over the investigation of subjects that have been ransacked from top to bottom years ago in England. So well is it known there in this case that spayed animals fatten faster than those that are left in their natural state, that at the Xmas fat-cattle show of the London Smithfield Club some 45 years ago, I saw placarded, over the department assigned to "fat cows and heifers," the following proviso: *Not being spayed*; it being considered an unequal contest, that between a spayed and an unspayed cow. What we call in England a Free-martin, i. e. a heifer twin with a bull, was also barred, and, for the same reason: 49 free-martins out of fifty not only never breed, but they never even "seek the bull;" consequently, as in the case of the spayed heifer, the periodical disturbance of the system does not occur, and the tranquil life the animals lead must tend to an earlier maturity.

By the bye, I wish people would spay those sow-pigs in every litter that they do not intend to keep for breeding. Frequently, a fat sow is killed when "in season," and the flavour is considerably deteriorated thereby.

The experiments at the Missouri College are only in their infancy, so I do not feel inclined to criticise them too severely, but I must observe that one of the reasons given by M Paquin, the veterinary surgeon, for performing the operation is rather peculiar: "The country," he says, "is overstocked with scrub cattle. The scrub bulls are castrated every year and make good beef and sell at a good profit. But the scrub heifers, unfortunately, are either bred or sold for barely the cost of raising them two or three years.

"In spaying heifers then, we may accomplish two things of financial value to owners and the country at large, viz.: Diminish if not end the production of scrub cattle, (thereby gradually influencing the raising of better stock); and, second, the transformation of practically valueless heifers into valuable beasts for market.

"It is true that, at present, spayed heifers, though they sell incomparably better than open ones, do not yet command quite the price of steers. This it would seem is because they are not what is termed export cattle. But should the country universally spay surplus heifers, and spay young to afford them better and longer opportunity to grow larger and heavier, and thus make to some extent standard beef subjects, why should they not become export cattle? Practical stock men may see some obstacles in the way with which I am unacquainted. But it seems to me that the quality and increase of weight of spayed heifers would tend to that result.

"The operation of spaying is a very simple one: an incision is made in the flank, the ovaries being held in one hand are cut off by a pair of long scissors, with curved blades, held in the other, and the wound is sewn up *loosely*, leaving a small hole at the lowest point to allow the exudation of matter."

As to spayed heifers not being "export cattle," I cannot understand M. Paquin's statement at all. A "maiden heifer" always fetches the highest price in the English market, and our salesmen there are not such fools as not to know one when they see her.

The language of M. Paquin is barely intelligible in places. If the report is a translation from the French, it is the reverse of what Ménage predicated of Albancour's translation of Tacitus: *C'est comme ma maitresse, c'est belle mais peu fidèle.*

I should not feel inclined to spay a heifer much before she was six months old, that is, if she were intended for beef; but to secure permanency of milk, the operation should be deferred until the animal has attained its full growth, which generally is completed at the age of four years. She should be at the flush of her milk, as the future quantity yielded seems to depend on the quantity she is giving at the time of the operation. Three or four weeks after calving, appears to be the time selected by the best vets for spaying. The cow should be in good health, should fast for twenty-four hours before being spayed, and be milked immediately before the operation is performed.

The advantages of spaying milch cows are as follows: 1. the secretion of milk is rendered permanent, 2. the quality of the milk is improved, 3. the disposition to fatten, when desired, is much increased, 4. the quality of the meat is very much superior to that of ordinary cattle.

The Cutaway Harrow.—A misnomer, certainly, of a very valuable implement, an engraving of which my readers will find at p. 182, December number, 1887, of this Journal. It should be called a cutaway-disc *cultivator*, and is a great improvement on the original disc-pattern, though that did good work, too. Neither of them are suitable to ground full of large stones, as there is always a risk of one getting nipped between two of the discs, when, unless the driver is very wide-awake, a breakage must ensue. But on stone-less clays, or sandy soils, I do not know a better implement for pulverising land after the plough. In using it, I should go over the field twice first, with the implement set at a very obtuse angle, and the second time, at an angle as acute as the team was equal to. In fact, I think three horses abreast should be employed in the second cultivation, which should be done diagonally across the first work.

A correspondent of the *Country Gentleman* says:

"I sow both oats and rye with the *cutaway*. In the spring I throw the oats upon the ground, and twice going over the land (without plowing) puts in the crop in No. 1 shape. If the ground is quite mellow, it will not do to ride the machine, as the cutting of the six notches into each of the discs converts a disc into a genuine spading machine, and it is liable to spade too deep.

"Its most satisfactory work to me is on the ensilage corn stubble. As soon as the corn is cut off, I scatter broadcast about two bushels of rye per acre upon the soil, and "wheel" it in, finding no trouble to put in five acres per day alone, between milkings. The way the machine will split, dig and uproot the corn stubble is a wonder. The notches in the angles of the discs are ground to an edge, and as they revolve they simply cut and cover. This saves me many a long day's work from ploughing, for with my spring-tooth drags and other cultivators I could not sow rye on the ensilage stubble, on account of clogging, without previous ploughing; but now I have a machine that will not clog and fill up with litter, and will dig and turn the soil where my disc would not work. This stubble I go over twice, lengthwise of the rows; then I finish up by going crosswise, but not riding, so as to obliterate the ridges. I have never used the seeding attachment, as I do not, with the amount I sow, think the extra expense and looking after the combined machine would pay me.

"About the 1st of last June, I *plowed* four acres of last year's millet stubble with the cutaway, and sowed to clover, using no nurse crop with it. Even so late as this, I had no difficulty in thoroughly working the soil four and five inches in depth, and the Thomas harrow quickly made a seed-bed as fine as one could desire.

"The draft is much less than that of the ordinary disc-harrow, and I can only explain this on the ground that the friction of the cutting edge is reduced by the notches from 48 inches to 22, which overcomes the sliding cut of the disc, and the angles in the notches being sharpened, they slice off the soil between the spade thrusts, and so take less power."

And, here, I have again to remark that I really believe that the very trifling yield of the grain crop in the States is far more attributable to the neglect of cultivation than either to climate or soil. The business of a grubber or cultivator