

phere is much greater, the benefits derived from the absorption of ammonia from the air, are considerably increased. The manure is spread on the soil. You then turn a furrow over on the part manured—proceed to the end, miss two furrows breadth, and, coming back, turn a furrow the opposite way, over against that which you just threw over, on the unploughed land. On coming again to the end, turn about (the horse walking in the same furrow which you have turned) throw the soil up over the manure and unplough 1 land, then miss two furrow breadths, and turn the third over on the part missed. By this means your field is all in ridges; and, if well done, is thrown up very high and rough. All the weeds you require to kill are turned, and all the manure is also buried in the centre of the ridge—where it remains till you require again to plough. Meantime the rain and natural moisture of the soil, take the soluble portions of the manure, not into the *subsoil*, but into the *clith*, or surface soil; and the natural decay of the ploughed-in weeds also benefits that portion of the land.

On ploughing again you open the ridge, throw one half one way, and the other half the other, into the vacant spaces, and you again reduce the soil to a flat surface, with all the manure thoroughly mixed through it, and that portion of the earth which has been benefitted by the atmosphere, is placed just where the plant can get the benefit of it. We may call this *triple ploughing*, but it is, in fact, only ploughing once. You miss half the ground the first time, and this is just the portion you plough the second time. A team will do two acres of this ridging up with as little labour as ploughing one in the ordinary manner; so that the time spent in the labour of the men and horses, is only equal to once ploughing.

Another point is worthy of consideration, and that is, the possible cause of rust. We know very little on this subject, and can only hazard conjecture; but it is generally believed that rust is caused by an overflow of sap or natural juices, which comes at a time when the grain is in such a state that it cannot absorb and take it up as fast as it rises. The stem of the wheat is softened by the moist weather in which it occurs. The flow is great, and as there is in nature no down-flow of sap to the soil, the pores burst, the rust is formed, and the crop ruined. Now may not this be caused thus,—at all events in manured lands? By ploughing the manure under, we have placed the chief magazine of nutriment far down into the earth—the wheat plant has been drawing upon this store, more or less, all the first part of the season but the dry heats of summer—while they have helped further to decay the manure, and render it fit for the sustenance of plant life and growth, have left these elements in so dry a state that they cannot be assimilated readily, and now when rain comes at a critical time in the growth of the crop, the moisture reaches the magazine of food—the roots find it in too great abundance for the state of the plant, a plethora of sap results, and rust is the consequence. Now if, on the other hand, the manure had been so situated that its chief benefit had been given out in the earlier stages of growth, the plant would have been firmer and stronger. The tillering out would have been more extensive, and there would have been more stems to take up the supply of plant food, at the time it came in the greatest abundance. This is speculative only, but is well worth thought.

Another speculation here arises. Have not all plants of the cereals two sets of roots, as in the case of Indian corn, one of which sets nourishes the stem, and leaves, and the other nourishes the grain? We do not say that they have, but who can say that they have not? We know that this is the case with Indian corn. The first, or fibrous roots, nourish the leaves and stem, and, in fact, produce them. As soon as the leaves and stem are complete, the second series of roots are produced, and immediately the ears start into existence. Any one can convince himself on this head

by pulling up plants of Indian corn at the different stages of growth mentioned and examining the roots. Many other plants possess these two sets of roots,—one for the one purpose, and the other for the other. Who shall say that all our cereals have not the same peculiarity? We know that all plants of the same genus are nourished more or less in the same manner. The mode in the species may be different, but the method of growth is the same. It is a subject of deep interest, and we hope to be able to follow it out on a future occasion.

Management of Red Clover for Seed.

WHEN the chief object is to raise a crop of seed, whether the clover is grazed or mowed off, it ought always be done in the month of June, in our latitude, and previous to the full bloom. It is not practicable to raise a good burden of hay and a crop of seed on the same ground in one season; nor can one expect a full yield of seed if the clover be grazed too long. If the large, or late kind of red clover, be allowed to stand until it is in full bloom, before it is cut, there will be only a small crop of seed. The most successful way of managing this kind of red clover is, to pasture it until about the 15th or 20th of June; in New England or New York, never later than the 20th of the month. It has been our practice to feed it down close just before shutting the animals off altogether, and if there was more clover than they could graze off close to the ground in a few days, the remainder was mowed, and usually left where it grew. The object in mowing off all the stalks that the stock leave, is to have all the clover start the second time as evenly as possible, grow uniformly, and all plants come to maturity at the same time, which is very essential. The seed or the portions of the field where the first growth has not been cut off, will come to maturity several weeks before the greater part of the crop is fit to cut. Consequently, most of it will shell off and be lost before the remainder can be secured. Many farmers, in their first attempts to raise the seed of the large kind of red clover, obtain only a small crop, simply because the first growth was allowed to advance too far.

In growing a crop of seed of the early, or small kind of red clover, the usual practice is to make hay of the first growth, though it is sometimes grazed off. Those who raise the largest crops of seed, cut the first time before it is in full bloom. They find this essential, and aim to cut when about two-thirds of the heads are in blossom. The stalks and leaves will be very green at this stage; but every day it is allowed to stand after this, tends to diminish the quantity of seed of the succeeding crop. Consequently when a farmer thinks best to allow the first crop of clover to come nearer maturity, for the purpose of having a greater burden of hay, he must remember that he will lose more in the yield of seed than he will gain in the quality and quantity of hay afforded by the first growth of the clover. If there be any weeds among clover, they should all be cut close to the ground, so that the clover will get the start of them and effectually suppress their growth.—*American Agriculturist.*

Cultivation of Buckwheat.

WHEN buckwheat is sowed in the spring, or first part of summer, the hot weather which occurs when it is in blossom, prevents perfect fructification. Consequently there will be numerous clusters of kernels that will be blasted. For this reason the seed should be sowed, so that the hottest weather will have passed, by the time the buckwheat is in full bloom. Cool weather or at least cool nights are quite as essential to a good crop of buckwheat, as hot days and nights are for Indian corn. The point to be aimed at in every locality is, to defer sowing as long as possible and allow it sufficient time to mature before an early frost will destroy the crop. This period occurs at different times in different localities. In the latitude of Central and Western New York, the proper time for seeding is about the first of July. We have known buckwheat sowed as late as the 16th of July, which produced a bountiful crop; but in that latitude there is a great risk on account of the frost, if it is not sowed by the tenth of July. Our most successful farmers in this latitude, calculate to have their buckwheat put in as soon as the fourth of July; and in some seasons, even when sowed at that time, frost appears so early in the fall as to almost destroy the entire crop. In some localities it may be sowed the latter part of July, and escape frost. If the soil where it is sowed be well pulverized so that it will vegetate immediately, and if the grain is put in by the fourth of July or even by the tenth, a bountiful crop may be expected. When the ground is ploughed but once for a crop of buckwheat where the soil is heavy, it is often so dry and hard, and breaks up in such large lumps and clods, that many farmers in waiting for rain to moisten the soil previous to

ploughing, are compelled to defer seeding until it is too late. But if the soil be ploughed in the spring, it will not become dry and hard by the time it is to be ploughed the second time, but will be moist and mellow; and the grain will vegetate soon.

Every intelligent farmer, who is located on a heavy soil, that is apt to plough up lumpy, understands the importance of ploughing it when it is just moist enough to turn up mellow. Buckwheat cannot be expected to vegetate in time, and flourish luxuriantly, and yield a remunerating crop when the soil is a mass of dry lumps.—*American Agriculturist.*

SHRINKAGE OF HAY.—The loss upon hay weighed July 20th, when cured enough to be put in the barn, and again February 20th, has been ascertained to be 27½ per cent. So that hay at \$15 a ton in the field is equal to \$20 and upward when weighed from the mow in winter.

GRAIN-BINDER.—Suel Foster of Muscatine, Iowa, writes to the *Country Gentleman*:

"I intimated some time ago that some Yankee east-west would bring out a successful Grain-Binder. It is a matter of so much interest agriculturally, that you a few weeks ago intimated some impatience. I am impatient, but not discouraged. Mr. John Underwood is yet busy, and has got the binder so that it is a complete success. It ties the bundle tight, and makes the knot fast and hard as you would tie it by hand, with one twine, if it will hold the sheaf sufficiently; if not, two are used, placing them four or six inches apart, with the same ease and operation that one is put around; the cost of twine is added, and in case of two bands, lighter twine may be used. This binder will require a rake specially adapted to it, and this is one cause of some delay. But the whole machinery is nearly completed, and when in operation will save nearly every straw the reaper cuts, tie it handsomely in sheaves, and thus drop them upon the ground. We expect to be able to save the grain so clean of waste in the harvest field, that this saving will pay the cost of twine. It runs with the running gears of the reaper, and with very little additional power."

UNDERDRAINING.—J. M. Connor, of Hopkinton, N. H., urges the necessity of drainage, which most theoretically acknowledge, yet but little is done. Much of the best soil, he truly says, is almost worthless because undrained. He is practising what he preaches, though he presumes 9-10ths of the farmers pronounce it a foolish expenditure from the apparent absence of springs; yet in digging down 2 or 3 feet, and in going 10 rods, water enough gathers to fill an inch pipe. Though the philosophy of underdrainage is admitted, few practice it. There is something curious in farmers about carrying theory into practice. "Why is it," he asks, "in respect to many branches of farming, men will not practice what they know? As an illustration: You may reason with many farmers about the mode of tending stock in winter, and although your views may exactly coincide with theirs, yet their practice you will often find is exactly the opposite: of the one his cattle look thrifty: the other's cattle look haggard and are half starved. So of tending swine: one man makes double the pork from a given amount of corn that another does; yet if you hear the two men talk, you would take the latter to be the best pork raiser. This is apparent in all the relations of life, men do not and will not practise what they know."—*Boston Cultivator.*

PASTURES.—Much has been said about top-dressing pastures. We confess to but little confidence in the application of manures above ground to improve pastures sufficient to meet the expense.—*Maine Farmer.*

At the winter meeting of the Massachusetts Board of Ag., in Greenfield, when the reclaiming of old pastures was under discussion, Wright, of Deerfield, stated that he bought an old pasture (14 acres) which kept but two cows: being of the opinion that it could be improved, and satisfying myself by hiring it one season, he paid \$27 an acre for it; my neighbours, said he, joked me,—would not have paid half that. I put in 3 cows: pretty well stocked, said a neighbour: it being a good grass season, it carried them through. I began to improve it by removing all obnoxious vegetation, after which it looked very smooth: then took 20 bushels of ashes, ½ ton of plaster, 8 bu. of hen-manure, and composted them, and in 3 weeks spread it broadcast over the pasture and it had a wonderful effect. Began it seven years ago, and summer before last put in 7 cows and 3 early calves and had a fine pasture; I put in the same last summer, but owing to the drouth, took out two; in 3 years I think I shall be able to keep 10 cows on that pasture.

Here is one interesting fact of the advantages of top dressing pastures. Others of a similar kind can be given. Let farmers take courage.—*Boston Cultivator.*