newer and even better fly killers, there is no excuse for accepting the loss in gains and waste of feed that come from pestering flies. Methodical spraying of the cattle and quarters and cleaning up of breeding places will practically eliminate flies.

The same can be said for adoption of recommended measures for control of lice and cattle grubs. The increased thrift and better gains on the cattle pay well for the time and money spent on these jobs.

114. How important is care and regularity in feeding?

"The eye of the master fattens his cattle."

No set of rules or detailed instructions can take the place of the feeder's interest and care. The good feeder studies and watches his cattle. He gets so well acquainted with them that any tendency to go "off feed" or any other shift from normal is quickly noticed.

The appetites of cattle on full feed are affected by weather conditions and changes. Damp, muggy weather or excessive heat slows them down. A skillful feeder anticipates this and feeds accordingly. If the cattle leave feed in the bunk, he cleans it out and feeds less the next feed. It is much easier and safer to keep cattle on feed than to try to get them back once they have gone off feed.
The good feeder is quiet and methodical in the yards. He knows that noise and excitement interfere with gains. Cattle are creatures of habit and do better where regular routines are established as to time and method of feeding and other chores.

115. How can I use fall feed to best advantage?

Cattle bought in early fall may be turned on meadow aftermath or other pasture as soon as they are rested and settled. This utilizes feed, tends to stretch out the cattle, gives them spread and starts them gaining.

Yearlings and bigger cattle may make good use of stalk fields. Calves, particularly light ones, do poorly on such feed. It rarely pays to pasture cornstalks with calves. It is easy to overestimate the value of stalk fields even for bigger cattle. When the corn left by the picker has been pretty well cleaned, gains slow down very quickly. Any sort of cattle intended for early finishing are best taken from stalk fields or pastures before they stop thriving under such conditions. The job of finishing off the stalk fields is best left to the stock cows or similar cattle.

116. How should I start my cattle on feed?

There are almost as many ways of starting cattle on feed as there are cattle feeders. Much depends on the kind of cattle, the feeding set-up or program, the feeds to be used and the risks the feeder is willing to take. For the beginner it is a critical time, and his motto well might be “make haste slowly.”

Opinions differ as to the methods to be used and the time required to get cattle on full feed. Many practical cattlemen figure 10 to 15 days for cattle to be short-fed and 5 to 15 days longer for cattle to be fed 6 months or more.

Observation of methods used by successful feeders as well as experimental results suggest the following principles:

1. Start cattle on all they will clean up of whatever roughage is to be fed before starting the grain. This may
be hay or a combination of silage and hay. Silage simplifies the job of getting cattle on feed. Almost any kind of cattle may be started within 4 or 5 days on all the silage they will eat. Better results are obtained by feeding some dry roughage, preferably of good legume hay, along with the silage.

(2) For yearlings or older cattle, start the corn at 2 or 3 pounds per head shelled corn basis the first day. Increase the corn 1 to 1½ pounds per head daily, the amount depending on their size, until the cattle are getting about 1¾ pounds of corn for each 100 pounds of live weight. Make further increases slowly at 1 pound per steer each 4 or 5 days, until they are consuming 2 pounds of corn daily per 100 pounds live weight. This is an average full feed. Some cattle will take considerably more in safety. Others stop a little under that figure.

Corn-and-cob meal, because of its bulk and perhaps for other reasons, is a safer starting feed than shelled corn. Many feeders use it for starting cattle even where shelled corn is to be fed later. They claim they can get cattle on feed safely in a third less time on corn-and-cob than shelled corn. But even where roughage feeding is limited, it is rarely possible to get as much corn into cattle when corn-and-cob is fed as when shelled corn is fed.

Shelled corn consumption can be safely stepped up more rapidly if the corn is fed mixed with such feeds as chopped hay, cut fodder or silage than if it is fed separately. If oats are available they may be used to advantage in starting cattle on feed. They work especially well with calves unaccustomed to grain.

(3) Start calves with a little whole oats, 2 to 3 pounds per head in the bunks. When all the calves are eating oats, add about 1 pound of corn, either shelled or as corn and cob meal, at the start. Increase the corn ½ to 1 pound per head every 2 or 3 days until the calves are eating 2 pounds of grain daily for each 100 pounds of live weight. Then the oats may be continued at 2 to 3 pounds cut back to 1 pound per day or dropped entirely, depending on their price and
availability. Fed at the rate of 1 to 2 pounds per head daily, they add variety, and in such small amounts are worth nearly as much per pound as corn for fattening calves.

(4) Start whatever protein supplement is to be fed when grain feeding begins. Contrary to the opinion and practice of many feeders, cattle do better and get on feed more quickly and more safely if the protein is fed from the start. If you plan to feed 1 pound or 1½ pounds of supplement daily, it is safe to feed ½ pound the first day and feed up to the full amount within 5 to 6 days.

If you need to economize on protein feed, it is better to use the protein feed the first half of the feeding period and cut down or drop it toward the close than to follow the usual reverse procedure. This is true from the standpoint of both rate of gain and efficiency in the use of feed. Of course, it is better still to feed it all the way through. The foregoing is particularly true with calves but applies to bigger cattle as well.

117. How can cattle be started early on new corn?

Yearlings or big cattle that have been grazed through the summer or bought in August for a short feed often are started on new corn, chopped stalk and all. Some start while the cattle are still on pasture. Others prefer the drylots.

As soon as the ears are glazed, the corn is harvested with a field cutter or with a corn binder and then run through a silage cutter. Because of heating, not more than a 2- to 3-day supply can be cut at once. Within a week or less the cattle can safely be fed all they will consume.

As the corn matures and the stalks dry, the cattle are shifted gradually to chopped snapped ears and finally to corn and cob meal or shelled corn. A little hay, 2 to 3 pounds per head daily, is added to the ration as the stalks are dropped. From 1 to 1½ pounds of protein daily is fed from the start. This is a method successfully used by a
number of Iowa feeders. Often they are able to prolong the chopped corn season by starting first on the earliest field and shifting to later fields as they mature. It is a good way to use a stray field of late or soft corn.

118. **What about turning cattle into the cornfield?**

Occasionally if you have a late field, or in soft corn years, it may be desirable to graze or "cattle off" such corn. Common practice in such cases is to start the cattle on bundle fodder or on chopped fodder from the field until they are eating all they can take.

The cattle are then turned into the field an hour or so the first day, and the time is increased each day, until at the end of 10 days they may be left in continuously even in pretty good corn. The poorer the corn, the shorter is the time required to get cattle safely into the field. In wet years or without plenty of hogs following the cattle, a lot of corn is wasted by this method. It is not often practiced in really good, high-yielding corn.

119. **How can cattle be started on the self-feeder?**

Most users of self-feeders bring their cattle to a full feed by hand feeding and continue to feed in the bunks for a few days after the self-feeders are opened. Others have tried to use mixtures of ground roughage and corn in the feeders. But the difficulty of getting such mixtures to feed down properly in the average self-feeder has made this unsatisfactory in many cases.

Still others take a chance by starting the cattle on the self-feeders at once on the regular corn and protein mixture, but closing the feeder openings on all but about one-fourth to one-fifth of the normal feeding space. They count on the cattle crowding each other away from the feed before any individual gets too much.

With cattle of uniform size not used to corn and full fed on roughage, there is apparently less risk in this method than might be supposed. I have seen a lot of a hundred-odd, 3-year-old western steers started on a mixture of shelled corn and linseed pellets by the simple method of closing all
but 16 feet of the 64-foot feeding space at the start, opening the second 16 feet at the end of a week, the third section at the end of 2 weeks and the fourth at 3 weeks. At 90 days the cattle were eating 28 pounds of corn daily and there were no off-feed or foundered steers in the lot. Good clover hay was full fed at the start and only slightly limited the rest of the feeding period.

The same procedure has been used in starting yearlings on corn and cob meal on pasture after they had been grazed without grain until midsummer. It looks risky, but for some feeders its seems to work.

120. **How many times per day should cattle be fed?**

Common practice with cattle on full hand feeding is to feed the grain twice daily, morning and evening. But experimental checks as well as the wide variations in methods among successful feeders indicate that so long as the job is well and regularly done, it makes little difference in total feed consumption or rate of gain whether the cattle are fed once, twice or three times a day or are self-fed. Practically equal results have been obtained by all four routines.

The method followed at the Iowa Experiment Station and by many feeders where a combination of silage and limited hay is being fed for roughage, and corn is full fed, is to feed corn first in the morning, and then silage. Corn and silage are fed in the evening, with hay the last thing at night. The protein supplement may be fed on either the corn or the silage. If grain is being limited it is fed only once a day. If hay is being full fed and silage limited, the racks are kept full and the silage fed once a day around noon.

121. **Does it pay to dehorn feeder cattle?**

It usually pays to dehorn young cattle that are to be kept for some time. Dehorned cattle are quieter; take less room at the feed bunk and in shelter, cause fewer injuries to each other and are safer to handle. Horns make little difference in the price of heifer calves or cattle to be marketed at light weights.

Heavy-horned, big cattle are often turned down by order
buyers or eastern shippers, and are discriminated against by all buyers because of the high percentage of bruises and injuries likely to show up in the carcasses.

Fall dehorning is best done in November after a hard freeze, and spring dehorning in March, to avoid screw and blow flies on one hand and severe weather on the other.

Most experienced feeders are willing to pay a fair premium for dehorned cattle rather than put up with the horns or tackle the messy job of dehorning, with the resulting shrink and possibility of loss.

122. Are mechanical curriers or "back scratchers" worth while?

Fattening cattle like to rub and scratch, especially while shedding their winter coats. They soon get on to the mechanical gadgets sold for the purpose and seem to have a lot of fun. But a log chain or twisted strands of heavy wire loosely stretched at the proper height between two stout posts seem to serve the purpose as well. Probably the chief cash value in either of these is the protection they afford the fences.

123. Is it a good idea to turn a bull in with feeding heifers in the spring?

As a general rule the answer is "no." Usually he creates as much or more excitement than he stops. Heifers usually quiet down as they fatten, anyhow. If you carry bred heifers into the summer, they may begin to look calfy and be discounted in price. Buyers usually try pretty hard to find out whether heifers have been bred, and remember a shipper if they have been fooled, but there is some evidence that the bred heifer gains a little faster than open ones.

124. Are spayed heifers worth the extra price, or the risk and cost of spaying?

There is a good deal of disagreement on this among feeders and even in experimental results. Spaying prevents the feedlot excitement caused by "bulling" heifers. It insures
against calfy heifers. Spayed heifers and steers may be fed together. They hold their shape better when carried to heavy or "Kosher" weights. There is evidence that they outgain open heifers a little. Usually it does not pay to spay heifers that are to be short-fed, but with choice heifers to be long-fed it may be worth while.

125. **How important is salt in cattle feeding?**

Cattle allowed all the salt they want are quieter, eat more feed, and gain faster and at lower cost than cattle getting no salt. The best way to feed it is as loose salt in a box or bunk protected from the weather. Cattle are sure to get enough when it is fed in this way. Block salt is all right, but it is hard for cattle to get enough of it. As one feeder remarked, "It lasts too long." Many feeders offer both loose and block salt to make sure the cattle get enough.

Salt-starved cattle are best started on block salt or fed a little loose salt each day until their craving is satisfied. If turned to all the loose salt they can eat at once, it may cause scouring or worse trouble.

126. **How much water do cattle need?**

It is hard to overemphasize the importance of a constant, convenient and easily accessible water supply for all stock. It not only saves labor, but is necessary if cattle are to do well. A day without water does as much or more damage than a day without feed.

Water consumption varies with the size of the cattle, the feed and weather, but 12 gallons per head daily for mature cattle and 7 or 8 gallons for calves and yearlings should be available. Cattle drink more if water is kept reasonably ice-free in winter, by shelter, cover or heater, but water does not need to be warmed.

127. **Is bedding important?**

Bedding is cheap feed. A steer gains faster lying down than standing up. A well bedded, dry place to lie down keeps cattle quiet and comfortable and makes for more rapid gains and better use of feed. It keeps them clean and salable.
Plenty of bedding saves the manure and adds to its value. Grain or bean straw, cornstalks or corncobs make satisfactory cattle bedding. With the advent of the manure loader, there is no need for shredding stalks or grinding the cobs for cattle bedding as was the case in the day of the four-tined fork.

LOTS, SHELTER, EQUIPMENT AND LABOR

128. How much lot and shelter space is needed per head?

Too much lot room may make cattle restless. Too little will make them "poor doers." The rules say that with access to yards, 20 to 25 square feet of shelter space is needed for each calf, 30 square feet for yearlings and up to 45 square feet for big cattle. Twenty-five to 30 square feet of lot space is needed for yearlings in completely paved lots, 100 to 130 square feet in unpaved yards; 20 square feet of paving plus 80 to 100 square feet of dirt yard is better than either kind of lot by itself. Many cattle feeders crowd their cattle into as little as two-thirds of this space and with plenty of bedding still get good results.

Cattle are easier to feed and handle and less space per steer is required in a long narrow lot than in a square one.

129. Does it pay to pave feedlots?

The answer to this question depends on lot location, drainage, type of soil, number of cattle handled, and season when fed. If cattle are in the lots in fall and spring and your lots get deep in mud, it will certainly pay to do some paving. Pave at least around the water tanks and a 24-foot wide strip on which the feed bunks stand. But leave some space unpaved or give the cattle access to an unpaved yard in dry weather. In bad weather paved lots save labor, feed and manure, increase gains and help keep the cattle clean and salable. In good weather the cattle do better if they have a chance to get "down to earth." Cattle tend to get footsore and stiff if held too long on pavement alone.
130. **How high should feed bunks be, and how much bunk space is needed?**

Calves eat and do better from bunks 24 inches high than from taller ones. They need about 18 linear inches of bunk space per head. Bunks for yearlings or older are better 30 inches high with 20 to 24 linear inches allowed per head.

Ideal self-feeder space is 6 to 8 linear inches for calves, 10 to 12 for yearlings and 14 to 16 linear inches for big steers. But a lot of self-fed cattle get along pretty well with as little as half that much.

131. **What kind of shelter is needed?**

A lot of cattle feeding plants are overbuilt from the standpoint of tight barns and shelter. A shed 24 to 30 feet deep or more, open to the south, is good enough for cattle of any age under average Iowa conditions. Big cattle have been fed pretty satisfactorily most seasons without shelter other than a windbreak of trees or a tight board fence or a straw stack or two. All that is really needed for any sort of cattle on feed is opportunity to get shelter from wind, wet weather and storms.

132. **Are self-feeders practical and safe?**

Self-feeders can be used only where cattle are being full fed grain. Properly designed and well constructed, self-feeders are proving to be practical and safe for many hundreds of Iowa cattle feeders. Self-fed cattle eat a little more corn, and gain a little faster than most hand-fed cattle, but they take slightly more feed per pound of gain. Feeders can be built to handle shelled corn, corn-and-cob meal, or ground grain and protein mixtures. I have yet to see one that handles chopped hay and grain mixtures satisfactorily.

Care is necessary in getting cattle started on the self-feeder. But remember, the self-feeder cannot take the place of the regular watchfulness of the caretaker. He needs to look over his cattle frequently, see that there is feed in the feeder and that it is feeding down properly.
In the self-feeder, protein pellets mix and feed better with shelled corn than does meal. Self-feeders are particularly popular for full feeding on pasture, but they are equally practical in the feedlot. They can save much time and labor.

133. **What is a good way to feed hay?**

Less hay is wasted when fed in manger-type racks. These can be made of poles or planks. Commonly they make one side of the feedlot fence. They are about $2\frac{1}{2}$ feet deep and 3 to 4 feet wide, with vertical 2 by 4 slats spaced from 12 to 18 inches apart on the lot side. If hay stacks or storage is handily located, the racks can be filled direct from the stack or mow. Or they can be filled direct from the wagon or truck. They are handier for feeding baled hay than are high racks.

If a movable rack is needed, the V-shaped rack built on skids, with vertical or slanted 5 to 6-foot slats spaced 4 inches apart and with a bunk or manger underneath to catch the leaves, works pretty well. Some feeders build such racks on old wagon gears or machine trucks so they can be moved easily and even be filled at the mow and hauled to the lot where the steers do the unloading.

134. **What makes a good feedlot fence?**

Feedlot fences have to take a great deal. They need to be stout. A tight board or plank fence on the north and west serves the double purpose of fence and windbreak. Some feeders have built masonry walls for the same purpose. A durable and practical lot fence can be built by combining woven and barbed wire. It should be braced and reinforced midway and at the top of the posts with a railing of poles or 2 by 6's. It pays to use heavy, durable posts and heavy wire for lot fencing.

135. **Does shade help gains?**

Anything that adds to the comfort of the steers is money in the pocket of the cattle feeder. Hot weather and "fly time" slow down gains and increase costs. The fatter and
more nearly finished the cattle are, the more heat affects
them. Heat is hard to combat. Shade helps. The steer's
idea of the best place to be in the middle of a hot day is
under tall trees on a breezy ridge or knoll. But trees do not
last in a feedlot. Some summer-time feeders build “breeze
ways” of poles roofed with straw or brush in the yard as a
substitute for natural shade. Others have gone so far as to
install fans or more elaborate cooling systems in barns or
sheds. There is some doubt as to their practicability. Cattle
like shade in hot weather, and it helps, but they can live
without it.

136. How can I save labor in cattle feeding?

- Cattle feeding operations vary greatly in volume from a
few head to several hundred. Labor saving and efficiency
in feeding operations is important for all, but the overhead
cost of maximum mechanization in storage, processing and
handling of feed and in the feeding operations often makes
it impractical except for the big operator.

There are some principles which apply to most conditions:

(1) Convenient arrangement of feed storage, shelter, lots
and gates will minimize the time and labor required in feeding
and handling cattle.

(2) Have a constant and convenient automatic water
supply, easily accessible to all stock.

(3) Haul—don’t carry feed. Where numbers are small,
the feed wagon may serve as temporary storage bin in the
feed yard. Fill wagons directly from silo, bins or hay storage.

(4) Paved lots save labor, feed and manure. Pave at least
around water tanks and a 10-foot strip on each side of feed
bunks.

(5) Where cattle are being full fed, large-capacity self-
feeders permit handling feed in full loads with a minimum
of labor. Self-feeding on pasture also saves hay making and
manure hauling.

(6) Feed hay close to storage or stack to provide the
least possible handling.
(7) Large-scale operators can make good use of elevating, conveying and processing equipment.

(8) Suitable pens, chutes and stocks are great conveniences in sorting, vaccinating, spraying, etc., and are worth the cost to the large operator.

PROBLEMS IN CATTLE MARKETING

137. What do you mean by marketing problems?

In my judgment, livestock marketing usually is given an altogether too narrow definition. We think of it only in terms of the mechanics of getting our cattle sold. As a matter of fact, everything which affects the financial outcome of the feeder's enterprise and the net share he manages to get of the consumer's meat dollar, has marketing implications. Many of these factors are outside his individual control; he can meet them only by recognizing and anticipating them and using such protective measures as he can. There are a number of things about which he can do something for himself.

138. What are the factors all or partly within his control which affect the individual feeder's net return from his cattle?

One rule of good salesmanship is to have the right product at the right place at the right time. So, smart marketing starts with sound planning of the feeding program. It involves the choice of the right cattle to fit the feed situation. It includes timing of the end of the feeding operation to fit the seasonal period of best demand for the kind of cattle fed. It continues with the feeding and proper finishing of the cattle for their grade.

At times smart marketing includes some close figuring as to how long the cattle should be carried in view of changing feed costs or the slow-down in rate of gain and efficiency in the use of feed as the cattle fatten. Effects of weather and lot conditions and the feeder's estimate of short-time outlook, or probable market behavior, cannot be left out of
his calculations. Finally, it comes down to the choice of the market, the marketing methods and the date.

Probably only three or four items on this list come within the limits of a strict definition of marketing. A number can be classed as management, and some only as simple practices, but they all affect the feeder’s net financial return.

139. What determines the price of cattle?

We farmers generally think of the supply of what we have to sell as the main price-determining factor. If we have a lot to sell, it’s cheap. When we haven’t much to market, the price goes up. Usually there is a good deal of soundness in that conception. But the supply is never more than half the picture, and often it is a very short half.

It is my opinion that, contrary to the conviction of most consumers and of a surprising number of producers, the price of meat is not made by the price of livestock. On the contrary, the price of livestock, on the average, is made by what the consumer is able to and does—unwillingly though it may be—spend for meat.

140. Why do you think this is so?

Even with all the modern equipment and methods available, meat is still a perishable product. New methods of processing, storage and handling help, but in the main, meat, and particularly beef, must be sold continuously as the livestock comes to market. On the whole the livestock processing and meat merchandising industry is highly competitive. In general, prices paid for livestock reflect pretty accurately the current and anticipated wholesale prices of meat and its by-products, and they, in turn, reflect the situation in retail trade.

I do not mean by this that there may not still be many things happening “in the dark” in livestock and meat trades that are objectionable to both producers and consumers. There are a number of things within the producer’s control
which might be of help in ironing out some of the difficulties. Chain store and cooperative experience indicates the possibility of improved meat merchandising methods, wholesale and retail, which may in time help bring a larger share of the consumer's dollar to the livestock producer.

141. What makes the wide day-to-day, short-time fluctuation in livestock prices?

The occasional wide day-to-day fluctuations in livestock prices are a thorn in the flesh of the livestock producer. They reflect, in part, somewhat comparable changes in wholesale meat prices; in part, fluctuations in around-the-circuit livestock marketings; and, of course, in considerable part the efforts of alert packer buyers to take advantage of every opportunity to buy as cheaply as possible.

142. What protection does the feeder have against such situations?

The smart feeder has some little chance for protection though not enough. The alert cattle feeder choosing a specific marketing date and place watches reports on the wholesale beef trade as well as current and expected livestock receipts and prices. He keeps himself informed on the comparative demand and price situation for the kind of cattle he has to sell on the markets available to him. He appraises his own cattle realistically as to weight, grade and yield, and he has a fair idea of what they are worth from study of radio and other market news service reports.

He can contact a good commission firm which will help keep him informed on many points. Sometimes he can get a salesman to inspect the cattle and give him an estimate as to their grade and value on the current market. Such an inspection also informs the salesman as to the kind of cattle he may have to sell and gives him a basis for a telephone call when he thinks the time is ripe.

If the feeder wants to sell at home he can familiarize
himself with the comparative transportation costs, shrink, and buying and weighing practices, of the various direct outlets open to him. All of this will help him in arriving at a decision as to the best time, place and method of marketing his cattle.

143. What outlets for his cattle does the Iowa feeder have?

The feeder has a somewhat wider choice of market outlets for his cattle than many realize.

He can ship them to the central market consigned to a commission company, where they are sold on the so-called "open competitive market" for the best bid that can be obtained. He can sell "direct" to interior slaughterers, order buyers or traders. Direct sales can be made at the packing plant, the buying station, to local packer representatives or to traveling buyers. Sales also can be made to traders or to local killers. Many cattle are sold through auctions.

144. How are Iowa cattle sold?

No very reliable figures are available, but the last attempted check-up indicated that about one-fifth of the cattle and five-sixths of the calves sold from Iowa farms go to market direct through one or another of the channels indicated above. Probably a considerably higher percentage of the fed cattle supply goes through the central markets than this figure indicates.

145. On what basis are live cattle prices made?

The skilled buyer for a big outfit is kept informed by his beef department as to what is needed and the price at which it should be bought in the beef in line with the current and anticipated wholesale market for the various grades and weights. From there, the buyer is on his own.

In general this is his procedure. Cattle are bought on the basis of yield and grade. The buyer estimates first the grade
or grades and number of each in the drove on which he is bidding. He knows what he can afford to pay for each grade in the beef, in the weight ranges involved. He estimates the yield or dressing percentage under the buying conditions. He knows what the allowance for killing credits or "drop"—that is, hide, offal, etc.—amounts to in terms of live weight price. Putting them all together—yield times beef price plus killing credits—he arrives at the allowable price and buys for as much less as the seller's knowledge of grades, values and available outlets will permit. Or at times he may pay as much more, within reason, as he has to in order to get stock needed to keep the plant going or to fill pressing orders.

This is the basic process whether the sale is made at the central markets or in the feeder's yard. Many quite successful buyers and traders will scarcely recognize it. They rely largely on their observation of markets and market trends, knowledge of cattle, experience and "feel" of the situation in making their bids. But fundamentally this is the way in which prices are determined.

146. What is the best way to sell cattle?

In my judgment there is no one best way. Relative demand and price situations shift rapidly. The alert feeder tries to sell in the way and at the time and place that will bring him the greatest net return for the kind of cattle he has to market. In general, but by no means always, the central markets furnish a broader outlet and relatively higher prices for the better grades of slaughter steers and heifers, and at times for some other specialty classes. Usually this is because of the competition furnished by order buyers for eastern and other slaughterers with special outlets for certain kinds and weights of cattle. However, many interior slaughterers and order buyers also have specialty outlets which make it possible for them to furnish strong competition on certain classes of cattle.

In general, it is up to the alert feeder to familiarize himself with the markets available to him and to choose the one that he thinks will bring him the greatest net return.
147. Will direct marketing continue to expand?

There are a good many indications that it may do so. By the last count we had 11 federally inspected interior packing plants located mainly in the eastern two-thirds of Iowa, and four or five easily accessible in adjoining states. A large number of smaller state-licensed slaughterers were widely scattered over the entire area. In addition most of the larger outfits on the central markets do considerable direct buying, although at present this is largely confined to hogs and lambs.

For various reasons there seems to be a tendency to decentralize the packing industry. Reasons advanced for this trend include lower net freight rates, to consuming centers, on meat than on livestock; better operating and labor situations in the smaller communities; greater assurance of obtaining livestock supplies; and, of course, the stock argument of central market interests, the possibility of buying at lower prices in the country.

In any case, the percentage of direct buying continues to grow with the increase in numbers of interior slaughter plants and the expansion of established ones. My guess is that these will continue to operate and to take an increasing share of our cattle output in the future.

148. Why do feeders sell direct?

It has been said that "A Nickel More" is the best livestock buyer in the country, and that feeders sell where they can realize the highest net returns. While this is true in general, observation indicates that price is not the only, or even in many cases the dominant, factor in the growth of direct marketing of livestock. The risks that are inherent in shipping to distant markets, occasional wide day-to-day fluctuation in prices at the market, the practical compulsion to sell once the market is reached, regardless of conditions, the time involved in shipping, but most of all, the uncertainty of outcome—these are things the average feeder dislikes. At home he is in position to say yes or no to an offer. When
he sells he knows what he is to get before control of his cattle passes from his hands. He likes cash on the barrel head. With all these things in mind, many feeders are inclined to accept the "direct" bid when they believe it is reasonably close to what might be obtained net by shipping to the central market.

149. How can you choose the best market and selling method?

Today much more complete, reliable and accessible information is available to the feeder concerning the central markets than concerning the interior outlets. In fact, there are no interior cattle market reports other than information given by buyers, by word of mouth or "the grapevine." Much progress has been made in Iowa in gathering and reporting the interior markets for hogs and lambs. But the interior cattle market is still very much in the dark.

To date the feeder must rely for his general market information and idea of values mainly on the central market reports.

The feeder who keeps himself best informed as to these markets' conditions and trends, and who knows pretty definitely the relative cost in freight, shrink and selling expense connected with the various marketing outlets, is in the best position to make an intelligent choice of market and method of selling.

If he is his own salesman, the seller needs even more than the patron of the central market to keep well informed on the market situation and to know how to appraise his cattle as to grade, yield and value. As a matter of fact he usually is less well posted than the man who visits the markets with cattle shipments.

It takes a better informed feeder and perhaps a little luck as well to do a good job of selling direct as compared with central marketing. As we mentioned earlier, the commission the feeder pays at the market can be made to buy a good
deal of expert service and advice in addition to the actual selling job.

150. What about selling on the yield and grade basis?

Selling on yield or combined yield and grade basis has been proposed as a means of taking some of the guess out of cattle marketing, particularly with the “directs.” Some interior slaughterers have tried this method of buying and offer the feeder opportunity to make use of it. Where it is available it offers some advantages, especially to the inexperienced feeder who wants to sell direct but mistrusts his own information and judgment as to the grade and value of his cattle. There is such wide variation in cattle in yield and grade, and in the corresponding spread in real value, that such a plan has many features that might make it attractive to both buyer and seller. A most valuable feature for the man who does have opportunity to sell on yield and grade is what he learns about his own cattle and how his methods of selection, feeding and management have turned out in terms of final product. He really has followed his cattle to market.

But real values between kinds and grades of cattle are pretty well reflected in the cattle markets as a whole. Expert buyers, while not infallible, are reasonably accurate in their live cattle appraisals, although they tend to hit closer to actual average yields and grades on droves of cattle than on individual steers. Volume processors hesitate to adopt a practice which involves additional detail in record and bookkeeping and perhaps some delay in processing. Most of the carcass grading is still on a company grade basis, not by U. S. standards or government grades. Payment for the cattle must be delayed until yield and grade reports are in. So the general adoption of such a system for all grades and kinds of cattle would be far less simple or easy than might appear on the surface.

151. How important is a good job of marketing?

The old adage that “well bought is half sold” has a lot
of truth in it. But we should remember that the other half of the job remains and that on the whole we do not do it too well. What we have said here may be of value chiefly as a reminder that there is more to smart livestock marketing than calling a trucker or ordering a car.

Agricultural Experiment Station, Iowa State College of Agriculture and Mechanic Arts, Floyd Andre, director, Ames, Iowa.