

rich. Save everything in your compost heap, and apply plaster, lime and salt through such compost. He would advise every farmer to keep four or five barrels of plaster to throw on compost heaps and in water closets—it fixes the ammonia, which is estimable in manure. He wanted those farmers present, who had tested the application of salt, to relate the result.

The chairman called upon Mr. Casely, who said that, by its application, the straw was a more generous and stiffer growth, the heads fuller, and kernal plumper and brighter, and was very beneficial in destroying the wire worm. He sowed after barley was up last year, this year with seed, one barrel to three acres.

Mr. James Tran said he always sowed salt and plaster together, mixed two barrels of salt to one of plaster, and fifty bushels to the acre.—*Markham Economist.*

Enemies of the Potato.

The present season seems to be prolific of troubles to the potato. Not only is it threatened by the Colorado beetle, but it is attacked by a small beetle akin to that which destroys the turnip, beet and cucumber. This beetle, which is known by entomologists as a species of *Haltica*, or flea-beetle, is described by Harris as *Haltica cucumeris*, from its attacking the young cucumber vines; it also infests beets, tomatoes, and especially the potato, eating small holes through the leaves until they are completely riddled, and only the veins left, in many cases. The leaves being destroyed, the plants perish.

For this insect there are, however, many remedies. The Paris green, which is effective against the Colorado beetle, is a complete remedy for it. This may be applied in the same manner as for the former, either by mixing one part of green with twenty or thirty parts of dry plaster (gypsum), or rye flour, and sprinkling it upon the leaves while the dew is on early in the morning; or a heaping tablespoonful of the green may be mixed in a pailful (ten or twelve quarts) of water, and while kept stirred, sprinkled by means of a broom-corn whisk upon the plants, or the water may be sprinkled upon them from a fine rose of a watering can.

Any fine gritty powder is also an antidote against these flea-beetles upon whatever kinds of plants they may be found. Road dust, fine sifted coal ashes, dry-slacked lime or plaster, may be sprinkled upon the leaves while wet with dew, so that they will adhere. If the lime is slaked with water in which one ounce of carbolic acid has been dissolved, it will be more effective. It is very necessary to use protective measures as soon as the need arrives, lest the countless number of enemies destroy the crop before any impression is made upon them, as well as to kill them off before they breed and increase by thousands.—*New York Times.*

How to Get Large Crops.

Now how are we to get larger crops per acre? The atmosphere perhaps furnishes us with all the carbonic acid which plants require; and the rains and dews furnish us a small quantity of nitrogen; but not nearly as much as we need to produce large crops. Nitrogen, phosphoric acid, potash, etc., are annually developed from the soil. The amount so furnished, varies greatly according to the character of the land. On light, sandy soil it may not be sufficient to furnish food for more than a quarter of a ton of hay, or five bushels of wheat to the acre; or it may be sufficient on some soils to furnish food enough for a ton of hay or twenty bushels of wheat an acre. Whatever the amount is, that is what I call the normal yield of the soil; cultivation may accelerate the development. It may procure us a larger quantity in a given time. A meadow which produces less than half a ton of hay to the acre, if plowed up, well worked, and seeded down again, may give us two tons to the acre. This is due in a great degree to the decomposition of the roots, which have been formed from the slowly developed matter in the soil for some years past. This is not the normal supply of plant food.

In Mr. Lawes' experimental wheat field, the annual yield of wheat for over thirty years, without manure of any kind; and the crop of grain and straw all removed has been about fifteen bushels per acre. This is the normal yield of wheat on that soil, with two plowings each year, and hoeing between the drills, to keep the crop clean. I have

used this well established fact to illustrate what Mr. Geddes calls my "pet theory of the advantages of raising, at long intervals, large crops of wheat by summer-fallowing." I hope the careful readers of the "Agriculturist" understand my views better than to limit my theory merely to summer-fallowing. That is only one of the means I have suggested. Raising clover, peas, mangels, turnips, mustard, rape, rye, corn, oats, buckwheat and grass, and feeding them out on the farm, carefully saving and turning the manure, is just as much one of my "pet theories." The principle is the same.

What I contend for is, that we must in some way get a greater accumulation of available plant food in the soil, especially for our best-paying crops and those which require the largest amount of labor to the acre. There are but two ways of doing this: 1st.—Buy the plant food. This we can do in artificial fertilizers. The nitrogen in this form will cost us twenty to thirty cents per pound. We can also buy stable manure from the cities. We can also buy hay from such of our neighbors as are willing to sell, or bran, oilcake, grain and other foods, and feed it out to cattle, sheep and pigs. There are some who can get fish, seaweed, swamp muck, etc. 2nd.—We can get this accumulation of plant-food by saving that which is annually developed from the soil. And it is right here that we need all the aid which science and experience can furnish us. It is the starting point of good farming.

If you have a good calcareous clayey soil like that of Mr. Lawes, which will produce fifteen bushels of wheat per acre every year, I contend that it is poor farming to sow it to wheat, or barley, or oats, or corn every year, and sell all the produce. It would require less seed and less labor to raise a crop of thirty bushels every other year—and the land would be cleaner. You raise and sell just as much wheat in the one case as the other. I do not say that by summer-fallowing you would be sure of getting thirty bushels every other year, or, if you summer-fallowed two years in succession, that you would get forty-five bushels every third year. I have only used these figures to illustrate my meaning.

What I contend for is, that we should raise fewer crops, or either summer-fallow more, (on heavy soils), or raise more clover or other crops which are consumed on the farm. I want to raise just as much wheat as we do now; but I want fewer acres and larger profits. And I want more good beef, mutton, wool, pork, cheese, butter and milk into the bargain. I believe all this can be accomplished, and I do not think Mr. Geddes would oppose my plan unless he can suggest a better one. It is easy to say you cannot afford to produce good beef in the State of New York, or to raise large crops, or that we cannot make farming pay. It is certain that if farming will not pay in this country, other business interests will not long prosper.—*AMERICAN AGRICULTURIST.*

Sugar Beets.

In the London "Agricultural Gazette" a writer says that many Continental farmers consider a crop of sugar beets far better and more profitable than any other root crop. It furnishes more nutritious substances, does not exhaust the land, and may be grown on fallow, and by good cultivation and judicious manuring, yields as much as any other root. The sugar beet is not inclined to get hollow in the top, does not suffer so much from the frost, and keeps better in stocks. The white Silesian beet is best, being the richest in sugar and grows mostly underground. The seed is sown in April or May, sixteen to eighteen pounds to the acre, in rows eighteen inches apart. As soon as the plants appear, a careful hoeing must be given; afterward they are thinned out, and then the cultivator must be kept going as often as necessary to keep the ground clear and mellow. Rotten farm-yard manure is used if it can be had; if not, guano, superphosphates and potash salts. Stimulating manures are not good for sugar beets.

Wood Ashes.

To the question about wood ashes being beneficial to land possessing an excess of alkali, we say, emphatically, no. If you have on your place any land of the opposite character, that is, if it is clayey, stiff and heavy, you can use a large amount of ashes upon it to advantage, both immediate and permanent; even coal ashes may be turned to good account there.—*Rural Press.*

Canada Thistles—Their Benefit and Damage.

The "Country Gentleman" differs widely from many Agricultural writers in his opinion of thistles. They are by most people reckoned among the greatest pests on a farm, and the enquiry is incessant—what means shall be taken to extirpate them? In our slight experience of them, we have never had much difficulty in eradicating them, and we have doubt that the method here recommended will, if carried out, be successful.

A luxuriant crop of weeds, especially such as the thistles, ragwarrh, and others of the larger species, are symptoms of the fertility of the soil, and not only so, but as the "Country Gentleman" well remarks, the thistle is a most efficient loosener of the soil. Deep down for many feet it strikes its tough roots, and they, when rotted, as they will be when its vegetation is killed, leave the places they occupied free passages for heat and moisture, and the mineral food they have drawn from the subsoil is a fertilizer of no little value.

The "Country Gentleman" says:

A farmer anxiously inquires of us how he can possibly kill a dense patch of several acres of Canada thistles. He will perhaps be startled if we should tell him that we would rather have a field filled with a dense growth of these thistles by the middle of June, on a strong soil, than to have a bare field or a badly seeded pasture. Next to red clover, the roots, stems and leaves of the Canada thistle are one of the best green crops to plow under. The roots are powerful looseners of the soil, and the tops, when well rotted, help to increase its fertility. Plow them under with a chain on the plow, when just coming into blossom, and they will soon rot in the soil. If left a little later, the plowing will be more destructive to the plants, but they will not rot quite so quickly. If the plowing is deeply and thoroughly done, they will not be seen above the surface for a month. But the very moment the first green point is seen peeping, plow the land again, and repeat it just often enough to keep them constantly smothered. By the 20th of September or 1st of October, the thistles will be effectually killed, and will never again make their appearance, while the rotted stems and leaves will have increased the fertility of the land. Usually about four plowings will have done the work effectually, at the same time that it will have rendered the field mellow like a garden, and destroyed most of the other weeds that may have been in the soil. All perennial rooted weeds, if kept under, will be destroyed, and all the seeds of annuals that have been thrown up near enough to the surface to germinate, will share the same fate.

We have never found any difficulty in killing patches of Canada thistles in a single season by a few plowings, if the soil is of a heavy or clayey character, so as to rest compactly upon them when they are turned under. On lighter soil, more care and more frequent plowing is necessary. If there are any large stones, stumps or other obstructions to free and perfect plowing, the thistles will not be destroyed at those places; or if they line boundary fences, where the plow cannot reach them, they will of course escape, and other modes of clearing them out, or the removal of the fences, will be necessary.

Working and Salting Butter.

Touching this important branch of making butter of prime quality, S. E. Lewis, of Oxford, N. Y., writes as follows: "When the butter comes, as soon as the dash churns clean, take off the churn; do not gather the butter compact with the dasher in the churn (as usually done); do not gather it at all, but have a hair sieve, which first wet in hot and then cold water, so that the butter will not stick to it; then have a piece of a board that will fit inside of the churn to hold the butter back, turn the buttermilk from the churn through the sieve; when the buttermilk is drained out let the butter remain in the churn; then take your water, holding it up as high as your head, and pour it upon the butter in a stream moving about upon the butter. This will separate the little balls of butter. Fill up the churn with water until what little buttermilk there was in the butter is diluted to the extent that there will be no necessity of changing the water, and the result

Canada Thistles