Agricultural.

Exhaustion of Manure.

As manuring the soil is the basis of our agriculture, it is important to have a clear idea of the length of time during which the soil retains any portion of a quantity of manure which has been applied to any crop; to know, in fact, how soon a dressing of manure is exhausted, and when crops cease to derive any benefit from it. This, of course, is a matter to be determined by experiment, for although theoretical principles may, to some extent, guide us toward a solution, yet there are so many accidental influences affecting it in so many ways, that theory is a very unsafe basis upon which to build. For instance, we may apply a certain portion of nitrogenous manure to a crop, and knowing that the harvest contains one-third as much nitrogen as the manure. as much nitrogen as the manure, we may expect to raise two more crops upon the strength of that single application. But when we endeavor to reasingle application. lize our hopes, we find to our surprise that the effect to the fertilizer has been exhausted in the first crop, and a large portion of the nitrogen must have disappeared or become inert. On the other hand, there are cases in which, as it is fre-quently said, the land "never forgets" an application of lime, ashes, or barn-yard manure, and then, again, there are cases in which the benefit from these are very evanescent. It is impossible under the ever varying conditions and character of soil and of season to establish any exact rule in scarcely any department of agriculture. Theory, therefore, is of no avail, except as a guide from which general directions may be learned; the difficulties to be surmounted are matters to be learned by experience; there may be none of any magnitude encountered, and there may be some which will render all our skill and much patience neces sary to overcome them. It is from the aggregate experience of practical and skillful farmers only that we can gather materials on which to base calculations as to the exhaustion of manures. This question has been thoroughly investigated in England through a long course of years, and by reason of so many disputes between landlords and tenants as to the value of unexhausted improvements at the termination of leases, that a very fair estimate can be made as to the value of the manure remaining in the soil after any specified lapse of time. The estimate usual in these cases appear to be as follows, viz: Lime applied to arable appear to be as follows, viz: Lime applied to arable land is held to benefit the soil for a period of ten years, and to be exhausted at the rate of ten fifty-fifths in the first year, nine fifty-fifths in the second year, and in a decreasing ratio of one fifty-fifth less each year, when there is only one fifty-fifth of the value of the lime left, which is totally exhausted in this year. In a rotation of five years hausted in this year. In a rotation of five years then, as it is common with us, there would be left in the soil, at the end of the period, only five fifty-fifths, or one eleventh of the value of the lime applied at the commencement. When lime is applied to permanent pasture it is held to last the lime applied to permanent pasture it is held to last the lime. twelve years, and to be exhausted at the rate of twelve seventy-eights the first year, eleven seventyeighths the second year, and in a decreasing ratio of one seventy-eighth less each year, when but one seventy-eighth part remains. For stable manure, night-soil, guano, bones and mineral phosophate of lime, the rate of exhaustion is held to be four tenths the first year; three-tenths the second; two tenths the third; and one-tenth the fourth year. When oil-cake, or any similar concentrated told is used upon the farm, the enrichment of the s il being chiefly in nitrogenous matters, very little is left after the first year, and a merely nominal allowance is made. In a discussion upon this subject, at a recent meeting of the Chamber of Agriculture (of England), Mr. George Hope stated, as the results of many experiments in growing crops during a rotation of four years, that the best Peru vian guano was equally lasting with barn-yard manure, and that a 100 cwt. (112 pounds) of guano was equal to three tons of manure. With fresh bone dust the first two crops were not equal to those with guano or barn-yard manure, but the last two crops were superior to them. The evidence of a number of prominent farmers given in an important trial in which this question was in dispute, went to show that a fully-manured green crop—as roots or corn with us, for instance—would exhaust from one-third to one-half of the value of yard manure, and one-half to three-fourths of guano, while the effect of bone dust would be more lasting. A great deal, of course, depends upon the climate, the season, and the manner of upon the climate, the season, and the manner of cultivation, and in applying these experiences to

the circumstances under which we are placed, we should take into account all these. A wet season or climate would help to exhaust manures more rapid than a dry season or a dry climate, as the growth of the crop would be stimulated, as all its ower of assimilation would be encouraged. held here, where lime is used regularly, that it is all exhausted in five years. Our own experience would go to support this. But this rapid exhaustion may be due to our higher summer temperature, beneath which decomposition of organic matter in the soil proceeds very repidly. It is matter in the soil proceeds very rapidly. It is therefore very probable that our peculiar climate, with its intense summer heat, would tend to exhaust all kinds of manures with equal, if not greater rapidity, than the cooler but moister English climate, and that the ratios of exhaustion there agreed upon might be fairly adopted for our guidance. -N. Y. Times.

Timothy Injurious to Land.

The roots of timothy grass are fine and near the surface, often in the second year forming a perfect mat. Yet such a sod is not equal to a much lighter growth of clover roots to fertilize the soil by plowing under, and if the timothy is mowed a few years it is constantly and surely robbing the soil of its fertility. Only on lands which are naturally irrigated by the wash of higher soils, or when manure in some form is plenty, can timothy grass be profitably grown for years in succession. It is fully as exhaustive as wheat, and more so than any other grain excepting oats. If the hay is sold from the farm it is hard to maintain the fertility of the soil, and when fed at home it is not nearly so beneficial and profitable as clover. The reason of this impoverishing effect of timothy is easily told: It exhausts the soil without ameliorating it. Its net work of roots take only the strength of the surface soil but they do that thoroughly while surface soil; but they do that thoroughly, while all benea h is left hard and not permeable to air and light. In such conditions soils gain nothing if they do not absolutely tend to sterility. In two or three years the surface is exhausted, and unless annually overflowed or artificially manured the timothy begins to die out. If it is then plowed and seeded with timothy again, this exhausted soil is turned to the bottom of the furrow, and the inert soil brought up to have the process repeated. A few years of such treatment will take the virtue out of any land, provided timothy is grown alone. The difference in this between timothy and

clover is remarkable. Clover roots penetrate the subsoil; they not only draw up fertility from below, but by making the soil permeable to air, heat and moisture, they create new elements of fertility throughout the soil. Finally in their decay they leave a large mass of nitrogenous plant food from the surface to the sub-soil, which roots of wheat and corn will follow downwards. and corn will follow downwards, thus enabling those crops on clover sod to withstand drouth better, as I know they will do from frequent observation.

Some, but not all these advantages of clover, are found in so ugly a customer as the Canada thistle. Its roots also strike deep, bringing up fertility from the sub-soil, also loosening and ameliorating it. A great many poor farmers are more indebted to the Canada thistle than they will ever believe for lessening the injurious effects of timothy and other crops whose roots are all near the surface. One of your correspondents some months since criticised my advice to destroy Canada thistles, saying they were the poor man's clover, and the more he could get of them the better he should like it. The name, poor man's clover, does not exactly describe them. Call thistles the poor farmer's clover and it describes them exactly. A poor man cannot afford such costly clover as this, but a poor farmer is always trying expensive experiments, which is indeed one reason why he is a poor farmer. The grand difficulty with Canada thistles as a substitute for clover is that their roots will not die easily, while those of clover will. Clover is one of the best forage plants, while thistles are worthless for that purpose. It is said that asses will eat thistles. Then surely let the asses grow them.

On land annually overflowed, timothy can be profitably grown, especially if near a good market. Some portions of the Genesee flats are wisely used for this purpose, and timothy hay always sells higher than any other in Rochester. Livery-stable keepers and owners of fancy horses always buy timothy in preference to any other hay; and for a pure timothy, such as is sometimes grown the first

probably stimulated many farmers to grow timothy when their lands were not at all adapted to it, and now timothy sells in Rochester at only \$14 to \$16 per ton—a price at which no one can profitably grow it except on overflown lands. The sediment brought down in the overflow is deposited on the surface next to the mat of timothy roots, which also serve to keep the soil from washing away. With an animal coating of excellent manure, spread evenly and costing nothing, a farmer on the flats can grow timothy forever and with profit. Farmers who have to buy, make and haul manure, can-

Though timothy should seldom if ever be sown exclusively, I think it usually better to sow a little with other grass seed. Variety of food is important for stock, both in pasture and hay; and a portant for stock, both in pasture and nay; and a little timothy with clover impoves its qualitity, especially if cut early, as it should be. It is a mistake when timothy and clover are growing together to wait for the latter grass to ripen, as it makes the clover nearly worthless. It is also much more difficult to grass group clover clove them if makes the clover hearly worthless. It is also much more difficult to cure green clover alone than if mixed with other grass, and this in haying-time is an important item. Besides, there may be places in the field not adapted to clover, and it is better for pasture or meadow to have these spots filled with weeds. But a very little timothy seed will suffice for the shrewdest and most practical farmers. One bushel of timothy to five of clover is a good proportion on upland—giving quite enough timothy, as its seeds are smaller than clover.

However little profit in growing, there is no grass that pays better to sell than timothy. It is less nutritious than clover, and though exhausting the soll more, has in itself less of the elements of plant fo d than clover. In fact I think livery stable keepers like timothy because it is less palatable than clover. Hay is the most expensive horse feed, and also the most bulky. Horses expected to travel fast do not want their stomachs disturbed with hay, especially when it is the most costly form in which putrition can be given. The chief form in which nutrition can be given. The chief object is to give a horse some kind of hay that he will not eat much of, and make up the balance with more stimulating grain, and timothy is chosen, not as the best, but because i is one of the poorest of the grasses. On clover, horses, if allowed to eat at will, might fill themselves too full for fast travel-On timothy and grain the horse will never be full, but always nervous, excited, and ready to make his mile in three minutes or less. This constant stimulation of the horse by concentrated food is not what farmers want. It shortens life, and incapacitates for steady hard work. By feeding clover moderately, without much grain, when not working, and mixing occasionally other grasses for change of feed, farmers can keep their horses in a better condition for work, than by feeding less nutritious hay, and making up the deficiency by orn and oats.

But this opens up another subject. I have merely hinted at the proper mode of feeding horses, and unless I explain more fully, I greatly fear some of your correspondents will disagree with me. But this must be reserved for another time. - W. J. F in Country Gentleman.

Manurial Value of Wood Ashes.

New land is proverbially good, not that it has more largely the elements of fertility in general, as the trees take care that this is not the case, using up what nutriment is annually furnished by the leaves; but it owes its value to the potash left after the land is burned over, as is the case in breaking up the prairie. The principle will be clearly seen by giving it a single thought. The ashes furnish the mineral, or inorganic part, the atmosphere the rest, the soil containing sufficient other material, (humus, clay, sand, &c.) for a basis. But science or philosophy aside, it has been found that ashes are a superior benefit. Around an old heap of spent ashes there will always be a circle of rank rowth, usually of grass and weeds of bluish color. This is found to be the case whatever the soil may be. In the strongest garden soil I have noticed it, and also in very poor land. Unleached ashes have a still more marked effect, show ng the importance of potash as manure. The tests that have been made, so far as I am cognizant, always show that the growth, especially of grass, corresponds to the amount of ashes applied; and the amount may be large—seven'y to eighty bushels per acre, and even more. The benefit will show at once, but not all of it, as the ashes do not give up at once all they contain, being dissolved slowly, so as to supply

one. The reason v valued-are not valuedis that they are too on meadows, a few are used. As but a it will be readily small, less so than t is one of the ingred

April, 1875.

But there are not and a large propor mitted to go to was with leached ashes, unleached, and equi every particle of ou the stovepipes and special uses—to me trees, and to use lawns. Each farm wood, makes enoug extent of land on cumscribed, they n cumscribed, they mease the effect will tory. I have use most gratifying rest to the mulch, have moist as well as to particularly excellenthe growth of the fruit also, and I h the use of ashes improved. I know ough drainage thi Particularly are la efited by ashes. eighty bushels per whether the ashes hardwood ashes l once in three or vines, fruit trees, yearly or biennia.
Of course a less que plication.—Cor.

Sowing Gras

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no crop of grain grass seed of ar much better tha poor and likely small quantity of grass the benefit shade, even in di come large enou benefited by th other plants. with the young and moisture fr ally benefit the r

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little or no val but many nee grass is cut wi tant that the knolls, hollow Even if it be r to be smooth to the ground.