ing a decided angle, and not cut under too sharply at base.

"Such a horse, going smooth and true, neither paddling nor toeing in forward, nor, as we say, straddling behind, will always command a top price in the market, provided he has been educated, and abounds in nervous energy. Form, size, color, symmetry, and substance are essentials, but these do not insure the road horse. To these must be added individuality, the result of breeding. It manifests itself in what we term nervous energy, the up-and-get-there power. It is the power of heredity, so desirable, so necessary. To secure this, there must be a high ideal and a fixed determination in breeding."

SWINE BREEDING AND FEEDING.

(From a paper read by W. M. McFADDEN, at an American Farmers' Institute.)

My observations along the line of raising hogs have convinced me that there are several popular ideas on the subject that are erroneous. I do not expect to convert you to my way of thinking, but I hope I can draw out a discussion that will be of value to all of us. We are raising hogs for the money there is in the business. Of course, I expect all to agree with that. It is, however, on the question of the best way to get the most money out of it that I may cause some contention.

All have noticed a few hog growers in every neighborhood who are away ahead of their neighbors in the success they secure in producing pork. These men but prove that the average man could adopt much better methods than those he practises. I believe a large number of the most successful hog men (and I speak now of the strictly pork producers) are those who do not accept many of the popular ideas on the business, who think for themselves, and who work on lines that a majority would denounce if asked to give an opinion. Now one remark we hear most frequently about our hogs is, perhaps, that they are too fine boned and lack size. From my standpoint nothing about a hog is easier to produce than size, that is, a big meaty hog. Hogs that possess these characteristics are by no means the most profitable pork producers. What we need is quality. It is generally thought we cannot get quality without reducing the size, but it can be secured and all the size necessary retained. The art of combining these two marks the successful hog man. A good, flinty bone is what we want, and not the coarse, soft leg. The bone need not be large, if it is the right kind and shape.

In view of the increased profits to be secured, I think it worth any farmer's while to make a study of the matter with a view to determining how he can best produce a hog of the right type. We frequently hear farmers declare they care nothing for the so-called fine points that breeders of purebred herds seem to place so much stress upon. Now, I believe a man who is raising hogs for pork is interested in a neat head and ear, a nice coat of hair, and other points that are generally considered only "fancy." While these things will add nothing to a bunch of hogs on the scales, so far as weight is concerned, they are valuable to any one raising hogs for two reasons. First, a bunch of this nice, neat, stylish kind, with lots of quality, will generally bring a little more on the market, and in the second place, and by far the most important one, they indicate good breeding, or, if you please, what I have termed quality, a thing that is something of a hobby with me.

I am aware that the tendency is to reduce the size when a great deal of attention is paid to quality, but this is not necessary. The secret of the whole business is to know what to select for breeders that will maintain sufficient size and yet secure the kind of animals that will give the very best results for feed consumed. This can be done, not by selection for size and so-called bone, but by intelligent selection, with quality as the first consideration. There is not a scarcity of this kind of breeding animals. Simply, we do not select them when we get them.

Another popular idea that I want to combat is that to get a good brood sow we must select a long, loose, coarse roomy one. Now, a good brood sow is one that will produce a fair-sized litter of the right kind of pigs. Some of the best brood sows I ever had were of the rather neat and stylish kind. I have bred a few state fair winners, and they were nearly all from sows that showed plenty of quality, and I never had results that were satisfactory to me from a big, coarse, roomy sow. Of course, there are some good brood sows of that type, but not by any means of the sows that are valuable as breeders of that kind.

As to feeding, I can sum up what little I know about it in a very few words. It does not matter nearly so much what you feed as how you feed it. The best part of any improved breed is the corn crib cross. One difficulty is that the average farmer does not feed regularly, and with a view to constant gain on his hogs. Variety of feed and a balanced ration are all right and of great advantage, but require an intelligent use of them just at the right time. Success in pork production demands, as does every other business in these days of close competition, constant and intelligent thought and attention, and can be secured by independent thought and methods as often as in any other way.

STEER AND HEIFER BEEF.

Widely different opinions are held as to the comparative value of steer and heifer beef. American packers rate steers at from 25 to 50 cents per hundred more than heifers of the same age, breed and general qualities. On the other hand, the opinion in England is the reverse, heifer beef being rated higher than steer beef.

For some years feeding experiments have been made at the Iowa Station to study the comparative value of steers and heifers for fattening. In the first trial one lot of steers, one lot of spayed heifers, and one lot of open heifers were used. They were all grade Shorthorns, as nearly alike in breeding and development as possible. There were five animals in each lot. The lots were fed and treated in the same manner. Seven of the heifers calved during the trial, which interfered with the comparison. The steers made a larger gain and sold for one cent per pound, live weight, more than the heifers. During the whole test, which lasted about eleven months, the steers made an average gain of 806 pounds; one open heifer, clear of calf, gained 775 pounds; four open heifers that had calves made an average gain of 628 pounds; two spayed heifers, clear of calf, made an average gain of 736 pounds; and three spayed heifers that had calves averaged 645 pounds gain.

The steers were sold at 5.75 cents and the heifers at 4.75 cents per pound, live weight. Allowing 3.5 cents per pound for the steers and 2 cents for the heifers at the beginning of the trial, there was a profit of $64.39 on the steers, $30.51 on the unspayed heifers, and $13.76 on the spayed heifers. The average proportion of beef in the carcass was 63.2 per cent. for the steers, 62.4 for the unspayed heifers, and 62.8 for the spayed heifers.

When slaughtered, the carcasses were cut and judged by an expert. The heifers gave a larger percentage of prime cuts (ribs and loins) than the steers, so that, on the basis of the meat and by-products obtained and the price paid for the steers, the heifers were worth from 0.57 to 0.62 cent a pound more than was paid for them.

Crediting each lot with the actual value of the different cuts and the by-products, and not including the expense of killing and handling, it is calculated that, at the prices which the butcher paid, he made $20.45 on the steers, $58.12 on the unspayed heifers, and $64.84 on the spayed heifers. In other words, the returns made by *the heifers would have justified a purchase* price of $5.37 per hundred for the spayed heifers and $5.32 for the open heifers, instead of $4.75 for each, and still have left the same profit as with the steers.

The results of a second trial to compare steers and heifers for beef production have been recently published. The test was made with 15 pure-bred or high-grade Herefords. The animals were divided into three equal lots, one of steers, one of spayed heifers, and one of open heifers, and all were fed alike during fourteen months.

The results of the experiment are briefly summarized in the following table:

RESULT OF FEEDING STEERS AND HEIFERS FOR BEEF.

	Average weight at end of test.	Average daily gain per head.	Dry matter eaten per pound of gain.	Average cost of food per pound of gain
	Pounds.	Pounds.	Pounds.	Cents
Steers	1,358	1.71	8.70	4.08
Open heifers	1,300	1.65	7.67	3.65
Spayed heifers	1,317	1.70	8.60	4.05

As shown by the experiment, the heifers made a slightly greater average gain from correspondingly less food and at a less cost than the steers. Carefully conducted slaughter and block tests did not reveal any material difference in the character, composition, or quality of meat from steers and heifers, although the percentage of high priced cuts, ribs and loins was greater in both lots of heifers than in the case of the steers.

It has been claimed that the principal cuts in heifer carcasses contain more fat than those of steers, and are, therefore, less profitable to the consumer. The average cost of the beef to the firm purchasing the cattle raised in these experiments was 6.51 cents for the steers, 6.21 cents for the spayed heifers, and 6.14 cents for the open heifers. The average selling price received by them was 6.59 cents, 6.26 cents, and 6.24 cents, respectively.

It was observed in this and other investigations that under similar conditions heifers are inclined to take on flesh a little more readily than steers. Larger gains by the heifers may not be shown, but there is a tendency to finish at a little earlier stage in the process of fattening. The difference between steers and heifers in this regard, when fed under the same conditions, has also been noted by practical stockmen feeding on an extensive scale.

The fact is emphasized that heifer beef has been much underestimated, since in both trials the heifers have returned a higher net profit on the block than the steers, notwithstanding the fact that the steer beef was rated higher than the heifer beef. So far as could be learned from these experiments, spaying had no particular influence on the gains made.—*Bulletin, U.S. Department of Agriculture.*

DIPPING SHEEP FOR TICKS.

The injury inflicted by the sheep tick upon the flocks of this state can only be roughly estimated. Ticks do not cause death directly, nor injure the wool, but cause untold torment by their biting and wandering about over the body. This saps the vigor of the old sheep, retards the growth of the lambs, and makes both susceptible to disease. The tick is a wingless fly about a quarter of an inch long, having a large, strong, reddish-gray body, and six legs. The most opportune time for killing ticks is just after shearing, as the ease of handling and the cost of dip is reduced to the minimum. Nearly all the ticks will leave the sheep for the lambs, so that the work will be very effective if only the lambs are dipped. It is better, however, to dip both old and young. The sheep should be examined carefully about three weeks after dipping, and if any eggs escape destruction the sheep should be redipped.

The apparatus necessary may consist of only a box or barrel, into which the animal may be submerged, and a table upon which they may be allowed to drain. Such temporary arrangements necessitate considerable labor and loss of dip. A special tank may be purchased or built if a large number are to be handled, as one will soon be repaid for its use. The tank should be about eight feet long at the top and two feet wide. It should be four and a-half feet high, and one end made vertical. The sides should slant so that the bottom will be from five to eight inches wide. The bottom should be about three and a half feet long, and one end made to slant so that the sheep may walk out. The tank should be set into the ground and a chute made so that the sheep may be driven into the tank. On the whole, it is more economical and satisfactory to use some of the good sheep dips offered upon the market. These dips usually contain arsenic, extract of tobacco, or products obtained from creosote or tar as the destroying agent. As the latter dips are effective and less dangerous