GARDEN WORK SYSTEM.

WHY AND HOW IT IS BEST TO PLANT SEEDS IN ROWS.

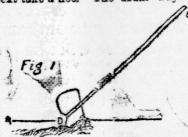
Facility of Cultivation is Thereby Ensured as Well as a More Careful and Neat Appearance-An Excellent Scheme for the Amateur Gardener.

There are a number of garden seeds, such as orion, carrot, peas, beans etc., that are best cared for if planted in rows. The rows should be perfectly straight, a fixed distance apart, and parallel. This facilitates cultivation, especially when the plants are yet small and scarcely visible. It also gives a neat appearance to the garden that encourages the owner to keep it all clean and in good order. Of course the quickest, neatest, and all around best way to plant seeds in rows is with a drill. But not every one can own or borrow a drill. How then shall one who has no drill best put in his seeds?

Even in such a simple matter as planting seeds in straight rows there are slow, laborious ways; and there is at least one comparatively rapid and successful way, somewhat troublesome to describe, but very easy to execute when once learned.

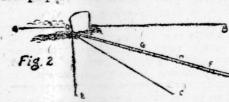
To begin with, if you have not a "true eye," or if you are a woman and awkward, you want a stout string-wool twine is best-as long as your rows. Also two or more stakes and a stick cut just the length you want the rows apart. Stretch the string between the two stakes where you want the first row to be. If the row is long, put the extra stakes on the line to keep it exactly in place.

Next take a hoe. The usual way from



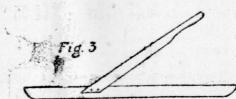
this point on is to pick or dig a groove with one corner of the hoe, using it as in Fig. 1, and making three to six inches of trench at a stroke. This is slow work, generally makes a groove crocked and uneven in depth, and, worst of all, if the ground is not perfectly loose and mellow the bottom of the treach, where the seeds are to sprout, is liable to be more or less hard and

In Fig. 1, A B is the line of direction of the trench. C is the position of the operator. At D is shown the manner of using the hoe. The handle of the hoe during the work is always in line with A B. Now try it and use the hoe as in Fig. 2. Instead of using only the corner point of the bee use the one edge as shown at D. Instead of standing in front of the hoe as it moves in the direction A B, stand to one side of A B, one foot at E and one at C. D E is two feet, and E C is two feet or more. The hoe as shown is at the end of a stroke, and D E is perpendicular to A.B. The hoe han-



dle, DI, is grasped at GF (G and F being about two feet apart), and is held well away from you. The angle which D I makes with A B is such that as you look down upon the handle it covers the line D C on the ground; i.e., crosses the point of your right foot, and makes an angle of forty-five degrees with A B. Instead of picking and diggirg, take a long, sweeping stroke, sharp and quick, eighteen to twenty inches, according to your strength and skill. The whole thing would be far easier to learn from actual sight. If done right the result will be a straight, clean groove of the desired depth, with fine, mellow dirt in the bottom. The blade of the hoe will throw the dirt like a plow in rapid motion.

Then, for very fine seeds, such as onion. etc., take an inch board about five feet leng, four to six inches wide, and shape it as in Fig. 3. Slide this along the bottom of the groove. This secures perfect



straightness, perfect evenness in depth, and the finest dirt in bottom of groove. The plants can thus be weeded and tilled even before they are up. Next move the line and stakes the proper distance until enough groaves are made. Then drop the peas, beans, seeds, etc., and cover. In covering, use the hos in much the same way as in grooving. However, if the ground is lumpy use care in getting only fine dirt on the seeds. Also be particular to cover to the proper depth.

To distribute very fine seeds in the grooves, mix them theroughly with dry sand, put all in a bottle, put a quill in the cork, and distribute along the trench. The amount of seed per rod or per foot of row can be calculated, and the distribution segulated accordingly.

This method saves two-thirds of the time and does better work.

To Cure a Merse of Balking. When I was a mounted policeman, I learned of a most humane and kind method of curing a balky horse. It not only never fails, but it does not give the slightest pain to the animal. When a horse refuses to go take the front foot by the fetlock and ber the leg at the knee-joint. Hold it thus for three minutes, and let it down and the horse will go. The only way in which I can account for this effective mastery of the horse is that he can think of but one thing at a time, and having made up his mind not to go, my theory is that the bending of the leg takes his mind from the original thought. There have been some barbarously cruel methods resorted to to make a balky horse go its way, such as filling its mouth with sand, severely beating the horse, or, as in one recent case, cutting out his tongue. The humane societies would have their hands full to care for all these cruelties to animals. If they only knew, the owners of horses would adopt my treatment, and there would be no trouble with the erst-

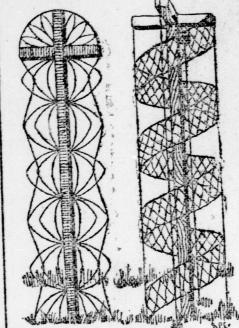
mal Friends. The Admiration of Statesmen. Petit farming in France is carried to its extremest attenuation among the highly civilized states, 2,167,667 estates being under 21 acres in size. This system is the admiration of statesmen.

while troublesome balky horse. -Our Ani-

VERY ATTRACTIVE.

Are These Neat Home-Made Wire Trel-

lises for Vines. Attractive trellises add much to the pleasure of growing plants and vines. The ordinary wooden affairs that are commonly seen are usually heavy in appearance, and not particularly attractive in design. The illustrations show a couple made large ly of wire, that are neat in shape and easily constructed.



HOME-MADE WIRE TRELLIS.

One has a central support of wood 11 inches square, with cross-pieces at the top and at the surface of the ground if desired. From the extremities of these cross-pieces four wires are stretched from top to bottom, and around these wires is wound, in spiral form, a strip of six-inch wire-netting, such as is used for yarding poultry. Small pieces of wire tie it firmly to the upright wires. The central support of wood should extend down into the ground eighteen or twenty inches.

The only explanation needed in regard to the other trellis is that the central support of wood has small holes through it at regular intervals, and through these are drawn fairly stout galvanized wire, according to the design that is suggested, or according to any other regular design that

the maker may elect. It is singular that greater use is not made about the garden and lawn of this galvanized wire, that is now so low in price. It may be used, in connection with light frame-works of wood as supports for large numbers of garden plants-peas, beans, tomatoes, berry bushes, etc., while it can be woven into almost any shape for the artistic support of flowers, sweet peas and a host of other climbers. In fact the various widths of poultry netting, and this smooth galvanized wire ought to be regarded as two of the most valuable assistants which the cultivator of fruits, vegetables and flowers has at his command in giving nature a chance to do its best-and prettiest-in the growth of the plants under his care.

WATERING HEATED HORSES.

Valuable Information in Readable Shape and Small Compass.

It was on one of last week's warmest days, and the mercury stood well up in the nineties. A man from a neighboring field stopped at our pump for a drink of water. He had his team with him, and the perspiration on man and beasts showed that all had been hard at work. The man grabbed the cup, filled it and drank eager-The horses, contrary to emphatic orders, drew close to the pump, and made a desperate effort to get their froth-covered, checked up mouths down to the drip-

"Let them have a sip," said I, saluting the man, as I passed on my way to the

"The horses?" Don't you see they're too hot to drink?" said the man with something in his tone that sounded like contempt for one's ignorance in so simple

a matter. "Are they any warmer than you?" I ven-

tured to inquire. "No. But ye see I've got sense enough tv take only a little-just enough to moisten my throat-and then quit. But them horses would empty that trough if I'd only give 'em a chance, and then they'd go home perhaps injured for life."

The man had refilled the large cup, while talking, and he now interrupted his halffinished paragraph by putting it again to his lips. As I stood wondering as to the area of the surface he had to "moisten," and what might be his full capacity when unrestrained, he set down the empty cup and continued:

"I'm goin' to let the horse walk all the way home and by that time they'll be cooled off enough to drink.

"Whoa, Kate! Back, there, Tom. Back, I tell ye! Wanter kill yerselves, don't

"You are right," said I, as the man fin-ished his orders to the horses by jerking them back a few paces. "You are right in saying that the horses are too warm to be allowed to drink their fill. But why not let them have a little? They would not have the sense to quit soon enough, but you can use your own judgment for them as well as for yourself. I would not even let them get their nostrils into the trough. for you can't tell how much they drink in that way. But here is a pail. Half a pailful to each will not hurt them.'

"Oh, pshaw! that little wouldn't do 'em a bit of good in their thirsty condition. Them horses is the awfullest drinkers you ever saw. I'll bet they'll get outside of three pailfuls apiece, when I get home, and mebbe more, if I let 'em. Half a pail

would be only an aggravation." "Wouldn't you have been glad of two spoonfuls of water, a few minutes ago. provided you could have only that, or else

have none?" "Oh, yes. My throat was dry as a

"Just so with the horses. Give them a gallon apiece, and it will do them good now, and they will be in better condition

for the drink when you get home." "Mebbe you're right," said the man thoughtfully. "I rather guess you be." And he took the pail to carry out my suggestion.

The man here spoken of is by no means a solitary one in his views. We have heard so much against watering horses when heated that we are apt to be cruel to them at times, and credit ourselves with acting for their good. One is scarcely expected to be more careful of his horse than of himself. In the matter of drink if he will imagine himself in the horse's place and then apply the golden rule, he will be adopting as good and as sate a plan as lies within his scope.—Ohio Farmed.

A Note From Europe. Several cities of Europe are working at the sewage question on the agricultural side of the problem. Are any of our Canadian cities thinking in this direction?

BUILDING FOR THE PURPOSE.

Dimensions of the Building-The Head Required and How Best to Furnish It-The Intention of the Evaporator and Row to Use It.

The process of evaporation is the cheapest known method of preserving indefinitely, for future use or for market, such fruit as raspberries, blackberries, cherries, apricots, plums, or apples; and in season of plenty, it enables one to preserve in a condensed and readily available form, fruit that would otherwise be sold at a low price, or allowed to decay. Some excel-

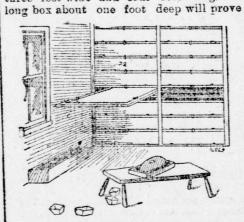


FIG. I.—EXTERIOR VIEW OF EVAPORATOR. market, and may be obtained ready to set up for immediate use. However, when several acres of berries are to be evaporated, or fruit is evaporated for other parties, it is best to put up a building especially for the purpose, and to a person skillful with tools the expense need not be great. A convenient and cheap form of

evaporator is shown in perfection in Fig. This will evaporate one hundred bushels of raspberries every twenty-four hours. The building is eight feet wide and twenty. two feet long. The sides and roof may be simply boarded up and down, or finished as elaborately as desired. If possible, locate the fruit-drying house

upon a sidehill, and at one end of the building lay up a cellar wall nearly five feet high, the width of the building, and about four feet wide, inside diameter. At one end a space is left for a door. Within three inches of the top of the foundation wall a stovepipe is inserted. In the same wall sections of five-inch pipe, a, are inserted to admit fresh air to the furnace room, and if the air is discharged near the centre of the cellar, or immediately over the stove, so much the better, as it creates a better draft than when admitted along the sides. In constructing an evaporator, a novice nearly always makes the mistake of allowing too little ventilation about the furnace. If a proper amount of fresh air is not admitted the fruit is simply steamed and often ruined by the cooking. Always admit the fresh air from as near the ground as possible. The ventilators should be of ample dimensions, and if made with a forced draft, better and quicker results will be obtained. When the work is rushing, all these little things are very important. Small fruit is best evaporated on the same day it is gathered. Hence, when doing a commercial business, aim to have the fruit delivered only as fast as the capacity of the evaporator will admit. For a building of this size a common box cast-iron stove, one foot square and two and a half feet long will, with dry wood for fuel, furnish all the

heat necessary, but it requires almost constant attention, and the heat will not be uniform. Hence, if possible, put in one of the low down, anthracite coal, base burners. The legs may be removed; the object being to have the stove as far below the fruit shelves as possible. One ton of hard coal will evaporate a sufficient quantity to make at least a ton of dried raspberries, and if the wood has to be purchased, coal will often be the least expensive. To utilize all the heat possible, let the pipe cross and recross the furnace room several times. An interior view of the evaporator is given in Fig. 2. The evaporator chutes are built directly over the furnace room. and should be of a size corresponding to the size of sieves or trays, the largest size of which is four feet square. When these are uniformly covered with a bushel of berries each, it requires a considerable strength to handle them quickly, as the little drop doors should not remain open longer than is absolutely necessary, or too much heat will escape. The drop doors, N, are five inches wide, and each space will admit two sieves. The strip to which the doors are hinged being one and a half inches wide. These dimensions can be changed to suit the fancy. For instance, a door may cover the space for three or four sieves, and be retained by a catch instead of wooden button. Two chutes are shown in the sketch. Often three are erected side by side; the dimension of the sizes should be determined upon before the building is commenced. The wire for a four-foot square sieve, of the best galvanized materi-



al, costs about seventy five cents. It comes

in rolls of different widths. Where wo-

men are to handle the sieves, those three

by four teet in size will prove most con-

venient, hence make three rows of chutes

three feet wide and four feet long. A

FIG. H-INTERIOR OF EVAPORATOR.

onvenient to throw the evaporated fruit nto direct from the sieves, from which it readily shoveled into bags, boxes, or other receptacles. This room should be well lighted, and racks may be placed along the walls for holding picking trays, baskets and other things when not in use. In the greatest evaporated raspberryproducing section of New York State, and-picking costs two cents per quart, requiring, on an average, nearly three quarts of fresh for a pound of dried fruit. Raspberry plants, if properly attended, will yield five paying crops before being

removed. A yield of six hundred pounds per acre is about the average crop. An active picker easily gathers one hundred quarts per day. By the use of an improved harvester one man will gather twelve bushels per day, and, be active work, several bushels more. Machineberries of course contain picked leaves, broken branches, and other litter, but are dried in this condition, then run through a fanning mill, which removes all the coarse and light rubbish, when women and children will look them over at their own home, at the become troublesome.

A FRUIT EVAPORATOR. rate of fifty cents per hundred pounds. This latter method of harvesting is one-half cheaper than hand-picking, and is be-HOW TO CONSTRUCT A HOMEMADE coming more popular each year. In the busiest season, put in the fresh berries at the top, moving down a point or two every hour, taking out the properly dried ones at the bottom; they should be dried just so much that in grasping a handful with considerable pressure that they will fall apart when laid upon a level surface. It too dry they will again absorb moisture from the variable atmosphere. If allowed to become too dry, they are liable to damage from scorehing, especially those on the lower tray.—Orange Judd Farmer.

SCIENCE A NECESSITY.

Successful Agriculture Impossible Without the Proper Knowledge,

At no period has science so largely benefitted agriculture as at present, says Prof. Weed in the American Agriculturist, and the time has long since passed when there is nothing to be done but to plant the seed in the spring and gather the harvest in the autumn. While agriculture has made much advancement during recent years, yet it has hardly kept abreast of the times during the last decade, and some of the other industries have pushed ahead of this most ancient and honorable occupation. Agriculture has excluded itself too much from the other lines of industry, and is just now coming abreast of the times through the aid which science has rendered. This is particularly true in some special lines. Farm crops are attacked by two kinds of organismsthe injurious insects and the parasitic fungi-and it is in dealing with these that perhaps the most advancement in scientific agriculture has recently been made. The insects eat the leaves and suck the sap of the plants, while the parastic fungi feed upon the rich juices of plants, causing a great check in growth. How much damage is caused by injurious insects and parasitic fungi cannot be estimated in just so many dollars and cents, but it is safe to say that fully one-fourth of the average yield of all farm produce is destroyed by injurious insects alone. That is to say, that were it not for the insects, the yield would be one-fourth greater than it is at present. To one who has not given this matter attention, this statement may be received somewhat doubtfully; but it is, nevertheless, only too true.

But by the application of proper remedies a large part of the loss caused by injurious insects can be prevented, and that with but little trouble and expense. It is here that the science of entomology comes to the rescue of the agriculturist by bringing forward insecticides to lessen, and indeed in some cases to entirely prevent, the loss caused by the ravages of injurious insects. Clean culture and good cultivation will greatly lessen the number of insects which attack the growing corn, while the application of bisulphide of carbon to the grain as soon as harvesteed will prevent further damage by insects in the granary.

In many cases the loss through damage by parasitic fungi is no less than that caused by the attack of injurious insects. The diseases of the grape have, perhaps, received the most attention at the hands of mycologists, and the beneficial results of their work in this branch of scientific agriculture manifest themselves on every hand. Grape diseases were formerly but little prevalent, but during recent years they have increased in their distribution and destructiveness to such an extent that it is now almost impossible to bring the grapes to maturity without the application of a fungicide to check the growth of the parasitic fungi which are the cause of the grape diseases. This being the case, the viticulturist knows that the application of the Bordeaux mixture is as fully an important part of success as pruning or cultivation. But it has also been recently shown that many plant diseases other than those of the grape can be checked in like manner by the application of fungicides. A prominent example of this is found in the good resulting from the application of Bordeaux mixture to potatoes, recent experiments showing that this fungicide not only prevents the potato rot, but also so very largely increases the yield that it would pay well to apply the Bordeaux mixture for this latter purpose alone, where potatoes are subject to early blight. This increase in yield was a result unlooked for when the experiments were conducted. This same fungicide is used in spraying apple trees to prevent the apple scab, and experiments last season at the Cornell station show that the Bordeaux mixture not only prevents the scab, but it increases both the yield and keeping qualities of the

But in other lines of agriculture, science has but recently shown many things of interest. It has long been supposed, and, indeed, common sense would go to show, that the winter protection of milch cows would pay, yet it has remained for the Indiana Experiment Station to recently show just what and how much benefit is to be derived from such winter protection. The matter of sub-irrigation has received attention at the hands of some of our stations, and the experiments have shown that this system of irrigation is much superior in its results to the usual methods. Agricultural chemistry, dairying and bacteriology are as yet but new sciences, and this is especially so in the intimate relations which they bear to each other. The matter of the fermentation of milk is now receiving much attention, and bacteriology will probably soon show us a method of greatly prolonging the sweetness of milk. By a method of milk testing, we are now able to say just how much butter fat a given amount of milk contains, i. e., how many pounds of butter can be made from the given quantity of milk. This being the case, the milk now sold at creameries is paid for in proportion to the amount of butter fat it contains. Thus we see the intimate relations existing between the sciences which underlie agriculture. We also see that science has brought agriculture forward to the state of advancement in which it now stands. That agriculture should be our foremost, as it ever has been primarily the most important, industry there can be no

doubt. But science has not completed its work in aiding agriculture. The greatest aid to the agriculturists in this country is the experiment stations-and it is through these institutions that much of the future aid to agriculture will be brought for-

ward.

Crossing or Hybridizing. Hybridization is the more difficult and uncertain method, as it must be followed for generatians before the species has become fixed to a degree that will warrant its being introduced as a new variety. Scientific experimenters are usually the most successful in the work of hybridizing as considerable skill is required in pollinating to effect a successful cross and after this is accomplished the work must be followed up with the most careful selection from the multitude of forms which invariably result from crossing. The tendency with hybrids is to revert to a type like one or the other of the parent plants and thus

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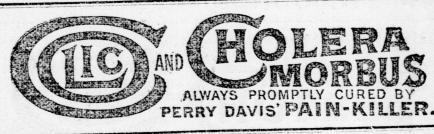
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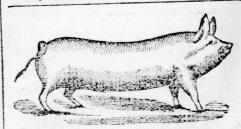
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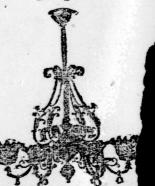
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