

•BEEF OF SPAYED HEIFERS.

In answer to questions by a correspondent of the *Country Gentleman* on this subject, Prof. E. W. Stewart says:

"First—Spaying has not been practised extensively and persistently enough, or careful experiments tried, to establish the relative fattening capacity of steer and spayed heifer. The comparisons have rather been made between spayed and unspayed heifers. Although opinions of good observers have declared the spayed heifer to feed easier or more economically than the steer, yet, so far, it is only an opinion not reduced to figures by well-established facts. It is hardly reasonable to suppose that there would be as much difference between the steer and spayed heifer as between spayed and unspayed heifers. Nervous irritability is quite opposed to rapid fattening or rapid growth. And periods of heat in the heifer occur about once in three weeks and become a decided hindrance to growth and fattening; yet some advise that spaying should not be done till the heifer is a year old, but I do not think this settled by experiment. It would seem that the operation might be properly performed as early as the first heat of the heifer, and the earlier it may be done with safety, the less loss in case of death. It is probably safe to say that the heifer may be grown and fattened at 20 per cent. less for spaying.

"Second—This question of relative quality of beef has not yet been settled, but it is believed by all that have tested it that the quality is much improved; and it may confidently be predicted that there is this quality of meat constantly in the market it would bear a higher price.

"Third—This operation should be performed by an expert, and then the risk is considered very small; with proper after care one or two per cent. ought to cover the loss.

"Fourth—There are not any regular dealers in spayed beef in our largest cities, because it is not regularly in market. A special market will be found when a regular supply of it can be had.

"A feeder of spayed heifers would soon get his customers, as the Darlingsons and others have for their butter. The mutton grown upon the Cheviot Hills brings an extra price in London. The high flavor of the grasses produces a highly-flavored mutton. When the finely-flavored flesh of spayed heifers can be furnished in market regularly, it will have a price commensurate with the high quality."

COAL ASHES FOR CURRANT BUSHES.

From the New England Farmer.

Mr. W. H. Earle of Worcester has used coal ashes for mulching his currant bushes for several years past with very excellent results. The ashes keep the weeds from growing, and thus save some labor with the hoe, but the greatest benefit is due to their influence in keeping off the currant worm, which is often so destructive to this fruit. Whether the presence of the ashes is particularly disagreeable to the worms, or whether it affords them no suitable place for passing through the proper stage may be an open question. It is understood that the worms usually pass through their transformations immediately beneath the bushes which they have defoliated, and that if the surface of the earth is cleaned up with a hoe or stiff broom, and the collection of leaves and other loose material burned or, deeply buried, the worms will be destroyed. Broods of chicks encouraged to scratch under the bushes, will prove beneficial by destroying the insects in their pupa cases, but coal ashes, where they can be had, are as simple a preventative as anything. An attaché of the New York Experiment Station in a letter to the *Rural New Yorker* endorses the coal ashes method. He says: "A plat of bushes

mulched with this material in the spring of 1884, on which no insecticide application has been made this year, suffered less from worms than an unmulched plat that had been several times treated with hellbore." The treatment is equally efficacious for gooseberries.

GRADUAL EXHAUSTION OF SOILS.

Rural New Yorker.

No country was ever blessed by nature with more productive soil. She made the best possible use of the long ages prior to the settlement of this country by white men, in forcing the most luxuriant growth of vegetation, and by its decay and that of the annual crop of foliage, had filled the soil with an amount of fertility that seemed exhaustless. So thought our fathers, and so think now many of the occupiers of the great fertile West. But a continual taking out and putting nothing back would exhaust even the ocean. It has exhausted the millions of acres of the older East, and it will exhaust the most fertile fields of the West. A study of the census must convince any searcher that the production of all our crops is year by year growing less and less. It cannot be attributed to a change of seasons for a series of years, but can be only to one cause—the gradual exhaustion of plant food by our unthinking and unwise course.

The subject of husbanding the resources of our acres, and of returning to our starving fields those elements of plant growth quite or nearly exhausted, is yearly forcing itself more prominently upon the attention of the farmers of at least the eastern half of our country, and the line is very rapidly extending westward. Millions of acres that once produced magnificent crops of the various grains, even west of the great lakes, are now lying vacant, or barely paying for the most shiftless cultivation. This question cannot be seriously considered too soon, even by the farmers on the now rich and productive prairies west of the great rivers. Every train that passes eastward is loaded with a portion of their fertility, much of it in the crude, and barely remunerative state of bran, oil meal, and the coarser grains, and, to the shame of the farmers, even in the bones of their animals, while the returning trains carry back nothing in the nature of plant food.

Though western farmers may think they have no need of such knowledge, they should not fail to thoroughly post themselves, and those farmers who do so and who take advantage of this knowledge, will, by and by, be looked upon as the "lucky ones" who have the richest farms in the vicinity in which they live.

WHERE NITROGEN FERTILIZERS COME FROM.

From the New England Farmer.

In his lecture before the Massachusetts Horticultural Society last winter, Mr. J. J. H. Gregory explained why manufacturers of commercial fertilizers are sometimes enabled to make a fertilizer and sell it at a profit, that will show a value at the experiment station above its selling price. He said one of the principal sources from which manufacturers of fertilizers obtain their ammonia, is the fish waste or offal which they pick up along the coast from Maine to Florida. The fish are caught in nets and boiled to secure the oil, in which they are rich, at various establishments along the coast and its bordering islands. After boiling, the water and oil are pressed out of the mass, and the residue is sometimes thrown into heaps to heat and dry; at other times it is put directly into barrels and pressed in.

In this condition it is known as "pomace," or "chum." If it is to be sold as fish guano, it is spread on large platforms to dry, after which it is ground. The fish guano is sometimes treated with

acid to make the nitrogen and phosphoric acid immediately available. Sometimes, when the catch is large, enough are taken at once to load two or three vessels of fifty tons each, and the quantity is greater than the oil factories can care for in hot weather, so the surplus is sold at the best price to be obtained. There are numerous other forms of fish-waste which are often sold at low prices, and are eagerly bought by fertilizer manufacturers. Among these are the scrap or chum from fish livers, after the oil is extracted. Mr. Gregory has bought this within the present year for \$4.50 per ton, and it is rarely higher than \$12, although by analysis and the station scale for fixing values, it is worth \$18.83 per ton.

Halibut chum, the refuse from the heads of halibut, which are cooked under high pressure to extract the oil, leaving the bones in such a state that they easily crumble, and very rich in phosphoric acid, is sold at from \$6 to \$10 per ton, while by analysis it is worth about \$20 per ton. Mr. Gregory says that these fish-wastes are usually engaged beforehand by dealers in fertilizers, but wide-awake farmers in the vicinity, by looking around, can generally pick up sufficient for their own use. Of course farmers living so near the factories that they can haul away these fish-wastes with their own teams, have a great advantage over those who are so far away that the freights and other expenses would equal all the saving they might hope to make. We have not quoted from Mr. Gregory's paper to show inland farmers how they can obtain fertilizers at less than half their rated value, but to show how it is that fertilizer manufacturers may often give a fertilizer for a less price than the station analysis indicates it is worth.

Last summer when visiting farms in the vicinity of Concord and Acton, we found cases where fish-wastes had been applied to grass lands, at first with great advantage, the hay crops being the wonder of the localities, but after a few heavy crops had been taken, the yield grew less and less, till after a few years the land appeared to have been poisoned by the application. Mr. Gregory explains this on the ground that the fertilization has been one-sided. Large quantities of nitrogen and phosphoric acid have been applied, but little or no potash, and the soils are dying for the want of it. Applying more of the fish-waste only makes a bad condition worse. To recuperate such soils, potash, or manures rich in potash should be applied, when their fertility will be restored.

Although the speaker purchased and used over fifty tons of commercial fertilizers last year, this was but a small part of the cost of all the manures used on his several large farms. He believed that manures containing a mixture of ammonia from different sources—the more the better—are preferable to those which derive their ammonia from a single source. Leather scraps contain considerable nitrogen, but so firmly tied up and being exceedingly slow to rot, they are practically worthless as a fertilizer. Ploughed into tillage land they are a nuisance, but make excellent coverings for blind drains.

The *Chicago Breeders' Gazette* of last week says: "Not the least of the attractions at the forthcoming Fat Stock Show in this city will be the large exhibition, from all parts of the country, of butter, cheese, dairy cattle and utensils used in the manufacture of dairy products. Over three tons (6,000 lbs.) of milk will be used each day of the show in the manufacture of butter and cheese in the Exposition Building, and the public will have a grand opportunity of seeing the most approved appliances and methods among the most successful dairymen of the country. The Exhibition will be open to the public day and evening (except Sunday) from 9 o'clock a.m., Tuesday, Nov. 10, 1885, until 10 o'clock p.m., Thursday, Nov. 19, 1885."