

neglect with more equanimity than many favorites, only dying of gas and overheating.—*American Garden.*

#### NITRATES ARE NEEDED.

Early in spring, the conversion of the nitrogenous matter of the soil, or of manure, into nitric acid, is exceedingly slow. It needs heat and moisture, bacteria and lime. In moist land, during hot weather in summer and autumn, the conversion takes place most rapidly. This is an advantage to the grower of winter wheat or winter rye. The growing wheat or rye plants in the fall take up the nitrates. I cannot go into the subject now. What I want to say is this; ordinary farming can avail itself largely of the natural fertility of the soil. We can grow crops of corn, and wheat, and grass, for many years without manure. But not so the market gardener. No soil in the world is naturally rich enough to grow garden crops to advantage and profit. Why? Not because garden peas require any more or different plant-food than field peas, or garden beets any more than mangel wurzels. It is because the gardener desires early crops. He desires to get the growth at a season of the year when little or no nitrates are formed in the soil. To attain his object, he puts into the soil a monstrous quantity of manure. To grow a crop of early cabbages, or early cauliflowers, it is almost impossible to make the land rich enough. At any rate, we find that the richer the land is made, the earlier and better are the cabbages, and the more profit. We have to furnish three or four times as much manure as the crop needs. Why? Because the soil is cold and no nitrates are formed. We try to furnish the plants with all needed nitrates by an excessive application of manure—better apply the nitrates direct. This is not theory. I have been trying for years

to grow good celery plants in the open ground. I could succeed only where the ground had been excessively manured for some years past. I have plowed in, the previous autumn, seventy-five to one hundred tons of the richest, well-rotted manure, and had "fair to good" celery plants. Now, by the use of nitrate of soda I can get celery plants earlier, larger, and every way better, at less than one quarter of the cost. There is no mystery about this. I presume we apply more nitrates than three hundred tons of manure per acre would furnish early in the season. Later, of course, when the manure commences to decompose an abundance of nitrates would be formed, but then early garden crops want the nitrates while the soil is so cold that nitrification cannot take place.—JOSEPH HARRIS in *American Agriculturist*

#### AUTUMN TRANSPLANTING.

Ben Perley Poore, in the *American Cultivator*, says: "Autumn is, so far as my experience teaches me, a better season for transplanting trees and shrubs than spring. Any trees, even the most delicate, may be successfully transplanted in autumn, if a little protection is afforded them by covering the root during the first and most trying winter. Where complete success is hoped, it is best to shift their locality in the fall, if possible. The protection of most trees, shrubs and woody plants may consist in spreading a few inches of litter from the stable around the trunk and over the roots. Delicate plants are sometimes supposed to be destroyed by too much protection after being transplanted, when, in fact, they perish for want of it, being killed by the alternate freezing and thawing of the earth and its surface. This difficulty might have been easily obviated by covering them with evergreen boughs or meadow moss.