will not cost me to exceed $3.00 per cord. I am getting leached ashes very cheap, and yet for manure of various kinds, including plaster and phosphates, I shall spend at least $500 for manuring not to exceed 14 acres of land, and if I do not get it all back, and something with it before next New Year's, it will be the first time in my life that such an expenditure has proved unprofitable.

Then let us manure our gardens heavily; let us cultivate them well, and we shall find as the season passes by, that large crops are the rule, not the exception.

ASHES FOR FRUIT TREES.

A Woman's Letter from Southern Iowa to the Iowa Homestead:

MR. EDITOR,—Some time since this new year began, I noticed a letter of enquiry on the subject of ashes in the dear old *Homestead*, wanting to know if any of your many readers had ever tried leached or unleached ashes around fruit trees, and what was the result.

I will give its many readers my experience in leached and unleached ashes:—

In November, 1870, I had several apple trees that had not borne any apples and were large enough to bear. My orchard is on hill sides, facing south and east; the ground had been in cultivation every year, and the soil is yellow, very sandy, and was washing badly. I had several loads of stones hauled and laid all around the trees, and then I had three wheel-barrow loads of leached ashes put around each tree, so that the stone and ashes almost filled around the trees up to the limbs. The result was, that the next spring the trees were full of bloom, and the next fall were loaded full of delicious apples.

In the spring of 1871 I ordered about $21 worth of apple, pear and plum trees, and in December of 1871 I had about two gallons of unleached ashes put around the most of each of my young apple, pear, and plum trees, resulting in killing nearly every young apple, pear and plum that I set out. The next spring the bark was perfectly black as far up on the tree as the ashes touched it, and was green above and below. It was a dear experience to me. It seems that leached ashes will not hurt old fruit trees, but kills young ones. I will give your readers other experiments that I have tried. A SUBSCRIBER.

TREE PLANTING.

Now is the time to get trees for transplanting. In doing this, the small fruits, such as the currant, gooseberry, raspberry and strawberry should not be overlooked. In planting trees we are inclined to plant them too close together, and in many cases put too many in our gardens. The kitchen garden should contain but few trees; these should consist of those whose fruit ripens early in the season. Those which ripen after mid-summer should be planted in the orchard.

The planter should look forward and calculate the amount of space that the tree will require in ten or fifteen years from the time of planting. In planting shade and evergreen trees, this is particularly desirable.—Evergreens are almost invariably set in rows, and too close together, and too often in front of the windows, so that in a few years the pleasantest views will be entirely cut off.—They should be set in groups of three or more, so that they will at least appear more sociable. Do not by any means plant them within four or five feet of the walk, unless you intend to transplant them again. Avoid planting them in rows, except for hedges or screens. Evergreen trees, contrary to the general impression, can, if carefully handled, be removed from one position in the yard or awn to another, without perceptibly retarding their growth.

THE BEARING YEAR OF FRUIT TREES.

Every fruit grower knows that there is a tendency in many apple trees, and to some extent in other fruit trees, to bear only every other year, or, at least, to make a heavy crop one year, and the next year to produce little, if any, fruit. This comes, in the first instance, simply from the exhaustion induced by overbearing, which leaves the tree too weak in the fruit-producing elements to bear again till it has had one year in which to recuperate; but, finally, this becomes, so to speak, a fixed constitutional habit, and is perpetuated by grafting or budding. To correct this, pick off the larger part of the fruit, the first bearing year, and thin out well whenever too much fruit sets, and such trees will acquire the habit of bearing every year.

FORESTS.

I notice in your weekly issue of March 19, an article from Mr. Bowles of Harrison, in reply to a short article of mine on forests, in the weekly issue of February 19. Mr. Bowles assures the public that he is "a practical farmer," and of course we are to infer that he is thoroughly acquainted with the theory and practice of farming. He starts out with a denial of almost everything I have said with regard to the benefits of forests and wind-breaks to the farmer and the fruit-grower. I claim that the fruit crop—with the exception of berries—of Southern Ohio, and of many of the older sections of the country, have deteriorated both in quantity and quality. The deterioration in quantity has reference to the average yield per acre. Thirty years ago finer apples, as to size and quality, were produced in the Miami bottoms than can now be produced under the most favorable circumstances, in the most favorable localities, with all the extra care that can be given the orchard.

A low bottom near Camp Dennison, that frequently overflows, was planted in apple trees about sixty years ago and bore large crops of fruit for many years in succession, superior, in size and quality, to any grown in the neighborhood at present. Why can not apples be produced in the same and similar localities at present? Fruits in the low lands are more frequently killed now than formerly by the late spring frosts. Why are such frosts more frequent and destructive to fruit and early vegetables than forty or fifty years ago? Fruit-raisers have abandoned the low lands and valleys for the high lands and ridges, but not the "ridges most exposed to the wind, the highest, bleakest points or knobs."

When the orchards were in bearing that were planted by the first settlers of Southern Ohio, the hills and great portions of the valleys were covered with a dense forest that protected the orchards from the cold winds that now sweep unresisted along the valleys. The presence of large forests increases the humidity of the atmosphere and prevents the rapid evaporation by the drying winds. Professor Tyndall says, in speaking of the intense radiation of mountain top and desert plains, "that these extreme reductions of temperature are due to absence of humidity. The presence of a large proportion of vapor acts as a dam to flowing water, restraining the escape of heat by greedily absorbing it." It is now a settled fact that when the air is filled with moisture radiation from the earth is prevented and the temperature of the night remains almost as high as that of the day. When there is little moisture in the air the sun's rays pass without absorption to the earth and impart little of their heat to the air. Professor Tyndall says: "The removal for a single summer night of the aqueous vapor from the atmosphere of England would be attended by the destruction of every plant which a freezing temperature would kill." The humidity of the atmosphere is much greater in a country with large forests than in a prairie country exposed to trying winds. The loamy soil of the forest will absorb and retain 170 parts of water, while field soil contains from forty to seventy parts.

In order to retain a uniform temperature the country must be protected against the influences causing excessive dryness. The protection afforded by the dense forests to the orchards of the early settlers of the country accounts for the large crops of superior fruit raised by them, and the removal of the forests for the uncertainty that attends fruit-raising at present.—There has been a great falling off in the fruit crops of late, both in quantity and quality.—Even the best orchards in Southern Ohio, the proportion of perfect specimens of fruit is exceedingly small. Thousands of bushels of apples, pears and peaches are taken to the Cincinnati market that would have paid the producers better if they had fed them to their stock. Many strangers visiting the Exposition at Cincinnati last year were greatly surprised at the inferiority of the greater portion of the apples on exhibition. Dr. Petticolas—now deceased—of Mount Carmel, Ohio, stated a few years ago at a meeting of the State Pomological Society, that "out of 120 or 130 varieties of apple trees in bearing, it is difficult to select six kinds of good, merchantable winter apples. Although some seasons are not quite as bad as others, still one-half or more, as a general rule, are unfit for market."

The Fruit Committee of the Ohio Horticultural Society for 1869, after stating the amount and value of the fruit crop of the State, say:—"Large as this sum appears, we are convinced by observation and enquiry, that the amount and value of the orchard products of the State have diminished very greatly during the past ten or fifteen years." The committee say "the average yield is only 36¼ bushels per acre—not as much as single trees often produced in former times." Two or three hundred bushels to the acre was regarded as only an ordinary crop by the first settlers of this country. It was no uncommon thing for single trees to produce 40 or 50 bushels. The committee further say:—"The average product is so far below that of healthy orchards that we are forced to regard the statistics as confirmatory of the opinion held by a majority of the members of this Society that the apple crop has been gradually, deteriorating in most parts of the State for the past ten years or more. The deterioration in quality is, in many sections, even greater than in quantity. So in our opinion, the commercial value of the fruit is not on an average more than one-half as great as in former years. In many orchards that we have seen not one-quarter of the crop was of fair marketable quality. This, too, is the general tenor of the reports we have received from all parts of the State."—*S. R. B. in Cincinnati Enquirer.*

CULTIVATING GRAPES ON THE GROUND.

A method of cultivating the grape as pursued in Cabul, Central Asia, might be tried here, at least. Cabul and the country just northward of it has a climate, as it appears, not a little like our own here in Minnesota, being a high plateau where, whilst the thermometer sometimes marks twenty degrees below zero, grapes and other fruits grow in perfection although requiring a great deal of care. As the snow does not usually disappear until the first of April or thereabouts, it appears needful to push the vine all that is possible, the frost once out of the way for the season. Accordingly this is the method:—

"Trenches are dug about one foot in depth, the earth being thrown up in the form of a terrace one foot high and six or eight feet broad. The vine being set in these trenches about three feet apart, is allowed to run over the terrace to the next trench, at the edge of which it is cut off, and the lateral branches are allowed to spread, being trimmed into three or four buds. In this way the vine and the fruit rest upon the ground. The effect of this plan will be to force the fruit by the heat or refraction from the soil."

Now as heat in this latitude, and with our summers (apt to be too short at both ends for grapes) appears to be the great desideratum, why should not some of our grape growers try the process above described, even if on a small scale? We know how much to do with early production the strawberry has raised flat on the ground. Why not apply the same method with the grape, putting some light brush or limbs along the terrace described, to lift the vines a little above the soil, in order to have a little more neatness?

And could this method be successful there is advantage to be considered. In laying down the vines for the winter the slant already given to them would prevent their suffering that twisting, that wrenching and violence certainly not beneficial to them when restored to light and growth in the spring. The experiment appears worth trying.—*Farmers' Union.*

SHORTENING IN EVERGREENS.

As a general rule evergreens please best when they are close and densely clothed with foliage. If one has thin open trees they can be made into the most enviable specimens by a judicious use of the knife. As soon as the frost has probably departed is an excellent time to do this. Cut back the growth of last year to within a few inches of where it started from.

It is very essential, however, to remember that the whole plant, leading shoot included, must be done at one time. It is particularly essential that the leader be shortened. A new one will push and generally will grow straight. If not, a little art will help it. Several leaders will come out sometimes, but of course all must be sprouted off but one. By this simple treatment any dilapidated old scrub may be brought to the perfection of beauty if it has not lost its lower branches, when of course it is beyond grace to restore. Pruning of all kinds should be got through with as soon as possible—the earlier this is done the stronger will plants push in the spring. Nothing weakens trees or shrubs more than to be cut severely just as the new growth is pushing.—*Gardener's Monthly.*

PROTECTION FROM THE CABBAGE WORM.

A correspondent of the New England *Farmer* says he last year raised four hundred head of cabbage. He started them in hot beds about the 1st of April, and transplanted them on a cloudy day as soon as the weather and soil was warm enough. The next day he put about a teaspoonful of salt around each plant, not minding at all if it fell on the plant. This served to kill all worms that might be in the soil. After the plants began to grow he stirred the soil as often as possible, keeping it loose and friable. As soon as those pests, the butterfly that lays the egg which forms the green worm appeared, he got half a pound of saltpetre, one fourth of a pound of copperas, and dissolved in a half hogshead of water. With this solution he watered the plants after each raid of the butterflies, which occurred three times during the summer, and by this means saved his cabbage from the worms, not losing a plant. This method would not be very difficult or expensive, and perhaps some of our readers may be disposed to try it the coming season.

HORTICULTURAL MATTERS IN MINNESOTA.

As the ground begins to thaw and the atmosphere becomes warmer, tree men begin to look about them to see what amount of damage has been done by the extreme cold of the past winter. We have been in hot water all winter about our trees. Have been out in the country to-day to see how the Flemish Beauty pear stood. It is sad to look at them.

Beautiful trees that have borne for two or three years—the bodies completely dead and black. The large orchard trees of Golden Russets, American and English; Duchess, Haas, Sweet Pear, Perry Russet, and Red Astrachan, look comparatively well, although the wood of some is injured, and in some instances the bark is badly injured on limbs in crotches or at the union of limbs to the body of the tree.

I think it most too early to determine the exact condition of trees. Nursery trees are badly damaged except (with me) the Duchess, Tetofski, Vendome and some grafted from Minnesota seedlings. The Vendome is a Fond du Lac Co., Wis., seedling. The crab varieties are all right, although the wood of some of them is slightly colored.

I have been wanting a test winter some time, and am perfectly satisfied with the results so far as determined. Our apple list in Minnesota was getting quite lengthy. It will now be visibly shortened, I think. Nursery trees on sandy land are badly root killed. One nurseryman says his entire stock except crabs is killed.

Will some one tell us why it is that trees root kill on sandy loam more than on clay?

GARDEN PEAS.

At this season of the year there are a great deal of trimmings and prunings which come in well for pea sticks if only thought of in time. Of late years it has been thought too much trouble to look after these things, and to foster this lazy feeling the seedsmen have introduced dwarfs and other varieties which need no staking they say, but which never bear half as much as those which are provided with these aids to the young pea in its efforts to get on in the world. The idea also that peas need no staking prevails because those who grow them for market let them trail on the ground as they will. But this is only because it suits their particular style of culture best, and not because it will yield the most peas. Besides, if this were not the case, it would be hardly possible to get sticks or labor enough to cover acres of ground.

It may be as well to remark that in pea culture it is an important element of success to get them in the ground early. They are tolerable hardy. A little frost will not hurt them and the like to get on well before the warm weather comes. Indeed, the pea does not like hot weather. It is a native of cool climates, and as soon as hot weather comes it gets mildewed or otherwise diseased. The best pea ground is therefore a cool, strong soil, and if the pea stakes can be provided, so that the luxuriant growth will not close in and suffocate all together, good well decomposed manure helps the crop wonderfully.—The best writers on vegetables claim that for peas it is best to have the ground well manured the year before the crop is sown, so as to have it well decayed, as rank manure makes more foliage and less peas, while well decomposed manure seems to help the seed more.

MANURE FOR ORCHARDS.

Wood ashes are doubtless excellent for orchards, but instead of being put round the trees, they should be spread over the whole land. But where are the ashes to come from in this region? We have little or no wood, and of course little or no ashes. In our limited experience we have learned one thing in regard to orchards as well as fruit trees of every kind that we have cultivated, and we believe the principle can be applied pretty much to everything that grows upon the earth, which is, that the application of manure benefits them all. Ground occupied with fruit trees should be manured as are other portions of the land used for the raising of wheat and corn. It is the neglect to do so, in connection with the general negligence with which orchards are treated in many sections, that makes them unprofitable and worn out prematurely. And as to the kind of manure with which orchards ought to be treated, while any kind, almost without exception, will prove of advantage, there is none in the world to be compared to stable or barnyard manure. A liberal application of this only every third year, with careful pruning and scraping of the trees, and ferreting out the borers, will make a prodigious change in an orchard. Autumn, even in December, if the ground is not frozen, is perhaps the best time to apply it.—*Germantown Telegraph.*