

beasts of three breeds for fattening mainly on steamed potatoes. He used no cake or corn, and yet he finished the bullocks off for the butcher so that they were in exceptionally prime condition, producing meat of the very best quality. The ration per bullock throughout the whole of the trial consisted of 55 pounds of steamed potatoes, 6½ pounds of chaffed hay, about 13 pounds of loose hay, and 1 ounce of salt. The potatoes, after being thoroughly cooked, so that they fell to pieces on being taken out of the steamer, were placed in alternate layers with hay chaff in a tub, the mixture being well stirred, and then left for 24 hours. It was given to the beasts in three meals per day, while the loose hay was supplied to them in the intervals—most of it after the last meal of the mixture. The finishing of these beasts, which were nearly fat to begin with, occupied from 63 to 71 days in all but one case, in which 85 days were allowed, because the animal did not start well on his diet. The average gain in live weight was over 3 lbs. per day, nearly 3.1 lb. This is a very remarkable result, especially for the finishing stage of fattening. Very satisfactory, too, was the average percentage of carcass to live weight, which proved to be 60½. As to the quality of the meat, M. Girard gives the testimony of several high authorities to the effect that it was excellent, and that there was no excess of fat. The meat was sold at a price higher than that of the average first-class meat of the day. But the reader will ask, does it pay? Or rather, what price does the farmer get for his potatoes (so used) and for his hay? *I am sorry that the reply is wholly unsatisfactory—the potatoes and the hay making a very insignificant return when made into meat in this fashion.*

VETCHES.

EDS. COUNTRY GENTLEMAN—I am satisfied that some one who has knowledge of the English plant "vetches" and is familiar with its cultivation and the methods of feeding it, can give your readers valuable information by writing an article on that subject for your paper. My attention has been called to what is said of it by the Canadian farmers. But my information about the plant is very meagre. How is it grown? When should the seed be sown? How much to the acre? When should it be cut? How is it fed green as a soiling food? Is it or can it be made into hay or cut into the silo? Is the plant adapted to the climate and soil of western New York? Is it a profitable crop grown to be fed to milch cows? When fed, should it be fed separately or in connection with other foods? I suppose the plant is an annual. I am informed the Canadians feed it to work horses. How does it compare as a milk producing food with peas and oats?

I cut into the silo this year 70 ton loads of peas and oats from 12 acres besides soiling my herd from the field. That crop is all that saved me during the drought, and from the destruction made by grasshoppers.

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The culture of vetches has been tried many times in America, and as a rule, has been abandoned because the yield was not so satisfactory as clover or corn, and they are inclined to lodge like peas, and are therefore difficult to harvest. They are nitrogen-

gatherers, and all animals are fond of them, either cured or green.

There are several varieties, both European and American. One in common cultivation in Italy, where this plant is quite largely raised, is *Vicia sativa*. They grow best in a rather moist, warm climate on calcareous soil.

The objection to the American farmer would be the difficulty of harvesting it. The seed should be sown in the spring. (*as early as possible*.—Ed.) a little before the time for planting corn, either in drills as wheat is sown, or by broadcasting. From three pecks to a bushel of seed per acre will be required. Cutting may be done when the seeds are nearly mature, but it would be best to feed the material green, as soiling food. It could be put in the silo out or uncured, but would be difficult to keep on account of the large percentage of nitrogen which it contains.

The plant, without doubt, would grow well on any of the good soils of western New York, provided the land is not composed largely of clay. (*It does well on clays*.—Ed.) It is probable that it is not as profitable a crop to grow for milch cows as alfalfa, which would be far more likely to give satisfactory results. Most certainly it should be fed with other foods which contain a large per cent, of carbohydrates.

The plant is an annual. There is no reason why it could not be fed to horses doing light work satisfactorily if put to hard use, the ration should be balanced up with foods which contain more heat and energy producers.

It is equal in quality when green to peas and oats, and probably superior to either when made into hay. It is also probable that the yield as compared with peas and oats would be less.

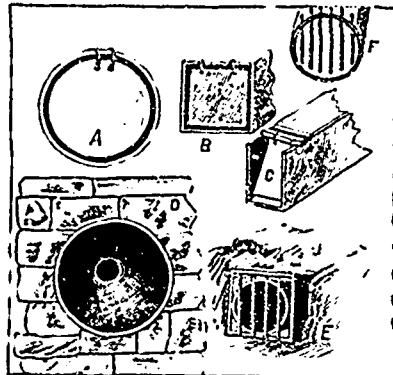
Vetches.—"Tares or vetches," says the above "are not much grown in this country;" and it then proceeds to give instruction as to the cultivation of the plant, starting by recommending 3 pecks to one bushel an acre as the proper quantity to sow. If the readers of the paper in question try to grow vetches with such a quantity of seed, they will not be likely to continue cultivating the crop; the proper quantity of the large vetch, the only sort fit for spring sowing, is 2½ bushels an acre with a bushel of oats to support the tares. The land should be fall-ploughed, and the mixed seed put in, with the drill if there is one handy, or with the grubber. In each case, the land should be well harrowed both before and after sowing, and when the crop is well up—say, 3 inches high—a roller passed over it will make the surface smooth for the scythe. Every reasonably strong loamy farm should have at least 4 acres of tares; sown early at twice, with a fortnight's interval between the sowings. They are good for all sorts of stock. As fast as they are consumed, the land should be ploughed, made fine, and sown with turnips up to the 20th July, and, after that date, with rape.

If vetches are wanted for hay, they should be cut when in full bloom; it allowed to nearly mature their seed they would be almost uneatable by any stock. Green vetches, before blooming, are mighty apt to cause scour. In the silo, they would keep as well as red-clover. The great trouble with making vetch-hay is that when nearly ready to carry, if a shower fall upon them the hay is absolutely spoiled. Vetches, pease, rape, and oats sown together make splendid food for milch-cows. In England, we have grown

hundreds of acres of winter-tares; the seed is smaller than the seed of the spring-vetch, and the crop heartier. Where large flocks are kept and folded on winter-tares, the sheep with a little grain or cake, do well: a little rape is generally sown with the tares when intended for this purpose.

PROTECTING TILE OUTLETS.

Unless special care is taken to protect the outlet of a tile drain, there is danger of its being more or less injured. If it is in the pasture, stock tramping about it are liable to crowd the tiles out of place or break them. Where land washes very easily, heavy rains will frequently displace them.



VARIOUS STYLES OF DRAIN OUTLETS.

It is also sometimes desirable to close the opening in the drain that muskrats, rabbits and other vermin cannot enter it during a dry time and build an obstruction. Several such devices are illustrated in the cut.

Outlet D is particularly suited to a tile which has its opening in the bank of a creek or ditch some distance from the bottom. It is merely a wall of stone or brick laid in cement. This protection prevents the washing away of earth from about the outlet or a displacement of tile or earth by freezing. Where stone is abundant, this style of an outlet is as practical as any and more substantial than many others. Outlet C consists of a wooden box made of 2-in. hard wood open at one end, which is slipped over the end of the drain. At the outer end a door, hinged at the top, is so arranged that the water can readily flow out, but nothing can go up the tile. A similar box outlet, E, is square at the outer end, over which iron rods are secured or a piece of strong wire netting is fastened. Outlet F is simply a tile with holes, in the top and bottom through which iron rods are passed. Trapdoor outlet A is a tile to the opening of which a circular piece of galvanized sheet iron is so attached that the water can pass out, but the entrance of any foreign matter is prevented. Outlet B is similar with a square tile for the end. These last are seldom made in the west, but are more generally in use in the east. When obtainable, they are more easily fitted with a piece of sheet iron. Often a small sewer tile is used to finish the lower end of a drain. The object in all these cases is to prevent an obstruction to the flow of water and to protect the drain.

Farm and Home.

NITROGEN.

(Continued.)

If there is one point more than another in which the nitrogenous matters in food distinguish themselves, it is in the nutrition of young animals. During the first few days after parturition, the milk is heavily charged with albuminoids, and those who, after the fashion of their ancestors, throw it away, are guilty of depriving the young animal of what is intended by nature as a means of ridding it of the indurated feces that have accumulated in its intestines.

In the cow, the *colostrum*, or *beistyn*, as the Scotch call it, contains about 20.7% of albuminoids, a proportion that gradually diminishes, until, about the fifth or sixth day, the milk becomes of a normal composition, containing only 3.7%.

Hence, when making up a ration for young calves during a deficiency of their natural food—milk—we have so often recommended our readers never to omit linseed—flaxseed—not only because, when mixed with skim-milk, the crushed linseed, by its oil, replaces the fat that the skimmer has deprived it of, but also, because the richness of the seed in albuminoids favours the rapid formation of nitrogenous tissue or lean meat. And what is true of the calf is also true of the foal, the lamb, and the pig: all young animals should have food rich in albuminoids, and, of course, in fat too: maize, Indian-corn, is by no means suitable food for young animals.

Horses, to do good work without suffering much loss of flesh, require plenty of nitrogenous food. Hence, the great stress all English stud-grooms lay upon plenty of *old beans* being at hand for their charges. This is an invariable rule in all hunting stables. For a hunter leaves the stable at, say, 9 o'clock A. M., has, very likely, from ten to fifteen miles to go to cover, and, even supposing a fox is found by eleven o'clock, is killed at noon, and the rider does not stay to find another fox, the horse will not reach the stable till perhaps 3 or 4 P. M., and unless his general food contains plenty of "stand by," he will be pretty faint before he gets home. Beans contain 4.08% of nitrogen, oats contain 2.06, just one-half as much; but the stablemen found out the use of beans, for horses in hard work, without ever having heard of such a word as nitrogen.

We saw that in cow's milk the albuminoid ratio was 1:3.6, so it is clear that a cow giving a full yield of milk must require a diet strong in nitrogen. As long as she is at pasture in good grass, with plenty of the different clovers in it, she can get along pretty well, but in a worn-out timothy meadow two or three pounds of linseed-cake, or an equivalent of pease-meal, will help her wonderfully. (1) If a cow gives 210 lbs. of milk a week, the nitrogen therein contained will be about equal to that contained in 100 lbs. of increased weight in a fattening bullock. All the great milk-farmers in England and Scotland give their cows plenty of nitrogenous food either in the form of bean-meal, pease-meal, or in cake. Vetches—tares—pease, and oats, sown together, are about the best green-fodder for milch cows: mown when the pulse is in bloom, there is no fear

(1) Cottonseed meal, being more astringent than linseed-cake, will do well for cows when, in a wet season, they are scouring.