

threaded inner end of the rod may be inserted and secured by a nut. The inner end of these plates are formed into downward projecting hooks, each of which engages with the side of a central opening made in a metallic block placed at the centre of the harrow. Clevises are secured to the outer ends of the two rods, lying in line with each other. In the normal condition of the harrow, the four beams form a square; but if it is desired to widen the harrow in one direction it may be readily accomplished by adjusting the inner ends of the rods, along the line in which the harrow is to be widened, and placing them in holes nearer the outer ends of the plates. By this construction it will be seen that the outer harrow beams are pivoted to each other at the ends, and will conform to the undulations of the ground. The tooth of this harrow is triangular, the triangle being formed of sides of unequal length, and is attached to the side of the tooth-holder by a bolt and nut passing through holes in the tooth that hold it at either of its angles, and the tooth-holder is bolted to the frame of the harrow.—*Scientific American.*

#### BEAN GROWING.

The land for beans should be ploughed early, and worked over once or twice before planting time, so as to kill the weeds and get it in good condition. The best time to plant I have found to be from the 1st to the 10th of June, and I prefer to plant as soon after a rain as the land will work well. I do not like to have a heavy rain fall on them before they come up, for two reasons. One is that they are likely to be clipped and not come up well, if the land is clay; and the other reason is that a crop of weeds will come up and start with them. I use from half a bushel to three pecks of seed to the acre, and prefer to sow with a force seed wheat drill, using every fourth drill, which makes the rows about two feet apart. This I consider wide enough for the Navy bean, but some of the larger varieties I should plant thirty-two inches apart. I can plant three rows at a time with the wheat drill at the first-named distance. The beans do not need much cultivation, as when planted close they soon shade the ground so that nothing else can grow; but it will pay to run through them with a cultivator as soon as they are long enough, and after each heavy rain, until they shade the ground. In an ordinary season two cultivations will be enough, while in some seasons they may need three or four workings.

#### CHESS OR CHEAT.

The wheat fields show quite an amount of chess, and it is creating quite a discussion among farmers. Some claim that wheat will turn to chess; others that it is caused by pasturing in the fall and spring; and others that it is an injury to the male plant by freezing. Some advance the theory that if left alone chess will turn to timothy. (1) Will wheat turn to chess? (2) Will pasturing cause it to do so? (3) Is there any sex developed in the wheat plant before the blossoming occurs? (4) Will it turn to timothy? (5) What is it?—*C. N. Coggeshall, Dickinson Co., Kansas.*

[(1) No plant can turn into another any more than an ox can turn into a horse. Plants are as distinct in their species as animals. In stalk and foliage "chess" somewhat resembles wheat, and as the conditions of a wheat field are favourable to its growth, the above-mentioned ideas have prevailed in regard to it. (2) No. It is a weak weed, which the natural grasses prevent growing, so its seeds remain in the ground until a small grain or other crop provides proper conditions for its growth. Its seeds are threshed out and remain with the wheat grain, and is consequently sown

with the wheat seed, thus being perpetuated by the farmer himself. (3) Both sexes of the wheat plant are in the blossom in all stages of its development from the bud. There is no male wheat plant in distinction from a female plant; both sexes are in one. (4) No. It cannot. (5) Chess, cheat, or brome grass, is the *Bromus secalinus* of botanists. There are three other species in the same genus, also called "cheat" or "chess," which somewhat resembles the *secalinus*.—*Ed. Farmers' Review.*]

#### MAKING HAY.

JOSEPHINE POLLARD.

Out in the meadows tossing the hay,  
Rich with the scent of clover,  
Out in the meadows the livelong day,  
Turning the grasses over,  
Robert is busily working away  
From morn until day's declining;  
Working away and making hay  
While the summer sun is shining!

He whistles and sings, for his heart is light,  
And gay as the sunshine o'er him:  
And smiles illumine his face so bright,  
As he tosses the hay before him;  
And in and out through his thoughts, all day,  
Are fancies their threads entwining,  
While he's working away and making hay  
While the sun is brightly shining.

Winds of summer are ready to blow  
Over the grasses and under,  
As soon as the farmer chooses to go  
And scatter the heaps asunder;  
And out on the high road far-away,  
The perfumed message divining,  
Some one will say, "They're making hay!  
And brightly the sun is shining!"

Then after the toil of the day is done,  
The cattle are under cover,  
When low in the west declines the sun,  
Where goeth the farmer lover?  
Toward the village he taketh his way,  
His heart with a message laden;  
For the lad so gay has something to say  
To-night to a certain maiden.

And under the balmy evening skies,  
In the glorious summer weather,  
With stars a-gleam in each other's eyes,  
They wander away together.  
And should you meet them (perchance you may),  
You'd know by her blush so charming,  
That love has a way of making hay  
Unknown to the rules of farming.

#### PURITY AND VITALITY OF FARM SEEDS.

Prof. J. M. McBryde, in his address before the East Tennessee Farmers' Convention at Knoxville, Tennessee, submitted facts and figures from analyses of seeds that astonished his hearers. A sample of orchard grass seed gave only 20 per cent. of pure seed, while 80 per cent. was empty florets or husks without grain; one of blue grass, while giving 92 per cent. of pure seed, only 5 in 100 germinated. Red clover gave 55 per cent. of pure seed, but only 42 in 100 germinated. White clover gave 97 per cent. of pure seed, but only 3 in 100 germinated. A like ratio is found in other seeds, the impurities being numerous and often seeds of weeds. The farmer buys seeds—good ones, as he supposes—sows them with care, and failing to get a catch takes it for granted that the season being unfavourable is the cause. The subject is one of vast importance, and demands a prompt and summary remedy.

#### APPLYING FRESH MANURE.

By fresh manure we mean not only green dung from the stables, but that which has been in the compost heap a month or more, undergoing fermentation. It may be true that in the compost heap, properly handled, there is no loss of fertilizing material. There is frequently loss from surplus manure lying idle in the compost heap, or barn cellar. Of course there is occasion, in the regular routine of farm crops, to apply large quantities of manure at one time. But where the manufacture of manure in the compost heap is made a leading business, there will be a surplus

for which no hoed crop calls. Any surplus fertilizers in midsummer or autumn can be used economically upon the grass crop. They will begin to draw interest as soon as sown, payable at the next harvest. If you have any meadows that out less than two tons to the acre, top-dress as soon as the hay is gathered. If they yield two tons, top-dress and get three tons or a second cutting. Keep manure on interest, and it will pay better than Government bonds.—*American Agriculturist.*

#### ROLLING ON LIGHT SOILS.

A New Jersey farmer, writing to an exchange, says: "Rolling is another popular process that may do much mischief upon light soils. The soil being very friable, the roller is not required to break up lumps and clods, and the harrow will compact the ground sufficiently for all purposes. The roller packs and hardens a light soil, and causes it to dry out very rapidly, while to retain moisture it should be kept loose and soft. The difference between rolled and harrowed fields is very marked after a long-continued drought. The rolled fields dry out, rye and wheat being light and small. The only useful effect of the roller on light soil, I am confident, is in the spring upon grass or grain fields, only to level and prepare them for the mower or reaper."

#### SOD AS A FERTILIZER.

An old farmer, writing to an exchange, says: "There is no way manure can be furnished so cheaply as in sod. Sod not only enriches the land, but improves it mechanically, the decay of the roots in the sod making the soil, and that too of the best quality. Sod manure is always adapted to the soil, and no testing is necessary to know whether it will benefit the crop or not, as with commercial fertilizers. With the sod manure it is all gain, both in mechanical and fertilizing effects. To get best results the rotation of crops should be quick, and the land got into clover and grass sod as quick as the fourth crop, so that the organic elements of the soil are not too heavily drawn upon."

The Colorado and far west papers report an entire absence of the famous potato beetle this year. He has packed up his trunk, taken his grip sack in hand, and left for good. Such being the case, it will be but a few years more before he will have deserted this whole country and have gone east on a European tour, of uncertain, but we hope eternal, duration. Unlike the star of empire, he travels against the sun.

JERUSALEM antichokes have long been known as a most valuable addition to the rations of hogs, but the fact that they are even more valuable as an addition to the diet of cattle seems to be less generally recognized. They are hardy, yield fair crops on poor, and very large ones on rich soil: are more nutritious than the potato, and once planted there will be no need for replanting, as they are not easily got out of a piece of land after they have become established.

MANY farmers throw away the old brine in beef and pork barrels and fish packages. Sometimes they throw it on a grass patch, or under a tree, and kill the vegetation. If they desire to kill vegetation with it, they should pour it on patches of burdocks or thistles, or around trees that are worthless. It is better, however, to use it for manure, in which case it should be applied with judgment. It may be applied to asparagus beds or quince trees liberally, but to other things sparingly. Ordinarily, the best disposition to make of it is to pour it on a manure or compost heap, and allow it to be absorbed.—*Exchange.*