

bad thoughts while sitting them on), let the shaft project out 4 inches at each end, leaving 1½ inches space between the rollers; get bar of iron 1 inch square with an eye in one end for the shaft; put it between the rollers and fasten the other end in the frame timber, with a tap; put a linch-pin in each end of shaft to hold the rollers in place. Take 3x3½-inch scantling to make the frame, with a couple of pieces of wagon tire arched over the top and a mowing machine seat bolted on, and you will have a number one roller. Mine cost me \$7.00 outside of my own work. It is 34 inches in diameter.

THE COMING WHEAT CROP.

A dispatch from Milwaukee says: The Millers' National Association gives publicity to wheat crop estimates, which promises, for the whole wheat belt of the United States, a yield of 373,500,000 bushels for 1883. Secretary Seaman's estimate by States is as follows: California, 45,000,000; Nebraska, 15,000,000; Texas, 21,000,000; Kansas, 23,000,000; Missouri, 21,400,000; Iowa, 15,300,000; Dakota, 18,000,000; Minnesota, 87,000,000; Wisconsin, 16,500,000; Illinois, 25,000,000; Kentucky, 12,400,000; Tennessee, 6,800,000; Georgia, 3,000,000; Virginia, 8,300,000; Maryland, 9,000,000; Delaware, 1,000,000; New York, 10,800,000; Pennsylvania, 22,300,000; Ohio, 26,000,000; Indiana, 29,500,000; Michigan, 23,300,000.

Horticulture.

FRUIT AND VEGETABLE GARDENING—SEASONABLE HINTS.

However much some may regard the cause of fire blight in the pear a mystery, there is no doubt about its being far less serious than it was a few years ago. The leaf blight and other blights are still about the same, but these are trifles as compared with the fire blight, which would often destroy comparatively large trees in a few days. It is now clear that Mr. Barry's original advice to the sufferer was sound. This was that the best remedy for a fire-blighted pear tree was to take it out at once and plant another in its place. Those who followed this advice from the first have many of them plenty of pears now. In all the discussions on this question, some things have been found which are undoubted. For instance, the fact that a new tree placed in the spot where one has been killed, and yet thriving perfectly afterwards, shows that the evil was not in any way connected with the soil. And then the fact that in some districts where the disease did appear, there were often many trees wholly uninjured is against any idea of general climate influences against the success of pear culture. It is no serious cause for discouragement, even should anyone believe that there has been nothing learned about the origin of the trouble. He may yet have pears if he will but set out trees. Those who believe that fungus spores enter through the bark and cause the trouble will continue to wash the bark of trees if they can get time or opportunity.

Whitewashing the stems of orchard trees has a very beneficial effect in clearing away old bark and destroying the eggs of innumerable insects. The white color is bad; throw in a little soot or some other matter to make it brown. In green-houses, sulphur has been found of benefit in keeping down mildew. Possibly if mixed with the whitewash in tree dressing, it might do good against fire-blight, and such-like fungoid troubles. In fruit growing, remember that fruits are like grain and vegetable crops, in this, that they must have ma-

nure to keep up the fertility. Unlike vegetables and grain, however, their feeding roots are mostly at the surface. It is best, therefore, annually to top dress fruit trees. If manure cannot be had, any fresh earth from ditches or roadsides, spread a half inch or so under the trees, will have a wonderful effect. Indeed, we do not know but that for the pear tree a thin layer of road sand is one of the best of manures. We have seen apples thrive amazingly with a coating of coal ashes.

The gooseberry and currant also do well in partial shade. In fact, if you would have the gooseberry and currant in great perfection, get a lot of old brushwood and cover the rows closely, so that the plants will have to push through, and you will be astonished at the growth and healthfulness of the bushes. The decaying wood also furnishes an excellent manure for them. The finest currants ever grown can be had by mulching with old chestnut burrs, or even sawdust.

It has been noted that the grapevine thrives amazingly when it gets into an asparagus bed. These are generally elevated, and are thus dry, while the rich soil necessary for asparagus, is also good for grapes.

In planting fruit trees, aim to have them so that the hot dry sun will not have full effect on the ground about the roots. The great heat in this way injures the trees. Many who have trees in gardens plant raspberries under them. The partial shade seems to be good for the raspberries, and helps the trees. Blackberries would, no doubt, do well in the same situation; and strawberries, it is well known, do not do badly, grown in this way.—*Gardener's Monthly*.

A GOOD ACRE.—The Anna Ill., *Farm and Fruit Grower* records the fact that W. M. Hopkins picked, the past season, 4,500 quarts of strawberries from one acre of ground that had been subsoiled to the depth of eighteen or twenty inches previous to planting. These he sold for \$11.50 gross, or \$9.50 net, per bushel, Kansas City, Mo., or a little more than 25 cents a quart clear of all expenses. He attributes his success entirely to the subsoiling, and believes it is the next best thing to irrigation, and should always be practiced where irrigation is not feasible. The subsoil should not be turned up on the surface, but merely loosened.

HOW TO GROW EARLY CABBAGE.

I sow the seed of the kinds I wish to grow in February or first of March, in small shallow boxes in forcing pit, hot-bed or if these are not to be had, a sunny window of the house will do. The boxes I use are 18 by 24 inches, 3 inches deep; made of ½ inch boards. The kinds of early cabbage I generally raise are Early Jersey Wakefield (best if pure,) Winningstadt, Early Summer and Potter's Early Drumhead. The first two for early; the others for second early. I only treated the first two as above stated; the second early I sow in common hot-beds from the 1st to the 15th of March.

After the seeds sown in boxes are up and about three inches high, it is necessary to transplant them to other boxes, like those they were sown in, about 1½ to 2 inches apart every way; or, put one plant in each pot, and pots close together in boxes, treating the same as if planted in boxes. Pots are better than boxes and I use them largely.

About one week or ten days before planting in garden, they must be hardened off by exposing gradually, night and day, in the open air. I set out my plants the end of April or beginning of May. The plants which are in boxes are taken in the boxes to the part of the garden where the ground is ready to plant. Plant Wakefield 20 inches in rows and

Early Summer the same, the other kinds 24 inches. The rows should be 30 inches apart, so that a cultivator can be used.

Early radish, lettuce, spinach, &c., can be sown between the cabbage rows, and be out before the cabbage needs all the room. After cabbage, celery can be sown on the same ground. In this way other vegetable plants can be raised to advantage. In fact, I have raised all the following with success. Early cauliflower, early lettuce, early kohlrabi, early savoy, early celery, early beet, early tomatoes, early cucumbers, and early squashes.

POULTRY.

POULTRY ON A LARGE SCALE.

We find the following sound advice in the *Poultry Monthly*:—

"There are many persons of moderate means who have had perhaps some little experience in breeding poultry, and who get to wondering if it will pay to breed poultry on a large scale—whether it will pay to embark in the breeding of poultry for market purposes as a business, and if it is good policy to give up a fair paying clerkship or small business to engage in it. Such questions are very difficult to answer to the satisfaction of all concerned, for much more really depends on the person than on the business in nearly every department of human industry, and where one person may make a success of any undertaking, another one may fail, though having started with equally good chances of success. Poultry, to be successful on a large scale, must be kept in small colonies of about fifty birds each, for many more than that number in a single house is apt to cause sickness and disease, ere long, among them. Small flocks like that can be given greater attention than larger ones, and the first approach of disorder can be seen readily and promptly checked, while there is less danger of great loss when thus kept in small flocks, as the trouble can usually be confined to the flock in which it started, by proper and prompt sanitary measures. When the breeder is not too far away from large retail markets, and especially when the breeder can market them himself, thus saving commission, freight, and loss, it pays best to breed and keep poultry for the eggs they produce, as eggs known to be strictly fresh are always in good demand at quite an increase in price over that received for the ordinary 'store' eggs. Such breeds as the brown and white Leghorns, and birds bred from them, either pure bred, or cross bred or grade, as a basis, are first-class egg producers, while a game cock is also valuable to breed to good common hens, producing, as a rule, vigorous, active pullets, which are invariably good layers. Those who wish to raise poultry principally for the flesh, should raise the light Brahma, Plymouth Rocks, dark Brahma or some of the Cochin breeds, the first two named, however, being general favorites in this respect, and also combining with good laying qualities under favorable circumstances. Those who can not or will not give the poultry regular or constant attention, shelter them properly, supply proper food in liberal quantities and at frequent and regular intervals, and pay a strict attention to cleanliness and thoroughness in all the details of the management, need not expect even to succeed, not to even consider the question of loss or profits, for 'success and profit here mean work, work, work.'"

Dudes have almost decided to wear silk trousers.

GAMES.

There are two distinct races of game fowls, the English and the East-Indian, both having originally been bred for the purpose of cock-fighting, which was one of the most popular amusements in England until it was prohibited by law in the seventeenth century.

In fowls bred for such a purpose we should expect to find compactness of form, hardness of constitution, and great courage, and these qualities are eminently characteristic of the games, and especially of the English games, in which the practice of cock-fighting has served to forward the working of the natural laws by which the strongest and hardiest become the progenitors of the race, as the visitors of the cockpit were naturally selected from the chiefs of the breeding-yard, a "natural selection" which was protected and encouraged by the skill in breeding for which the English are justly celebrated, until this breed of fowls has come to be regarded as the highest type of gallinaceous hardihood, courage, and elegance of form.

Indeed, so great has been the care taken of the purity of the blood of certain strains of games that their pedigrees have been kept after the manner of cattle and horses, so that they may be traced for a century or more.

There are many sub-varieties of the English game, based upon size or color of plumage, but these all have a generally recognized and uniform type of form and carriage, the characteristics of which are thus given by Tegetmeier:

"The carriage and form of the game cock are certainly more beautiful than those of any other domestic fowl. The neck is long, strong, and gracefully curved; the hackle short and very close; the breast broad; the back short, and broad across the shoulders; the whole body very firm and hard, with a perfectly straight breast and back, the latter tapering towards the tail; the wings are large and powerful and carried closely pressed into the side; the thighs are strong, muscular and short, tightly clothed with feathers, and well set forward on the body, so as to be available for fighting; the shanks rather long, strong, but not coarse, covered with fine scales, and of moderate length; the feet flat and thin, the toes long and spreading, so as to give a good hold on the ground; the hind toe must be set low down, so as to rest flatly on the ground, and not merely touch with toe point—a defect which is known as duck-footed, and is regarded as a serious disqualification, as it renders the bird unsteady when pushed back by his opponent.

"The plumage is compact, hard, and mail-like to a remarkable degree; and possesses a brilliant glossiness that cannot be surpassed. The tail in the cock is rather long, the sickle feathers gracefully arched, and carried closely together, the whole tail curved backwards, and not brought forward over the back—a defect which when present causes the bird to be termed squirrel-tailed.

"The head in this variety is extremely beautiful, being thin and long, like that of a greyhound; the beak massive at its root, strong and well curved; the eye large, very full, and brilliant in lustre; the ear-lobe and face of a bright scarlet, and the comb in undubbed birds single, erect, and thin. The spur, which is exceedingly dense and sharp, should be set low on the leg, its power as a weapon being thereby greatly increased, and it may be remarked that this offensive organ is often present in the softer sex.

"In the hen, the form, making due allowance for the difference of sex and