I wish more particularly here to speak of the absolute necessity of thoroughly tilling the soil by ploughing, in order to secure the largest and best grain or grass crops. It is the good seed bed that conduces to the germination of the seed, and it is the free and thorough pulverization of the soil that assists to destroy torpid insect life. Nearly every broken lump disinters the embryo of an insect, and being disturbed in that locality, they seek elsewhere for support, or die in the search Good ploughing is perhaps an indefinite term, because one plough or team cannot perform precisely similar work on varied soils. By good ploughing is meant a perfect turning of the soil; complete pulverization; no ridge left between furrow slices; no hollows to be afterwards filled up by harrowing, and no skips of the plough, going here three inches deep for one to six feet, and then down to seven or eight inches for a rod or more. Soils vary so much that good ploughing cannot be done upon them at all times, yet now as the autumn is with us, with its moisture from rains, all who have soils to plough, should carefully study them, and apply themselves to the work in such manner as is best to be done. Fall ploughing, whether for an immediate sowing or the coming spring's use, is unquestionably advisable, except it be upon light, sandy or gravelly soils, and possibly it may be that light alluvial soils are not benefited by it but as a rule late fall ploughing is of more benefit to the land, when well and thoroughly performed than half a dressing of the best manure.—*Cor. Country Gentleman.*

Winter Manuring.

The question, when should manure be spread upon the soil? is of great importance, not only in regard to the greater or less benefit which may result from the application, but also in regard to the cost of applying it, as the time may be more or less convenient for the work. To spread the manure directly upon the fields as it is made in the stables is a very cheap and convenient method, and if it can be done with good effect would be far the best way of handling it. But the cheapest and most direct way is not always the best by any means. Nor does it follow that what is good in one case or under some peculiar circumstances is good always and for all purposes. Many mistakes occur from jumping to conclusions without thought or experience and too hastily. This is too frequent apparent in listening to or reading the remarks made by farmers at the conventions or club meetings. To a listener or attentive reader it is clearly shown that nearly always the differences in soils, in crops, and in the character and quality of the manure are not taken into account at all, and are either not thought of, or are considered of no importance. It has been sometimes stated that one load of manure spread in the Fall is worth two put on in the Spring; and, again, another has stated with equal positiveness the very reverse. Now, the difference in value between the manure that is generally spread in the Fall and that spread in the Spring is very great. The former is generally old and well rotted, and one load of it, if it has been well taken care of, is worth three loads of more bulky fresh manure, such as is usually on hand in the Spring. This is true if each kind has been made from well-fed animals. But if the former had been exposed to the sun and rain during a Summer, or had been made only from grass-fed animals, that had been simply yarded at night, a load of it would be worth less than a third as much of that which had been made from grain-fed animals, carefully saved, and well handled through the Winter. So that the differences in effect noted by the two persons might easily have been justified by the difference in value of the two manures. One load of well-rotted manure, while it is but one-third of the bulk of fresh manure, has its value as plant food from its condition of decomposition largely increased, so that a greater effect might easily be produced from one load of it than from three of fresh manure. Again, very great differences may arise from the kind of crop to which the manure has been applied. It is manifest that meadows and wheat-fields require different treatment in regard to manuring. No plant is a more exacting feeder in this respect than wheat, which needs thoroughly rotted manure, while grass responds very favorably to that which is coarse, fresh, and drawn directly from the stables as it is gathered. In considering the question, these differences must be taken into account, and the experience of a dairy farmer who draws the manure every day from his stable every day and spreads it every day upon his meadows, will not serve as an example for one who is growing wheat or corn. The saving of labor and expense to the latter may easily be lost many times over by the latter. For a very close attention to what has been said at farmers' discussions, and what we have noted in the management of farmers whom we have been in the habit of visiting and conversing with freely, as well as from our own experience and custom, we are satisfied that the methods of manuring which in the great majority of cases will be most effective and economical are as follows:

For grass lands—either pastures or meadows—the manure may be drawn at any time as it is made, and spread evenly upon the fields. If the ground is covered with snow, and the last spreading is hidden from view, stakes may be placed in the ground as a guide for the next spreading. In these cases it is convenient to keep a line straight across the field, and to spread evenly, breaking the lumps. Hollows which receive the wash from the knolls may be passed over, and an extra portion be spread upon the higher portions. If the manure is very strawy, or there is much litter in it, the field should be raked over with a horse-rake early in Spring, and the raking carried back to the yard. To save this trouble it will be well to use only fine litter, such as cut straw, leaves, hard-wood sawdust, dry swamp muck, or even pond or dry earth. By the use of a sufficient quantity of such absorbents, all the liquids from the stables will be saved.

For wheat fields Winter top-dressing with fresh manure is labor thrown away. A crop so manured will be a failure. If the field has not been manured in the Fall before the seed was sown,, it will be found better to pile the manure in the yard in a compact square heap so that it may ferment, heat, and rot by the time the ground is clear of snow, in the Spring, when the crop may be top-dressed with benefit. But this method is not the best. The best would be to keep the manure well preserved until the Fall, and when it is in fine condition to spread it after plowing, mix it with the soil by harrowing, and drill the seed in where it will be close to the manure. Ten loads of such manure as this will be as effective as thirty loads of fresh, coarse stuff. For corn a similar method of handling the manure is to be preferred. To save labor we have drawn manure so made in sleds just as the snow was about to disappear, or upon a fresh fall of snow in the early Spring, and spread it upon the clover sod or upon the Fall-plowed ground, and have found it most valuable and effective. Some good farmers spread manure in open drills made in Fall-plowed ground, cover it lightly with the plow, and then plant in the drills over the manure; but it is a question if the extra labor is repaid by the increase of crop gained by it. To produce $8 worth of corn at an expenditure of $10 is neither economical nor profitable, but in the preparation and use of manure it is not only the immediately following crop by which the benefit should be measured, but the effect gained during the whole rotation, including the grass with which it ends. In conclusion, we would state as our belief, and a reasonable probability, that by the compositing, piling up and working over, and the careful decomposing of the manure, there need be no loss of ammonia during the whole Winter. We have frequently tested the vapors arising from a well-kept manure heap, with moistened red litmus paper, without once finding the color change, which is a proof that no ammonia was escaping from the heap. Unless the heat is allowed to rise very high and the heap to become dry, there will be water enough in it to absorb all the ammonia that may be evolved in the moderate fermentation.—*N. Y. Times.*

White Willow.

I have seen the time here in the West that nearly every man was favorable to the cultivation of the white willow. Every nurseryman had prepared "cuttings," which he offered and sold largely at $5 per thousand. In a few years they commenced dropping down in price until they, the cuttings, became free to everyone who had a mind to cut and prepare them.

At this time, however, the enthusiasm for the willow has completely abated. While it is no longer a question as to whether it will make a hedge or stockade—for we have miles of it in use—it is a question with most persons now whether it ought to be planted at all. It has come to be regarded by some as a perfect nuisance, while others still incline to the opinion that it has sufficient virtues to commend it.

After an experience with it of some ten years, there are a few things we can affirm of it with certainty. It is the most exhaustive of the soil of any plant which has as yet been introduced into our country. They extend their roots without limitation. Nothing, except probably grass, will do any good nearer to it than from three to four rods While it constitutes a good wind break for an orchard, being of quick and rapid growth, if a man is anyway limited in ground he cannot afford to plant it, as an apple-tree should not stand nearer to the break than from three to five rods. Otherwise it will be sure to become dwarfed and choked down by it. It is not fit to be planted along a roadside. Instead of an ornament, and constituting a refreshing shade in hot weather and protection in winter, we cannot regard it in such places as anything but an intolerable nuisance. Every time for the last two years I have travelled where the wayside has been wedged up by these willows, I have wished there would never be another one planted along any road in the State. The county of Marshall has extended them for miles and miles along the highways. The result is, the farms are almost perfectly hidden from view, and the traveller has to guess at everything belonging to them. There is something refreshing and grand in travelling through a country where farming is carried on in something near perfection, when the traveller can see the growing crops, inspect the buildings and general improvements, with other farm arrangements. But with these willows upon either side, with their tops twenty-five to forty feet high, neither an apple-tree, a barn or anything belong to the farm can be perfectly seen They also injure roads by keeping out sunshine and hindering evaporation, causing continued dampness. Whatever virtues they may have as stockades and wind-breaks around orchards and barnyards, as means of protection, they should by all means be kept from the wayside. The Osage orange is yearly growing into favor. It is becoming hardier than formerly, and is altogether more desirable for a hedge-plant than than the willow.—*Germantown Telegraph.*

The Value of Commercial Fertilizers.

Perhaps tillers of the soil (excepting a few of them) are not aware that commercial fertilizers may be employed to impoverished land, in many instances, without exerting any perceptible effect on the growth and development of crop plants. This fact will be perceived more impressively where the soil consists of a light, sandy loam, than when the land is composed largely of clay and calcareous material, The condition of the soil will often be in such a low state of fertility that a generous dressing with commercial manure will not increase the growth of crops even when the season, rain and sunshine are all as favorable as could be desired. Farmers were once accustomed to suppose that a ton of commercial fertilizers applied to impoverished land would augment the yield of grain just as many bushels per acre as the same quantity would do if applied to a richer soil. But well-conducted experiments have proved that the more a soil has been impoverished the less valuable will be the action of commercial fertilizers by way of developing crop plants. Hence agricultural chemists are beginning to understand that the agricultural value of a fertilizer will depend on the condition of the land under treatment, and that one of its constituents will exert the greatest effect which is most wanting in the soil by the plants under cultivation. The amount and relative proportion of the active plant food in the soil will control the yield of crops, provided that weather and climate are favorable. To secure the highest possible yield will require sufficient manure to enable the plant to find at any period of growth the largest amount of each kind of plant food they are capable of turning to account. When the grain is sold from two-thirds to four-fifths of the phosphoric acid abstracted from the soil is lost for the next crop, and so on year after year. Considering also that this loss is but slowly made good by natural agencies, the final result cannot be doubtful. The general condition of farm lands, regarding their present reduced store of active phosphoric acid, will alone account for the rapid and universal indorsement of phosphoric fertilers, for it is contrary to the teachings of exact experimental inquiry to ascribe to phosphoric acid a particular virtue over any other essential element of plant food. Not only are potash, phosphoric acid, nitrogen, lime, &c., essential, but, according to trustworthy experiments, they are of equal importance; which means, that in case one is wanting, as a general rule, the rest cannot act. The fact that of two crops which require the same plant food one continues to yield satisfactorily after the other has failed, does not contradict these statements. A close examination in such cases will show that these crops either live upon different elements of soil or their roots are more or less capable of abstracting the available plant food. They have more fine rootlets or they spread over a larger area, for the absorption of plant food by roots depends largely on the surface they present to the soil. Hence, the first step by way of renovating an impoverished soil will be to develop a generous supply of humus and humic acid, after which commercial fertilizers may be used with satisfactory profit.

Barnyard manures is quite deservedly the main fertiliser in ordinary farm operations, yet its special value rests more in its beneficial influence upon the physical than upon the chemical condition of the soil. Although we recommend the use of commercial fertilizers, yet it is only to make up for past losses and present wants. Our system of rotation and management in general farming ought to be so arranged as to produce upon the farm the manures required by the crops taken off, for pecuniary reasons. In farming, for special industrial purposes alone will these fertilizers attain more and more prominence on account of their special influence upon the development of those constituents in the plant which give to certain crops a peculiar commercial value, as e. g., liberal supplies of potash increase the amount of starch in the potato, and sugar in the beet, and produce a superior fibre in flax.

A new area may be dated from the time of the introduction of commercial manures. The farmer finds himself less