

1897

R. M. KELLOGG'S

1897

A TEXT BOOK  
... FOR ...  
PROGRESSIVE  
FRUIT GROWERS.

GREAT  
CROPS OF  
SMALL  
FRUITS

.. AND  
.. HOW HE  
.. GROWS  
.. THEM.

WITH FULL  
INSTRUCTIONS  
FOR

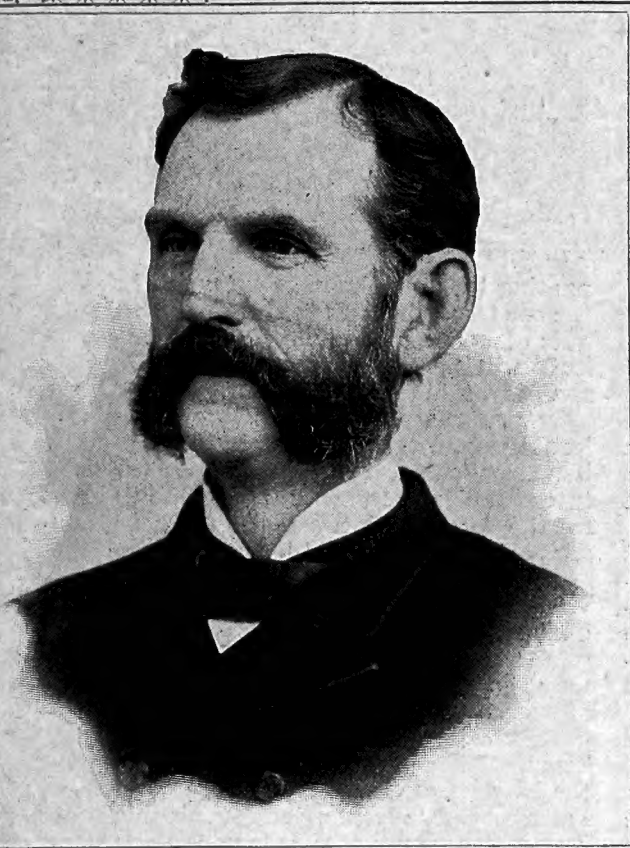
BREEDING  
PEDIGREE PLANTS



Three Rivers  
and Ionia, Mich.

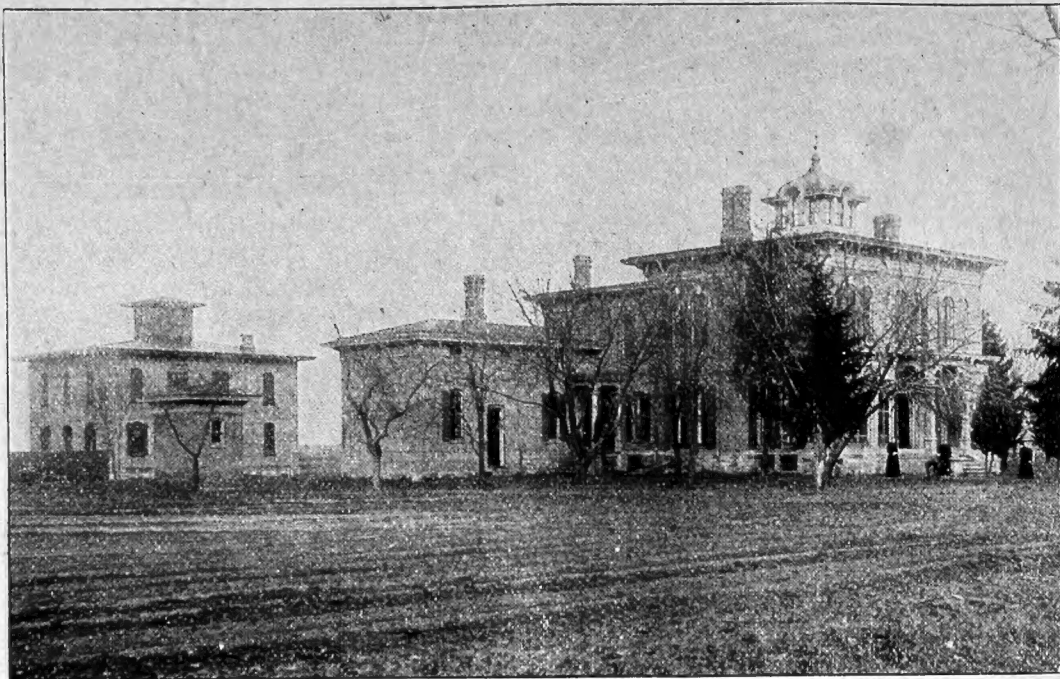
POSTOFFICE ADDRESS

THREE RIVERS, MICH.



THE LARGEST CROPS.  
THE FINEST FRUIT.  
THE LEAST LABOR.

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BY R. M. KELLOGG



CORNER PORTAGE AVENUE AND EIGHTH STREET, THREE RIVERS, MICH.

**The Three Rivers establishment** was acquired to secure unlimited facilities for plant breeding. It was selected after a search of many weeks in which nearly all parts of the State were visited. It possesses an ideal soil and occupies an elevated plain between the Portage and Rock rivers, a short distance north of their junction with the Saint Joseph.

While we have grown the largest crops of small fruits without irrigation, depending on thorough cultivation during protracted drouths as explained in this pamphlet, yet the successful propagation of plants requires different conditions.

**The plant is a baby.** A stunted plant, like a stunted calf, requires a great deal of extra feeding and care to bring it up, hence in order to secure a steady growth and development we have completed an extensive system of water works by which over six hundred thousand gallons of water per day are pumped up over the bluffs and distributed to every part of the farm by the most perfect system known to irrigation enabling us to maintain at all times the exact degree of moisture necessary to secure the fullest root development and an uninterrupted growth that insures a hardiness and vigor of plants which cannot be obtained under other conditions.

**Our experimental gardens and prop-**

**N. B.**—The title and contents of the various editions of this pamphlet have been fully copyrighted and nurserymen will be held responsible for taking extracts in making up their catalogues, or others in preparing papers for the press or horticultural meetings.

agating beds are the most extensive in the country, where all the leading varieties of small fruits known to this latitude will be seen growing under the most favorable conditions.

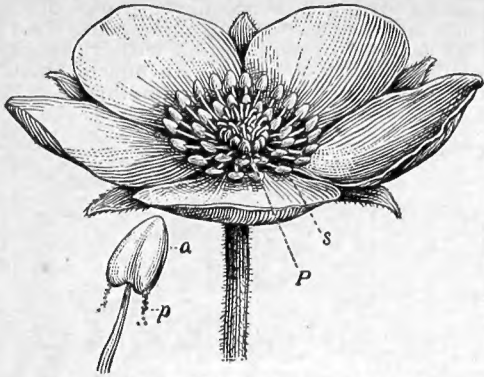
**Our extensive correspondence** with leading growers in every state, and visits to horticultural meetings and institutes enables us to advise beginners as to the best varieties and methods adapted to any soil and locality.

**Letters of inquiry** are cordially invited, stating briefly nature of soil, location and what you propose to do and means you have of doing it and you may expect a prompt and definite answer.

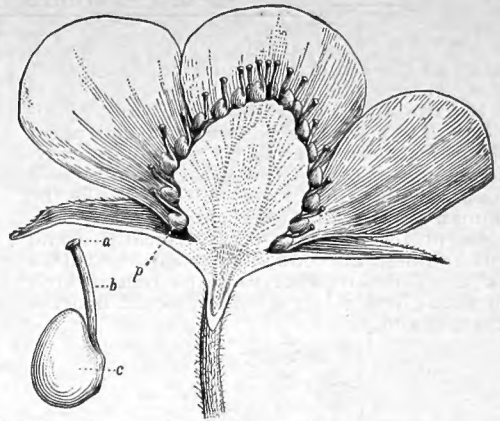
**Three Rivers** is noted as Michigan's beautiful city and takes its name from the junction of three large rivers within its corporate limits, each furnishing fine water power for extensive mills and factories. Its fine residences, shaded avenues and drives together with its central location and railroad facilities, being situated at the crossing of the Michigan Central and Lake Shore & Michigan Southern railroads, making only a few hours by express or freight to Chicago, Detroit and Toledo giving it fine advantages as a shipping point.

**The Ionia establishment** will be continued as an auxiliary.

Address all communications to **R. M. Kellogg, Three Rivers, Mich.**



(MALE ORGAN.) FIGURE 1.



(FEMALE ORGAN.) FIGURE 2.

### STRAWBERRY BLOSSOMS MAGNIFIED

To show the sexual organs, illustrating how pollenization takes place for the development of seeds and fruit, Figure 1 shows the perfect flower with Pistils (*P*) in center with Stamens (*s*) arranged around the outside. The enlarged Stamen on the left shows the anther (*a*) bursting and Pollen (*p*) dropping out which is carried to the pistillate or imperfect flowers by wind and insects.

Figure 2 is a sectional view showing the pistils or female organs. The pollen falling on the stigma (*a*) which secretes a waxy substance for catching the pollen and carries it down the style (*b*) to the ovaries (*c*) where impregnation takes place. There is a pistil for each seed and wherever the pollen fails to touch no seed or fruit will develop, or if the pollen is weak the berries will be small and inferior. The value of Pedigree Plants, as will be seen in the following pages, lies in vigor of pistils and potency of pollen and ability to develop fruit instead of excessive foliage.

### MY CLAIM.

**M**Y claim, briefly stated, is this: By pursuing the methods pointed out in these pages, I have grown the largest crops of the finest fruit which have brought to me more customers than I have ever been able to supply and who were willing to pay me the highest price to secure my products.

**Beginning on a small scale** and by growing a strictly high grade of fruit, the business has advanced rapidly until now it is conceded to be the largest establishment of its kind in the State.

**The basis of my success** is found in the following principles. First, in breeding up and accumulating high fruiting qualities in plants so that when the harvest comes every plant is loaded with fine large specimens of fruit and possesses the ability to bring them to the greatest perfection.

**I never have room** for a blank or barren plant. If it cannot pay me liberally for my work and use of land, it must give place to those which can do so.

Second, by systematic experiments to ascertain the real value of varieties and thereby determine which are best adapted to my location and soil, always recognizing the fact that it is safer to plant most largely of those which succeed over a wide area of the country and testing new varieties only in a small way.

Third, by a thorough system of fertilizing and cultivation which shall produce the greatest results for the amount of labor and expense incurred. This is the secret of large profits.

**If you are not growing** three or four

hundred bushels of strawberries and at least two hundred bushels of raspberries and three hundred bushels of blackberries per acre you are not enjoying the degree of success you are entitled to and should study these pages carefully and learn how the writer has accomplished it.

Soil, location and climatic conditions have great influence but they can be controlled in a large measure by robust plants, with stamina that shall force a fruitage under unfavorable conditions. In all these years we have never had an unprofitable season.

**There is no more difficulty** in breeding good qualities into plants than there is in breeding up animals.

### SEX IN PLANTS.

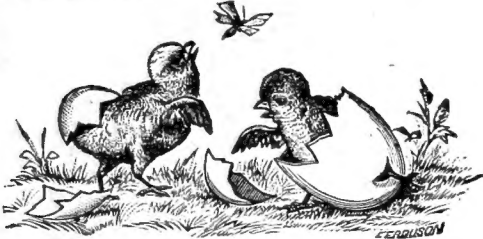
It is believed that originally both of the sexes were contained in the same individual but with the animal; this is now the case only in the lowest forms, while in plant life there is a gradual separation going on. Recent years have shown a large increase of pistillate seedlings or those having no male organs. They are popular because much more hardy and productive. We have no exclusively male strawberry. Of course such a plant could produce no fruit.

The bisexual plants or those containing both stamens and pistils (see Figure 1) must be set within six or eight feet of the pistillates so the pollen may be carried by wind and insects to the female plants (Figure 2). No pollen, no seeds; no seeds, no fruit.

**Every plant has a father and mother** and like the animal it is not only the offspring of its parents but of its grand

and great grandparents. Their peculiarities will be seen cropping out here and there down through many generations.

**Plants have love matches** and affinities. They receive pollen from one plant and reject it from another. They give evidence of enjoying the presence of some plants while others are repulsive. Like the human family different varieties have decided preferences for certain localities and environment and one variety will not thrive on a soil destitute of some particular kind of plant food while another would flourish there grandly.



The seeds are the eggs of a plant. Take a hen's egg and keep it at the right temperature twenty-one days and out pops a chicken. Take an acorn (egg of the oak tree) and place it in moist warm earth and soon up-springs the great oak. The important point is we must have a full understanding of the fact that when a plant bears fruit, it is breeding or multiplying its species and the fruit develops only as a receptacle for the seeds to grow in and the size and quality of the fruit depends on the stamina of the seeds.

**In the beginning** God commanded both animals and plants to multiply and replenish the earth and to secure obedience to this command he endowed both alike with a passion, which, unless restrained leads to destruction. Every physician knows the chief cause of idiocy and insanity; every veterinary knows the source of scrubs that infest our barn yards and thoughtful horticulturists are fast learning that exhaustion in seed bearing is the great cause of unfruitfulness in plants.

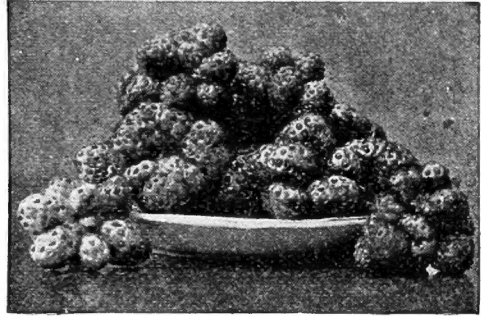
The sexual organs of the plant contain the counterpart of all those found in the animal and the glands for secreting the vital dust (pollen) are as perfect as those of the animal for secreting the "vital fluid" (see engravings on first page).

**Impotency** or inability to fruit is brought on by excessive use of the sexual organs which in the plant are even more sensitive than those of the animal. Since the development of fruit depends on the stamina of the seeds, if the male plant is vigorous and the organs of the female strong and healthy the seeds will reach great perfection and the pulp or fruit will be large in size, brilliant in color, firm in texture and rich in flavor.

In fruiting, then, everything depends on the breeding ability of the plants.

**Pollen exhaustion** corresponds to what is medically known as seminal weakness in the animal. A large and luscious berry never grew on a seminally weak plant; a

small and gnarly berry never grows on a seminally strong plant, or one possessed of high potency of pollen, and with vigorous pistils properly supplied with nourishment and placed in congenial surroundings.



UNDEVELOPED STRAWBERRIES.  
(Showing lack of potency in pollen.)

As an evidence that excessive pollen bearing destroys fruitfulness I submit that when an apple orchard gives excessive bloom, when every twig is loaded with blossoms we notice that the crop is not only small but the apples are small and gnarly. The tree has not sufficient strength to impart potency to so much pollen and the pistils are not impregnated with enough vitality to secure the development of fruit. The largest crops of fine fruit always come from moderate bloom.

When an orchard bears an excessive crop it is usually barren the following year and will be succeeded by light crops for several years, but if the limbs are shortened in and thick clusters cut out to remove surplus buds, thus preventing exhaustion it will bear a large crop annually. Grape growers understand this and the successful vinedresser never leaves a surplus of buds to exhaust the vines. The same holds true in raspberry and blackberry culture.

**Strawberries** propagate in two ways, first, sexually or by seeds and asexually or by buds (runners). Variation is very great when propagated by seeds. Of the many thousand seedlings introduced the number really worthy of culture is very few and not one in ten thousand has proven superior to the old favorite varieties, hence, when we do find a superior plant we multiply it by buds or runners.

**Bud variation.** In looking over the berry field or orchard you may find fruits which vary in form and general characteristics and buds or runners may be selected from these for propagation and perpetuated if desirable. Many new varieties have been originated in this way and others greatly improved by selecting those which vary in the right direction.

## A PEDIGREE PLANT.

A Pedigree Plant is one possessing full fruiting vigor and has every good quality of its variety in the highest perfection, which has been accumulated by continuous selec-

tion of ideal plants through a long series of years; taking advantage of bud variation to secure the greatest uniformity of fruit and by restricting pollen bearing, build up a potency and stamina that shall secure the highest possible development of fruit and foliage.

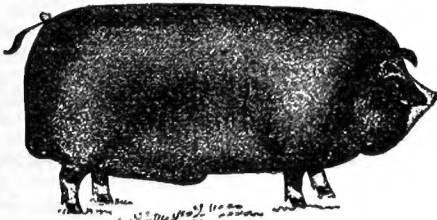
**BREEDING PEDIGREE PLANTS.**

We adopt the same methods pursued by stock breeders. In selecting strawberries for propagation we prefer to take them from plants grown in hills. We begin the search in the field for ideal specimens early the first year during the growing season. These are staked and a record kept with scale of points from one to ten. The plants must show a tendency to make large fruit buds instead of a profusion of runners



THE OLD RAZORBACK.

The foliage must be bright and healthy. The next spring we remove all buds except two or three to prevent pollen exhaustion. When blossoms open we examine the pistils

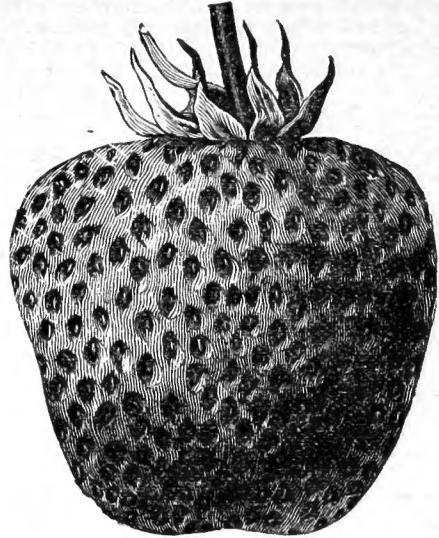


BRED UP BY SELECTION.

and stamens under a powerful magnifying glass to ascertain their condition. Two or three berries only are allowed to set and mature to determine size, color, firmness and flavor, the scale being noted in the field book kept for the purpose. You will note that the bearing of a few full developed berries is not exhaustive but strengthens the functions of all the organs. We now add the points of excellence and from the plants showing the highest record we pot runners and transfer them to a special propagating bed, where we grow all plants for next year's setting. Each succeeding year we pursue the same method and thus accumulate desirable qualities. Raspberries and blackberries are propagated on the same principles.



WILD STRAWBERRY.



THE MARSHALL.  
(Bred up by Selection.)



**Boiling down** what has been said in the previous pages, we have the following propositions:

I. Like begets like in plants as well as in animals.

II. That two scrubs whether of animals or plants cannot beget a thoroughbred; that the weakness or disease of the

mother plant is found in its runners which form the new plants and impair their fruiting ability.

III. Only plants of absolute perfection should be taken for purposes of propagating. By annually throwing out all weaklings we secure perfect health, great uniformity in size, quality and fruiting vigor.

IV. That unrestricted pollen bearing in the male plant produces impotency and is the leading cause of failure in developing fruit.

V. That a plant taken from a pedigree plant possesses its good qualities in as high degree as the offspring of thoroughbred animals.

VI. That having attained this high degree of fruiting power, we can keep it up by taking all plants from a propagating bed set the year previous and removing blossoms before they weaken themselves by heavy secretions of pollen.

VII. That after a field has produced a heavy crop of berries its fruiting vigor is so impaired that plants should never be taken from it to start a new bed.

The propagating bed requires only a small plat of moderately rich ground; the size of plat depending on the number of plants required for setting the following spring. Manuring, plowing, etc., should be done as explained in succeeding chapters. To start with procure pure pedigree plants to set the required number you wish. As soon as runners start, layer them by putting on a little stone, or bury shallow by putting a little moist earth on them so that they will quickly root and relieve the mother plant, causing it to send out other runners and occupy all the ground. Grow all your plants in this way. Never take plants indiscriminately from the edges of rows. They are tips and poor in vitality.

### START WITH PEDIGREE PLANTS.

To select plants and build up a fruiting vigor as explained in preceding pages is the work of an expert. No amateur can detect the changes with a skill that shall send the plant variations in the right direction. He must have had years of experience for if he select a poor plant then all is lost. It is expensive and involves an immense amount of work and great care.

Not one man in a thousand has had sufficient training and experience and possesses facilities for securing accurate results in this direction.

Don't get discouraged, you do not have to have this experience. What I have labored years to accomplish and expended large sums of money to demonstrate now comes to you free so that you can stock your farm with these high fruiters as cheaply as any reliable nursery can furnish their stock.

Procure Pedigree plants in the spring and remove blossoms before they open as explained previously. If you set a field the next spring take plants from beds you set this spring. If you decide to let your plantation fruit two or more years then set a small propagating bed of each variety to carry plants over from year to year. If you grow in hills or half matted rows this will be necessary in order to have future supplies of plants. In this way you can maintain their good quantity for many years.

These plants have been selected so long the variations are now slight and if degeneration is prevented uniform results may be expected. Under no circumstances take plants from a bed which has once borne a crop of fruit. You will lose half your labor as sure as you do it. Don't spend your time trying to make exhausted plants bear a heavy crop. It positively cannot be done any more than you can force a scrub cow to make three pounds of butter per day. It takes a thoroughbred to do that.

### SPURIOUS PLANTS.

When a bed fruits, many small and inferior berries rot on the ground and the seeds grow, often resembling the parents but almost invariably inferior to them; they make runners freely and crowd out the genuine plants.

Nurserymen generally keep stock beds, allowing plants to stand from year to year to make runners and flood the country with these spurious, unproductive plants which make foliage instead of fruit.

There are now scarcely any old standard sorts not mixed in this way.

### SELLING PLANTS.

Whether or not it will pay you to invest a large sum of money in printing and sending out large expensive catalogs and other advertising, is a matter for you to determine in the future. But when you appear on the market with fine large fruit that leads the trade, and visitors flock to your farm and see all your plants loaded with magnificent berries and they learn that you can furnish pure pedigree stock from your propagating beds, the demand for plants from your neighbors will be large and gradually increase until it will of itself grow into a profitable business.

It has been so in my own case and will be so with you, if you send out the highest grade of stock.

Although I have more than doubled the size of my propagating beds every year and increased my help from one lone hired man to more than one hundred hands, I have never been able to supply the demand, and old customers are giving notice of largely increased orders for the coming spring.

You will need to test all the new varieties and determine their value for yourself before you will dare to commend them to your friends and patrons.

### TESTING NEW VARIETIES.

Originators of new varieties too often ruin their plants by letting them fruit to utter exhaustion to make a reputation and gain notoriety, and then take runners from them and send to other growers who in turn let them fruit heavily and propagate from them, and thus they become worthless.

To test such plants for the purpose of ascertaining their adaptability to your soil and location is misleading. In experimenting with new varieties we always order double the amount desired for fruiting, taking one-half for testing and use the balance to breed up by restriction and selection and if found a desirable variety we propagate only from the latter to send out to purchasers.

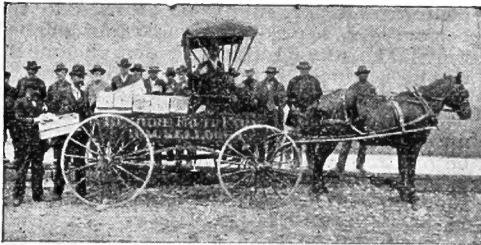
In many instances the first plants show no valuable characteristics but later when improved by breeding up are very valuable. It always requires several years to determine the value of any new variety. The greatest care should be used to send to reliable propagators to get original and improved stock and then see that it is kept up to the highest standard of fruiting vigor.

## THE FARMER'S FRUIT GARDEN.

No place on the farm will furnish so much health, pleasure and profit as a small plot set aside for a succession of asparagus, strawberries, raspberries, blackberries and grapes. It furnishes concentrated deliciousness for your table all summer long. With plenty of berries, which can be gathered in a few minutes, a few other nicknacks, and the meal is ready. It only requires a few strong fruiting pedigree plants and a little delightful evening recreation in the way of caring for them and the pleasure is yours.

If you can use the horse for cultivating, set in long rows as the nature of ground will permit. If all the work is to be done by hand and plants are to be kept in hills, set two rows one foot apart and plants 18 inches apart in the row and then leave an alley two feet wide in which to stand to pick the berries and hoe. Set pistillates (female) and staminate (male) plants together. If you wish to let them run in narrow rows, set two and a half feet apart and twenty inches in row and cut off all runners till the middle of July, then let them form and root and cut off all runners after they have made one plant and you will get berries that will astonish you. Of course you will hoe frequently during the drouth and keep weeds out.

There is an immense amount of pleasure in seeing the good things coming on, and when the great delicious beauties begin to turn red, there will be no difficulty in keeping the boys in the patch, and when you send a negligent neighbor a dish you will enjoy both his envy and gratitude.



## THE MARKET.

Do not worry about the market. If you have the reputation of growing large luscious fruit and offer it in an attractive style people will hunt you up and readily take all you can grow. The word goes from one family to another and to their friends in distant towns where families club together and have fruit sent them daily by express and they divide it among themselves. We have had a large trade of this kind in Detroit, Saginaw and other cities.

Fancy fruit never knows a glutted market or keeps the grower waiting. It is the customer who waits for you. The demand

for high grade fruit is not met in any town. It is fruit so poor in quality people cannot eat it that gluts the market.

We commence taking in money from our asparagus beds very soon after the frost is out of the ground and it continues until strawberries ripen, then follow raspberries, currants, gooseberries, blackberries and grapes without intermission. Have something to offer customers every day. Do not let them get the idea they can get along without fruit for a single meal. If they tire of one variety have something else to tempt their appetite.

Keep them eating and filling up your pocketbook.

I have made most money selling direct to private families. I have never failed to secure for customers nearly every family on all the principal streets. Other growers tag around after me and offer my customers their berries for two or three cents per quart less, but I pay no attention to them, always insisting on a fair price, quality considered, and they are only too glad to get them at that.

Furnish each family with a ticket printed on manilla cardboard about three inches wide and eight inches long and insist that the ticket shall be hung in a convenient place by the door where it can be found without delay. This prevents all bickering and dispute about price of berries purchased. It saves making change and loss of sales because ladies do not always have change. It suits the "man of the house" because it furnishes a voucher as to correctness of bill. The family will buy double the fruit when this ticket is used and it assists in holding the customer. Insist on pay every week except when bill is presented at store or office at close of season.

The following is the form for ticket:

DON'T FORGET TO BRING THIS CARD.

### TIME IS PRECIOUS.

When you hear our bell ring, kindly HAVE THIS CARD READY AND BE AT THE DOOR, so we can make the proper entry and deliver the fruit with as little delay as possible. Payment expected every Monday.

M

In Account with R. M. KELLOGG.

Date.	Quarts Wanted.	KIND.	Dr.	Cr.

Keep a neat personal appearance. Shoe blacking is cheap, wear a good fitting business suit of clothes and be in a condition to approach a wealthy family and make a good impression. Never offer a customer berries in an old dirty box. Keep your wagon looking neat. We have a wagon furnished as fine as a phaeton, with name of farm in large gold letters, artistically shaded, a large shiny black horse with heavy harness and

full brass trimmings brightly polished and brass gong attached to wagon to let people know when we are in the neighborhood so there is no waiting.

**It will do you good** to hear the children shout and the mothers rush to the door. I had rather sell berries this way than to play ball. There is more fun (cash) in it.

Another good way. Select the leading groceryman and arrange with him to handle all your fruit, and put little squibs in local paper that your berries are for sale at that store. The extra trade it will bring him will pay him a good profit for handling your fruit. You will rarely need pay over one cent per quart commission.

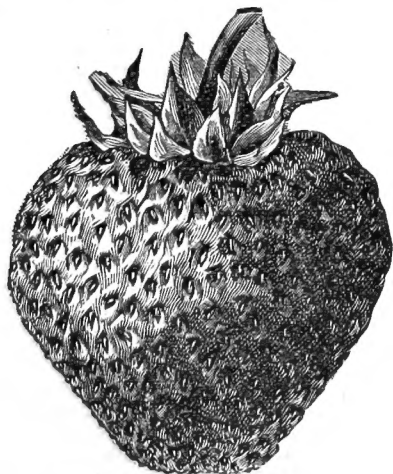
Never overcharge nor accept a price lower than the grade of fruit will warrant.

### SELECTING A SITE.

I do not care to spend much time on this subject. Everybody knows good land when they see it. How would it do for a garden? Hard, flinty clay or light, drifting sand are bad. A light clay or sand loam are best. Stony land is good if it does not interfere with cultivation. Cold, springy land is bad. High land, that is, land which is higher than any in the immediate vicinity is best. Cold air runs off the hills onto low land precisely the same as water, so that a low piece of ground with high land all around it should not be selected. Level land with no high hills near it will do. A south incline matures fruit early and a north incline makes the same variety later.

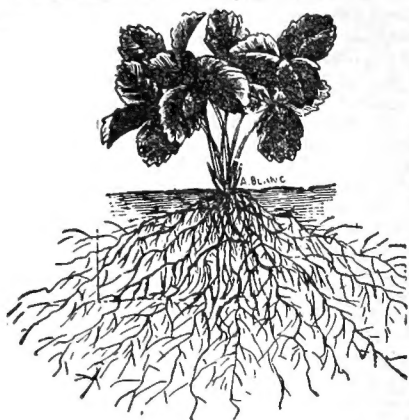
### MANURING THE GROUND.

Stable manure is the best. I should prefer to have it well rotted, but that cannot always be had. Get the best you can find, even if you have to draw it as fast as made. Spread it evenly over the ground during the winter and early spring. Do not put in piles. The deep snow is no objection to spreading it. The winter and spring rains will wash the juices into the ground so it



THE GREENVILLE.

will be incorporated with the soil where the plants can use it. Before plowing rake off all coarse straw so that capillary attraction which draws water from the lower subsoil shall not be cut off. Water will not pass up through a mass of straw if plowed under. **Be very careful about this.** If you can't get stable manure apply broadcast from four to eight hundred pounds of pure, fine ground raw bone meal and not over fifty bushels per acre of unleached hardwood ashes and cultivate in before plowing.



### ROOT PASTURAGE.

The ground should be prepared so that roots can penetrate and feed in every square inch of the upper twelve inches of the soil, and even penetrate deeply into the lower strata. The soil must be porous and friable so the air can enter it to dissolve the plant food and make it available. **A lump is bad.** Its particles are cemented together so no air can get into it and as the food it contains is not available the roots will not penetrate it. If lumps are turned to the bottom of the furrow without being mashed they make innumerable holes or air chambers through which water cannot come up by capillary action and a feeding root will not pass through the slightest cavity, so that unless we pulverize the first six inches before we plow, the area of root pasturage is greatly diminished and no after cultivation will compensate for this loss.

### HOW PLANTS FEED.

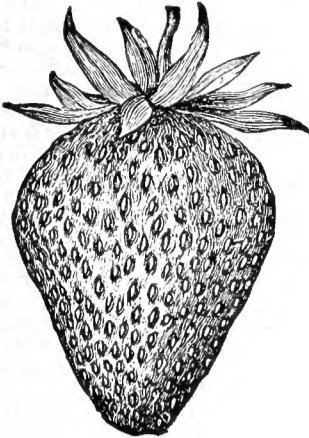
It is a mistake to suppose that plants eat manure. They do nothing of the kind. It must first become thoroughly decomposed, actual dirt. Large quantities of any kind of raw manure coming directly in contact with roots of plants is rank poison to them. More plants and vines are killed by manuring in the hill than from any other cause. Don't do it. Don't put a lot of manure directly under the hill because it shuts off the water from coming up from below.

**Plants take their food** in the form of water having a little mineral substance in it. It is sucked up by little hair like roots and passes up through the center of the stalk to the leaves which perform the same



office as the stomach and lungs of an animal. They digest this food and pass it down next to the bark where the cells are built up and thus the size of plant is increased. We call it growing.

We first go over the ground with a spading or disk harrow and tear it up. If you do not have these tools plow five or six inches deep, then roll to mash lumps and then take the Acme or other harrow and go over it until it is as fine as sifted ashes. Then plow as deeply as you can without bringing up too much of the lower subsoil. Follow the plow with the subsoiler in the same furrow which breaks up the lower strata but does not bring it to the surface, yet separates its particles so they will hold from ten to twenty times as much water as they would in their natural dense condition, thus creating a reservoir under each plant to carry you over the drouthy weeks of summer. **The good effects of this breaking up of the lower soil will be seen in land for several years afterwards.** A light gravelly or porous soil which already holds all the water that can be suspended by adhesion and capillarity would not be benefited by subsoiling. If you can readily dig the subsoil with your hands, I should regard it as sufficiently porous and would not subsoil; but if you could not do so use the subsoiler by all means.



THE WARFIELD.

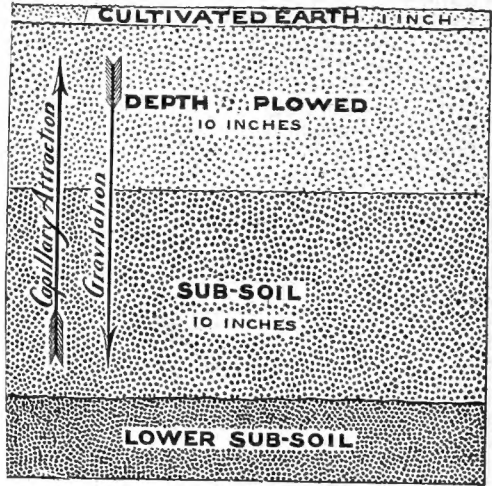
### WHY WE PLOW AND SUBSOIL.

There are two reasons why we plow. If all plant food was soluble so the plants could use it at once, the rains would quickly wash it all out and the land become barren, and so to preserve it for the use of plants it becomes insoluble in water. At the same time a resolvent was provided which should make it available in small quantities so that the present needs of the growing plants could be supplied. This great resolvent is the oxygen of the atmosphere, and must come in contact with every particle of earth, before the plant can take up the food.

**The lower subsoil** contains an immense

amount of plant food washed down into it where it becomes insoluble and remains there. By breaking up the subsoil we admit the air dissolving this food and the water returning to the surface by capillary attraction (see engraving) it is carried to the upper soil where the plant can use it.

Again we plow and subsoil because in so doing we separate the particles of earth so they will contain many times as much water as in their natural dense condition. In subsoiling we actually create a reservoir under the plant which will hold enough water in suspension which can be conserved by surface cultivation to tide us over the most protracted drouth.



One inch cultivated soil so loose water will not rise by capillary attraction. Ten inches plowed and firmed so water will rise. Ten inches of reservoir in subsoil.

**Water in the soil** is moved by two forces. First by gravitation which draws the water down and second by capillary attraction (see engraving) which returns it to the surface again. Capillary means a hair-like tube or minute passage. If we enlarge the passage by separating the particles of earth too far apart it would take so much water to fill the space that this force would be overcome by gravitation and no water would rise. Thus when we plow and leave the ground very loose it soon dries out. Water cannot come up from below and free air finds its way through the openings and carries the water off.

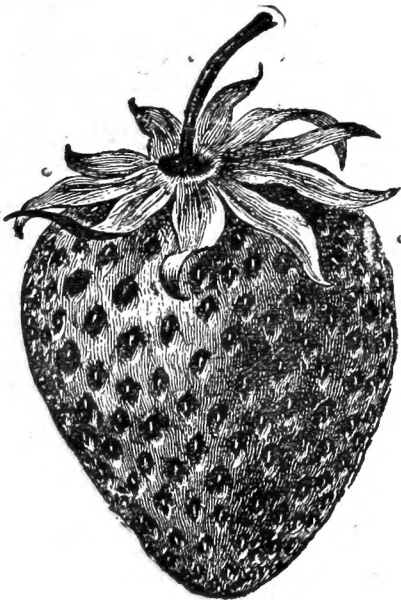
So immediately after plowing, before the water has time to get away we go over it with a roller and press the particles of earth together so as to exclude this circulating air and make these passages so small that capillary attraction will bring the water up to the surface.

**Why we cultivate.** Now when the water comes up if it reaches the surface so as to come in contact with the bright sun it will readily pass off into the air. We want it to come within an inch or so of the surface of the ground so as to nourish all the roots

of the plant. We take the weeding machine or fine tooth cultivator and separate the particles of earth, breaking up the capillary passages so that gravitation will not let the water come any higher and the loose earth and dust excludes the sun and wind so the water cannot get away, but will collect under this dust mulch for the use of the plants so that several inches of the upper earth will contain much more water than that a foot or so below it, and as this will cause the particles of earth to settle together again we must cultivate every few days.

The manner in which the water comes up through the ground might be illustrated by the wick of a lamp. The oil comes up the wick by capillary action precisely as the water does in the soil. We light the lamp and as fast as the oil comes up it is burned. Now blow the flame out and the oil comes to the top in such quantities that the wick holds all it can. The flame of the lamp carries off the oil just as the sun and wind does the water that comes clear to the surface. When we cultivate, it has the same effect as blowing out the light, it keeps the water below the surface or loose earth.

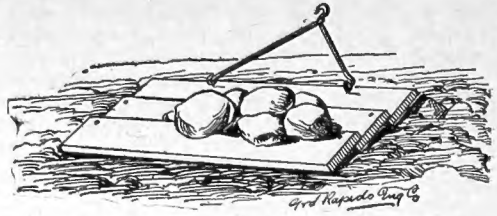
The crust forming after a rain excludes the air from the roots and makes capillary attraction perfect and should always be broken up as soon as ground is dry enough to cultivate.



THE LOVETT.

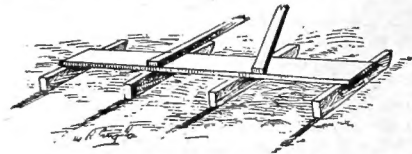
The cultivator should only go deep enough to maintain the dust or loose earth mulch, rarely more than two inches are required and often one inch is better, depending on the texture of the soil.

The roller. You cannot properly fit land without a roller or floater. The plow and harrow leaves the ground too loose and does not sufficiently exclude free air, and capillary action will not bring the water up



A FLOATER.

from below. The particles of earth must be brought near together. If you do not have a roller, take three two-inch planks about seven feet long and one foot wide; bolt or spike the edges together like the siding on a house and hitch a chain to each end and load it with as much stone as the team can draw, and go over the surface. On many soils it will do better work than a roller. **Do not attempt to set plants in loose earth.**



THE MARKER.

**Marking off the ground.** Have your ground properly firmed, leveled and rolled so the perfection plant setter will set the plants exactly the right depth or if you use the dibble or spade, you can determine quickly the right depth for setting plants. Mark as lightly as possible where the rows are to be. For this purpose we take a board about one-half inch thick, eight or ten inches wide and long enough to mark four rows at a time. Make four short sled runners and nail them under the board the distance the rows are to be apart, and nail shafts or handles on the top to draw it with. A man can draw it all day without fatigue. The object of using a thin board is to make it bend and accommodate itself to the uneven surface of the ground. Get the first row perfectly straight and let one runner go in the last mark as a guide. This will make all the rows exactly so far apart so that late in the season when your plants get larger you can remove one or two teeth of the weeding machine and cultivate two rows at a time, enabling you to use the weeder all summer, doing the cultivating at the rate of fifteen or twenty acres per day.

#### TOOLS.

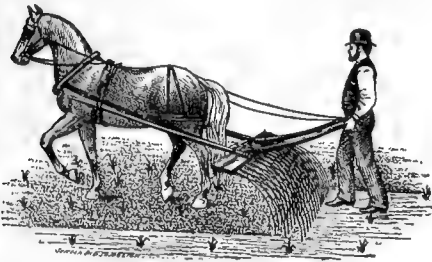
We herewith give a description of some very desirable tools with name and address of the manufacturers. We do not handle them and you should address the parties direct, who will advise you as to where they can be had, with price, etc.

For berry boxes, crates, grape baskets, bushel baskets, berry box machines, egg cases, and all kinds of fruit packages, send for price list to the Wells-Higman Company, St. Joseph, Mich. We have bought all our boxes of them ever since we have been in

business and never received a second grade article. They are the largest manufacturers in the West, and are perfectly reliable. They make a specialty of Climax grape and peach baskets. It pays to make up berry boxes during the winter before the busy season opens.

The perfection plant setter and automatic runner cutter can be had only of R. M. Kellogg, Three Rivers, Mich.

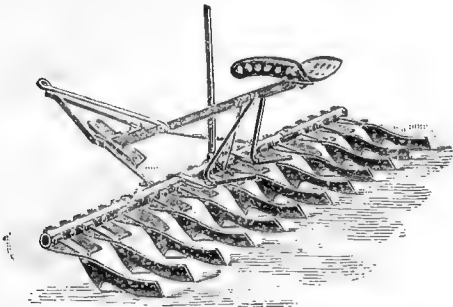
Among the greatest inventions of modern times is the weeding machine. We do very little or no hand weeding in our strawberry beds. No matter how many *little* weeds there are, we take two rows, as seen in the engraving, and clean them out entirely at the rate of from fifteen to twenty acres per day, making a fine dust mulch all around each plant. If plants have been carefully set, it will not injure or disturb one in a whole day's work. There are several makes of



THE Z. BREED WEEDER.

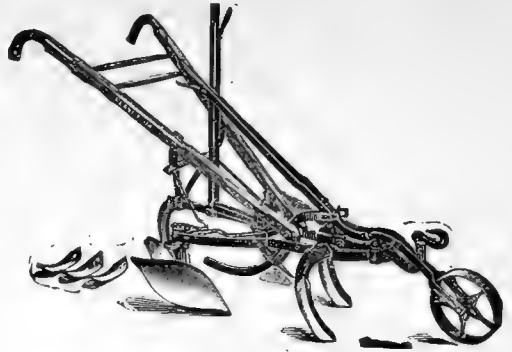
these tools, most of which I have tested, but that with crooked teeth, as shown in the engraving, is decidedly the best. Manufactured by the Z. Breed Weeder Co., 26 Merchants' Row, Boston, Mass.

**Subsoil Plows** which will do first-class work can be ordered through any local dealer in agricultural implements.



ACME HARROW.

We use the "Acme" Harrow, clod crusher and leveler almost exclusively in fitting our ground. It is a great tool. It is substantially made and durable. It rolls and cuts the soil, pulverizing the entire surface, mashes all small lumps and brings all in contact with the atmosphere and leaves the surface perfectly level for rolling. If manure or sod has been plowed under, it does not bring it to the surface. Manufactured by Duane H. Nash, Millington, New Jersey.



PLANET JR. HORSE HOE.

In cultivators I have never seen anything which would approach the twelve tooth cultivator with its pulverizing attachment. It leaves the ground level and loose and the runner cutting attachment is put on and removed with ease. All parts are instantly adjusted to any depth or width. Their horse hoe is made of steel and has a "hang" and ease of working not found in other tools. They also make a complete line of garden tools. Send a card to S. L. Allen & Co., No. 1107 Market St., Philadelphia, Pa., and they will give prices and advise you where the tools can be had.

## TIME TO SET PLANTS.

The time to set plants is in the spring. I never got a great paying crop of berries until I had grown big plants with large roots and a great many of them. I know there are many people who say they can set plants in August and September and get a good crop next season. If you mean you can get a few berries for your own table and could not have them unless you set a few in the garden in the fall it's all right, set them whenever you can, but when you are talking of setting plants in the fall for market as money makers it's "off." If you can do it you know more about the business than I do. I admit that in the South where plants grow pretty much all winter the chances are good for a paying crop, but not in the North. You can set plants in October and November and shade them with a little straw or mulch and pick the blossoms next spring and by fall they will be monstrous plants, and next season look for an immense crop.

There are four methods of growing strawberries, hill culture, the hedge row, half matted row and full matted row, each having advantages and disadvantages. We will first consider

## HILL CULTURE.

By this method all runners are cut off as soon as they appear throughout the season. It might be designated as the process of consolidating many small plants into one large plant and turning many small berries into large berries. Every time you cut off a runner it throws the growth back to the

mother plant and a new plant, which we call a crown, starts out on the side of the original one, building it up to mammoth proportions.

Plants on rich land have often exceeded the size of a bushel basket, producing over four quarts of berries.

They extend their roots a great distance through all the soil between the rows while light comes to all parts of the foliage giving perfect assimilation and thus a continuous growth until the close of the season is maintained.

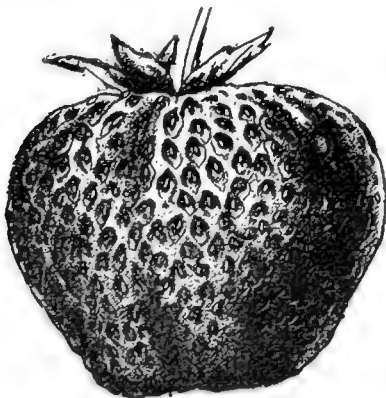


PLANT GROWN UNDER HILL CULTURE.

The requirements for hill culture are that the ground should be very rich and thorough cultivation given so that a large growth of additional crowns will be made. I would not try to grow in hills on poor ground.

Then again the fruiting vigor of plants used must be high, so that every hill will do its full duty.

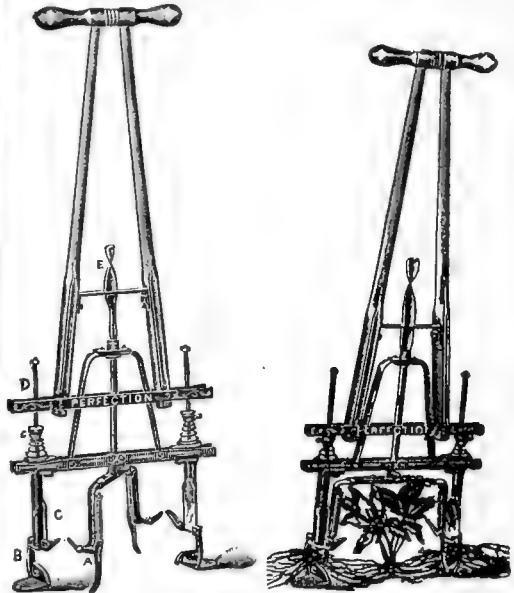
Set such varieties as Wilson, Crescent.



THE ENHANCE.

Beder-Wood, etc., 30x30 inches and cultivate both ways, or rows 30 inches wide and 18 inches in the row if weeding machine is used. For large varieties like Marshall, Dew, Haverland, Brandywine and Weston set 34 or 36 inches each way or 18x34 inches for weeder, or a little hand hoeing with common cultivator run one way.

The work of keeping off the runners has been greatly overestimated. They can be drawn around with the corner of a sharp hoe and quickly chopped off, but the work can be greatly lessened by the use of the *automatic runner cutter*. No matter how many runners there are around the hill, place it over the plant and press down on the handle, when the twisted shaft (E) passes through the slot, forcing the shaft around half way, so that the two opposite fingers (A) pass around and gather up the runners, drawing them into the slot (B) when the two



AUTOMATIC RUNNER CUTTER.

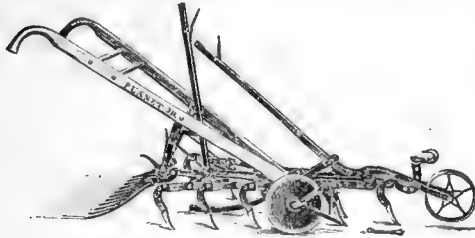
knives (C) are forced down by the cross bars (D) and cuts them off. The whole work is done in one motion and a second of time. You simply walk along the row, using the machine as a cane, placing it over the plant, give it a shove down and the work is done.

By careful usage it will keep the runners from ten acres every year for half a life time. Price \$6.00, or the perfection plant setter and automatic runner cutter both for \$9.00. The cost of making the machine is so much that we cannot make any reduction in price, and must be sold direct to planters. Only large stones, very rough ground, or rubbish, that would prevent the fingers from passing around the plant will interfere with its working.

#### THE HEDGE ROW.

Set the plants as for hill culture using the automatic runner cutter only once to allow the plants to get well established. Then

cultivate one way all the time so as to throw the runners around so plants will stand three to six inches apart directly in line, only one plant wide. Then attach the rolling cutter to the twelve tooth cultivator and clip the runners as often as you cultivate. The narrow alleys furnish root pasturage, light and air so that full assimilation is secured.



PLANET JR. CULTIVATOR WITH RUNNER CUTTER ATTACHMENT.

### HALF MATTED ROW.

This is the next best way to grow berries. Make rows three and one-half feet apart and set 18 to 24 inches in the row according to variety and fertility of soil. On poor land set closer. Keep off all runners the same as for hill culture until about the middle of July. By this time nearly all weed seed will have germinated and been killed by the cultivator; the plants will have formed large crowns and an abundance of long roots and



HALF MATTED ROW.

will send out large strong runners. The ground having been kept moist and mellow over the entire surface by frequent cultivation, the plants have not been stunted by the usual early summer's drouth.

The first runners usually start about the time the summer drouth begins and will not root unless the ground is wet at the surface, but the wind and cultivator rolls them up in ropes where they continue to draw their sustenance from the mother plant, preventing it from making new crowns or materially increasing its rootage. Hence there is nothing lost by keeping them cut off, but an immense amount of labor saved in hand weeding.

### THE FULL MATTED ROW.

Probably three-fourths of the berries are grown in this way, but it is a mistake and progressive growers are fast finding it out. It involves an immense amount of hand labor in pulling out grass and weeds with fingers not required in hill culture, hedge, or half matted row, and fruit is always of a lower grade.

Make rows four feet apart and set plants eighteen inches apart in the row. Let the cultivator go in the same direction every time so as to throw the runners around without tangling them, and as they root narrow up the cultivator.

In the thick matted row there is not enough room for the roots, and plants forming later find it impossible to establish themselves, yet being supported by the "wire" from the mother plant they set buds and attempt to produce fruit which for the want of rootage they cannot bring to maturity, thus they are not only worthless in themselves but greatly injure other plants near them. With the isolated plant in hill culture the roots often extend in every direction filling the ground without warring on other plants. It is thus enabled to meet all requirements by maintaining an equal balance of root and foliage making perfect assimilation of all food gathered and thus giving potency to pollen and vitality to seeds and consequent high development of fruit.

Some careful growers thin out the plants when they get too thick, but slovenly people never do that; but such folks are the ones "*who tarry long on the market*" and sell what they raise at any price they can get, work like slaves from daylight till dark and never make any money, live in cheerless homes, wear ragged clothes and play second fiddle to every body else. As they aspire to nothing better, it don't make much difference. They cannot distinguish between true economy and penuriousness in expenditure of labor or money. Spurious or exhausted plants will serve their purpose as well as any if they can be bought of some irresponsible party for a few cents cheaper than pedigree plants of high fruiting power, and you can't make them see they are saving pennies by the loss of dollars. If you think this is harsh, go among your neighbors and on the market and see if it is not true.

Only one man in ten succeeds liberally in any business because they do not adopt the better methods. In which class do you propose to stand?

### SETTING PLANTS.

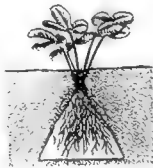
The great point is to have every root straight and separated from each other and imbedded in soft mellow earth so that new feeding roots can start out in every direction without any hindrance and thus secure a vigorous growth at once.

The spade is quite generally used, but in the hands of a careless man is about the most villainous tool ever used for the pur-

pose. The first objection is that when forced into the ground, moved back and forth and sideways it makes a glazed surface and when closed by the foot in the ordinary way incases the roots in a veritable pocket and if dry weather follows the glazed surface will dry out and no feeding root can penetrate it. Dig a plant up a week afterwards and find the little white rootlets tracing up and down the old root to find a crack in this "plastered wall" through which it can penetrate to the mellow soil just beyond. No good growth can be had under such circumstances. If the ground be moderately loamy or clay the weight of a man will not close the bottom of the cavity (see figure).



THE WRONG WAY.

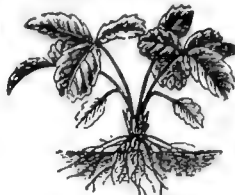
A "RAT HOME."  
(Bottom of hole not closed.)

Set a plant and step on it in the usual way and then dig down by the side of it and see how many "rat homes" you will find with roots hanging in free open air. You will be surprised to find that often more than half are exposed. Another objection is that the lower ends of roots are buried too deep. The roots of a plant spread out in all directions and coming near the surface feel the warmth of the sun and send out feeders much sooner. Notice the natural tendency in roots to run near the surface when taking them up in propagating bed.

Use the spade this way. Let a man go ahead of the setter, force the spade straight down two-thirds the length of the blade, then draw the handle toward him about ten inches, force one inch deeper, push from him far enough to make the earth stay and withdraw the spade, thus leaving the opening so the bottom is easily closed. Quickly insert the hand, rub off the glazed surface and take a few roots from one side of the plant, holding crown in left hand, deftly drag the roots sideways into the opening and when all spread out evenly and center of crown just even with surface of ground quickly fill the cavity, piling the earth so that when stepped on it will be perfectly level around the plant.



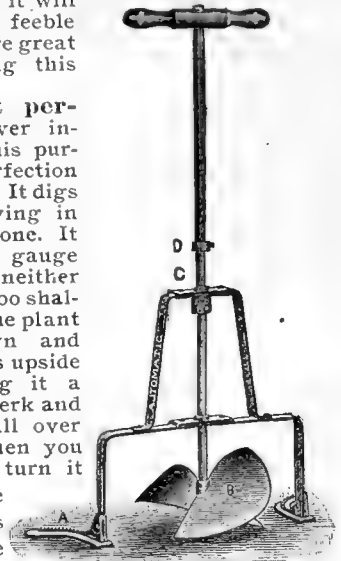
TOO DEEP.



TOO SHALLOW.

If the crowns are too low they will rot or make a feeble growth. If too high the upper roots will be exposed to wind and die. The new roots always start from above the old ones and if the plant is not in the ground deep enough they will not start (see engravings). If a little too deep new crowns will not start on the side of the plant, and if a little too high it will make only a feeble growth. I urge great care in doing this work.

The most perfect tool ever invented for this purpose is the Perfection plant setter. It digs the hole leaving in the center a cone. It is set with a gauge so it can be neither too deep nor too shallow. Take the plant by the crown and hold the roots upside down, giving it a slight quick jerk and roots will fall over the hand when you can quickly turn it over the cone and the roots will arrange themselves evenly around

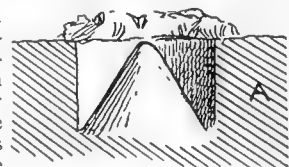


PERFECTION PLANT SETTER.

it. Then the dirt is quickly brushed back into the opening and firmed. The cone comes clear up under the center of the crown, the bottom of cone being about five inches in diameter and roots so distributed there can be no tangled mass as it gives a circumference and immediate root pasturage of over fifteen inches.

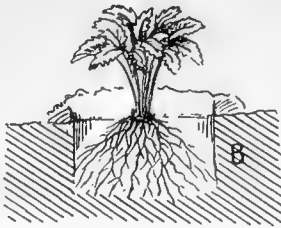
All roots in center of a tangled mass not being able to reach the soil mildew and rot, and are not only lost as feeders to the plant, but greatly injure the remaining roots and hinder the growth for many weeks.

The weeding machine will work perfectly as roots are braced in all directions and at an exact depth so none can be injured by the teeth passing around them. We can furnish this machine at \$4.00 or with Automatic runner cutter

THE CONE.  
(Ready for the plant.)

SEPARATING ROOTS.

for \$9.00. It does the work faster than any other machine that will do it equally well. **The only requirements** are that the ground shall be properly fitted by rolling and reasonably free from sod, straw, or anything which would gather on the edges of the blades in quantity so as to tear the cone to pieces. Small stones do not interfere if not too many.



READY FOR COVERING.

**An experiment** in setting alternate rows with Perfection plant setter showed a plain difference of at least twenty-five per cent in favor of those set on the cones. This increase, I estimate, will entirely pay for setting and cultivating plants for the season, giving a profit of very many times its cost. If given good care the tool will last a life time.

**An absolute necessity.** I wish to impress the necessity of loosening the earth around the plant by cultivating with weeding machine *immediately* after plants are set, so that capillary action will bring the water up above the roots and collect under the loose earth or dust mulch and nourish the plant during the trying ordeal of transplanting and becoming established. Where you step around the plant to firm it, about the roots you have left the particles so close together that the water draws up to surface with great rapidity to be carried off with sun and wind. I do not wait a single hour after plants are set before cultivating.

**Leaving the ground** without cultivation for a few days in a dry time kills and stunts more plants than any other negligence you are liable to commit. To have a boy drop plants ahead of the setter often leaving them five minutes in bright sun and drying winds is sure death or permanent injury. Don't do it. Put a piece of manilla paper in the bottom of a basket and pour in a quart of water and then open the bunches of plants and set the roots in it and take them out as needed. Do not let them stand in water over a half hour before setting as they become soaked and injured.

**DISEASES.**

Diseases and fungi always attack weak and sickly plants. I never could fuss to doctor a sick ten cent chicken. Send it to the dung heap—and a plant to the brush pile. Keep up the selection. Adopt the rule of the survival of the fittest. Fix your ideal of perfection high and accept nothing below it. There are plenty of varieties to occupy our soils and maintain health and vigor. No, we don't need a plant doctor. The hoe is the best physician. If a plant has not vitality enough to shake off the disease and resist fungi, hoe it up and put in one that has.

**NUMBER OF PLANTS REQUIRED TO SET ONE ACRE.**

STRAWBERRIES.		GRAPES.	
18x30 inches	11,616	7x7 feet	888
30x30 "	6,968	7x8 "	777
18x34 "	10,250	7x9 "	691
34x34 "	5,426	7x10 "	662
15x48 "	8,712	8x8 "	680
20x36 "	8,712	8x9 "	605
18x36 "	9,680	8x10 "	544
36x36 "	4,825	8x11 "	495
18x42 "	8,297	8x12 "	453
18x48 "	7,260		

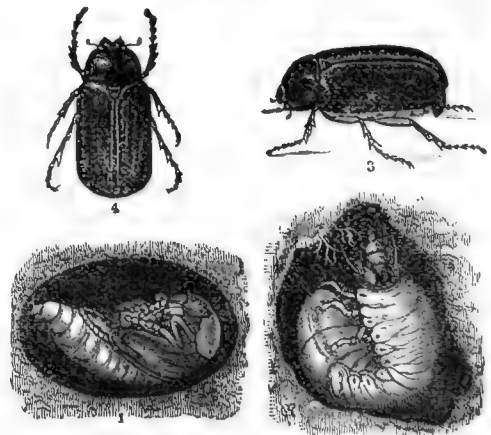
RASPBERRIES, BLACKBERRIES, ETC.			
3x5 feet	2,904	3x7 feet	2,074
3x6 "	2,420	3x8 "	1,815

**HOW MANY CROPS?**

How many crops can be taken before plowing under depends on the method of cultivation. In hills fruiting vigor can be maintained from four to six years. In the half matted row two or three years and if matted very thick one big crop ends the usefulness of the patch. If as explained elsewhere, the plants are mixed so that some are fruiting and some not, it will produce two or three small crops. If perchance the plantation is severely injured with frosts, so that plants can use the season largely to recuperate, a good crop may be expected the next season.

The second and third crops cost very little save the picking, as the plantation is already established. Berries generally ripen two or three days earlier in an old bed than in a new one.

**INSECTS.**



3 and 4, May beetle; 2, larva or white grub; 1, pupa.

The only insect likely to do serious damage in strawberries is the white grub or larva of the May beetle illustrated in the

engraving. The larvæ feed on the roots of grass and are often found so thick in old June grass sod or pastures as to destroy it. They are passionately fond of strawberry roots and great care should be exercised not to set plants on ground infested with them. They remain in this larval state for two or three years, doing the most damage the second season.

Grubs similar to these are often found in manure and old wood, but that kind does not eat roots and is therefore harmless. As there are so many kinds it will be safer to send some of those found in your ground to the entomologist at your State Agricultural College and ascertain if they are the true May beetle. They can be sent by mail. They very rarely or never lay their eggs in fresh cultivated ground so that if the land has been in any hoed crop for two or three years previous there will be very little danger. Examine old strawberry beds carefully before resetting.

### MANAGING PICKERS.

Berry pickers will do their work very nicely if they are sure they will get caught if they do dirty work. Place a stake at the end of each row and number them consecutively. Make an alphabetical list of pickers and when they commence on a row the superintendent places the number of the stake opposite the picker's name, so if the picker gets away before the superintendent has a chance to inspect the work he can tell just who to look to if berries are not properly picked or foliage of plants are mused or injured. Allow no berries to be picked which are not fully ripe and no ripe berries left on the vines to decay. Berries too small to sell should be picked to relieve the plant from maturing so many seeds, especially if plantation is to be carried over to next year.

Maintain a military discipline. Don't argue with pickers as to how the work should be done. Don't scold and fret at them, be kind but firm and give your orders clearly and positively.

Keep a blackboard in the packing house where all can see it daily. Place the name of each picker on it and grade their conduct when at work from one to ten, putting the figures opposite their name every day. This will make them sensitive about their standing and you will have very little trouble.

Make a positive rule that no talking shall be done in the field, only necessary questions about their work. A loud mouthed picker who is always finding fault is a nuisance and should be discharged at once. Adopt a regular system of fines ranging from one to ten cents and enforce it. This is much more effective and will prevent the offense being repeated. Never call to a picker in a loud voice and attract the attention of all the others, but let the superintendent go to him quietly and set the example of silent work.

The best berries can be easily spoiled by bad picking. Teach them to pick the stem and not pull off the fruit so as to muss the berries. Put the big berries in the bottom of the box and fill the box up well and face them by turning the points of berries up on top, which makes them look very beautiful. It will be a pleasant surprise to your customers when they empty the box and find the big berries in the bottom, and they will tell it to their neighbors. A high reputation for honesty is the best capital in any business.

RUSHIRE FRUIT FARM PICKER'S CARD. <i>(Not Transferable.)</i>			
For _____			
+ qt.	+ qt.	1 qt.	1 qt.

Use tickets to settle in the field or a conductor's punch and a ticket printed so you can punch out the number of quarts picked and pay pickers at the end of the week.

We pay one cent per quart for berries grown in hills and one and one-half cents for matted row, and at close of season for those who have remained all through we pay one-fourth cent per quart more.

Reward your pickers by a picnic dinner at the lake or some distant grove where you can drive with wagons. They will greatly appreciate it and it will help you to secure the best pickers in the community.

### WINTER PROTECTION.

In the case of strawberries it is not the freezing that does the injury. On many soils, especially clay, when the ground freezes all night and thaws under the influence of the bright sun the ground contracts and expands and thus heaves the plants up, pulling the roots loose which weakens them. Now if we place some coarse litter over the plants merely to shade them from the sun to prevent thawing during the day and the frost comes out very slowly, no injury can result.

The plant must have air for its foliage even if frozen solid, hence any heavy, dense mass like manure will smother and injure it. The strong ammonia washing down from manure is very bad for the foliage and it should never be placed directly on the plants, but it may serve a good purpose in conserving moisture between the rows. Light chaff, straw or marsh hay may be used.

In the spring if the mulch has been applied between the rows heavily enough we rake off from directly over the plants to allow the leaves and stems to come up through the mulch, and leave it until after the picking is done. If the mulch has been applied only on the plants and none between the rows we cultivate not over one inch



deep and then rake part off to the edge of the row to keep the berries clean.

**Burning is very important.** If there is enough straw to make it burn freely all over the patch we do not mow the leaves, but if lightly mulched mow the bed, stir up the straw and after it gets dry wait for a strong wind and burn it, destroying all insects and fungi. The plants being exhausted by heavy fruiting will rest for a short time but should be cultivated immediately. New roots and leaves will start out and the whole patch look new and vigorous in a short time.

This burning must be done immediately after fruiting and always before the new growth starts, and no time should be lost in cultivating the ground. The new roots come out above the old ones and the crown raises up to make room for them, hence the ground should be ridged slightly and the whole surface reduced to a fine dust mulch.

Cultivate frequently, always using the rolling cutter on the cultivator to clip off runners as fast as they appear. If in hills use the Automatic runner cutter or a sharp hoe.

## VARIETIES OF STRAWBERRIES.

The great diversity of soils renders it exceedingly difficult to recommend varieties. Those which do well with me may not do well with you. If two varieties are set side by side, one fails, the other succeeds grandly, remove them both to another field and their success will be sometimes exactly reversed. It often happens that the same variety from another part of the country will do better; this has often been found true of the old standards, Crescent and Wilson. The only way you can determine definitely is to experiment with different varieties, bearing in mind that those sorts which do well over the greatest area of country will be the safest to plant largely, and that exhausted plants cannot be made to succeed anywhere.

I do not believe there is any soil on which large crops of corn and potatoes do nicely where some variety of the strawberry will not do equally well, and this can be definitely settled only by testing.

**Set largely of those varieties** which have been widely tested and found to succeed almost everywhere. There are many new varieties coming out and some are of the greatest value and may be exactly suited to your soil and location in which case it would be a valuable discovery. Keep in mind that one crop of three hundred bushels per acre affords a *large profit*, while fifty bushels would not pay expenses. This difference often hangs on the variety and its adaptability alone.

In selecting varieties arrange to have every third row of those marked "B" (Bisexual) and the other two marked "P" or pistillate and which are designated for the same season, early, medium, or late. Those marked B may be set alone although I

believe they fruit better if about six rows of different kinds are set alternately in the same field so as to cross fertilize.

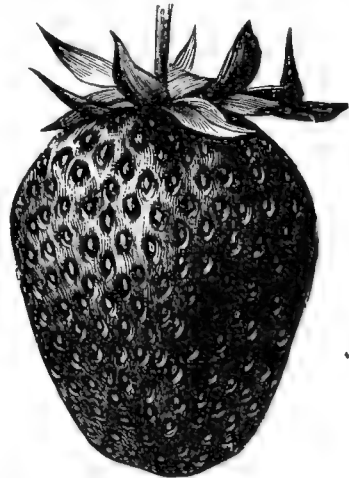
**The price given** is the lowest at which we can furnish the plants at quantities stated, but customers may select six of any one variety at dozen rates, 50 at 100 and 500 at 1,000 rates. We have cut the price as low as we can possibly furnish them and pay the labor of growing pedigree plants.

## VARIETIES OF STRAWBERRIES IN ALPHABETICAL ORDER.

**Aroma (B).** Above medium in size, bright color, moderately firm, quality good, foliage vigorous and healthy. Season late. 25c per doz., 60c per 100 and \$3.50 per 1,000.

**Annie Laura (B).** One of the most vigorous and productive berries. While of recent introduction reports from all sections speak in highest praise of it. Its uniform size, glossy red and bright yellow seeds on the surface give it a handsome color. Season medium. 25c per doz., 60c per 100 and \$3.50 per 1,000.

**Bouncer (B).** This is a new berry and has had only one selection. The demand for it as a large show berry induces me to supply plants for this season. Its berries are very large and beautiful and it certainly ranks high as a producer. Season late. 30c per doz., \$1.00 per 100 and \$5.00 per 1,000.



THE HAVERLAND.

**Beder-Wood (B).** Now recognized as the standard sort. Very early and one of the best pollenizers for extra early varieties. On some soils it rusts some but never fails to mature a large crop of fruit. 25c per doz., 50c per 100 and \$3.00 per 1,000.

**Beverly (B).** Medium early. Fruit large, conical, beautiful glossy red and of highest quality. Plant vigorous and in every way very desirable. 25c per doz., 60c per 100 and \$3.50 per 1,000.

**Brandywine (B).** The favorite of all the list and contains more good qualities than any berry we have ever tested. Reports from every section place it at the head of the list of perfect flowering sorts.

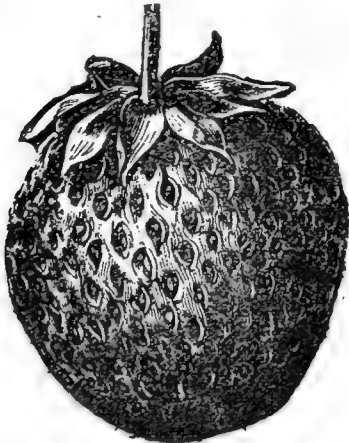
Not only a fine pollenizer for all medium early berries, but the heaviest fruiter of any perfect flowers. If you do not have it, by all means add it to your list. Berries large and beautiful and has the longest fruiting season, commencing quite early and continuing late. Don't pass this grand berry. Quite early. 30c per doz., 75c per 100 and \$4.00 per 1,000.

**Wm. Belt (B).** This is a new variety of greatest merit. It certainly has qualities that commend it most highly. Its fruit rivals the Marshall, is very productive, and wherever tested is conceded to be a most valuable sort. Twelve berries fill a quart box and they are not only large but beautiful and of highest quality. Demand for plants wherever fruit is seen will be great. Season medium early to very late. 40c per doz., \$1.00 per 100 and \$6.00 per 1,000.

**Belle (B).** A new berry selected only once but tested in many quarters and pronounced a great acquisition. Not a blemish on foliage. Plants very vigorous and stocky. Fruit large and bright color. Season very late. 40c per doz., \$1.00 per 100 and \$6.00 per 1,000.

**Bert Seedling (B).** Resembles the Old Wilson, medium in size, quite vigorous and productive, and a good early pollenizer for Warfield, Crescent, etc. 25c per doz., 50c per 100 and \$3.00 per 1,000.

**Banquet (B).** Valuable on account of quality. Not as productive as many sorts and not up to standard as to size. Season early. 30c per doz., 75c per 100 and \$4.00 per 1,000.

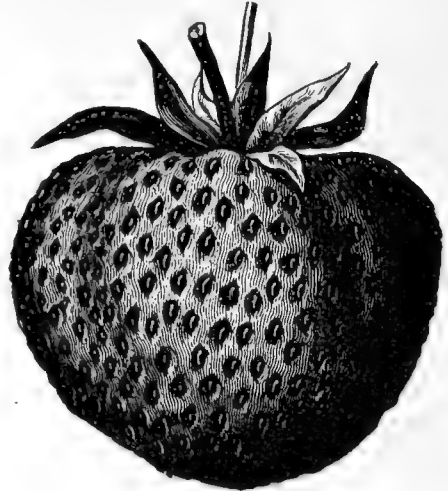


THE BEDER-WOOD.

**Barton Eclipse (P).** A large medium early berry, very productive, bright color and in every way desirable. A luxuriant grower and succeeds on nearly all soils and locations. Season medium. 25c per doz., 60c per 100 and \$3.50 per 1,000.

**Brunette (B).** We have only fruited this berry and made one selection but its quality is so good and shows up so well we offer it to customers. Berries above medium in size, a dark color and quite firm and of delicious flavor. Medium early. 30c per doz., 75c per 100 and \$4.00 per 1,000.

**Bisel (P).** A seedling of the Wilson and is a fine market berry. The plant is vigorous and productive. It roots very deep and stands drouth splendidly and for this reason succeeds on light land. Berries above medium and ripen very early. Season early. 25c per doz., 60c per 100 and \$3.50 per 1,000.



THE BRANDYWINE.

**Cyclone (B).** As an extra early berry of highest potency of pollen and a fertilizer for all early berries it stands without a rival. A good shipper, large size, bright color and the most productive, perfect flowering early berry on the list. Its foliage is superb and it succeeds everywhere. 25c per doz., 60c per 100 and \$3.50 per 1,000.

**Crescent (P).** I have selected and bred up this plant until it is better than the day it was introduced. No berry ever had so general success and made so much money for growers. When well grown in hills or hedge row not allowing it to mat too thickly the berries are large and fine. On account of neglect to preserve its fruiting qualities many growers have discarded it. Its old admirers are invited to renew their beds with this pedigree stock. Season early. 25c per doz., 50c per 100 and \$2.50 per 1,000.

**Cloud (P).** Strongly resembles the Crescent. It roots very deeply and succeeds grandly on light sand and drouthy soils. Season early. 25c per doz., 50c per 100 and \$2.50 per 1,000.

**The Dew.** As a large berry of the highest quality it is only rivaled by the Marshall. The berries are somewhat irregular but their size sells them at sight. It should be grown in hills or hedge rows. Season late. 30c per doz., 75c per 100 and \$4.00 per 1,000.

**Enhance (B).** The most productive late bi-sexual berry now under cultivation. The best pollenizer for all late pistillates. The berries are somewhat ribbed but their size and quality make them great sellers when other berries run small. It succeeds apparently on all soils. Season late. 25c per doz., 60c per 100 and \$3.50 per 1,000.

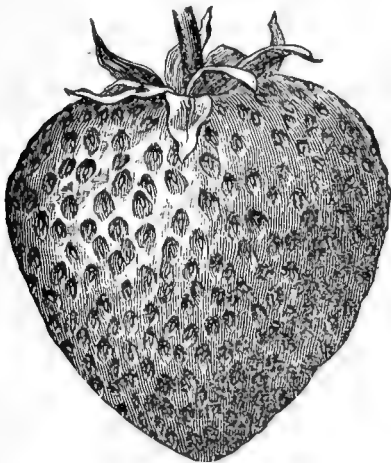
**Eleanor (B).** A very early berry and everywhere reported as productive and possessed of desirable qualities. For its season it must stand as an extra large berry. The demand for it will be large wherever its fruit is seen. 30c per doz., 75c per 100 and \$5.00 per 1,000.

**Edgar Queen (P).** A large berry only moderately productive. Resembles the Sharpless. Medium late. 25c per doz., 60c per 100 and \$3.50 per 1,000.

**Enormous (B.)** This is another big berry. It has proven productive for so large a berry and shown many good traits, where it originated in Illinois, and is well known. It is a leader as an extra large berry. With one fruiting and selection we are favorably impressed with it. Season late. 40c per doz., \$1.00 per 100 and \$6.00 per 1,000.

**Greenville (P).** The most desirable late berry grown. Its foliage is superb. If there has been a failure where other berries succeed I have not heard of it. No berry of its season produces more. Its fruit is large and attractive. We give it the place of Bubach because its fruit is equally fine and twice as productive. 25c per doz., 60c per 100 and \$3.50 per 1,000.

**Gandy (B).** One of the latest berries. It ripens its fruit nearly all at once after all other berries are gone. On this account it is not so productive as some others yet profitable because it has the market to itself. Its berries are large and possess a flavor peculiar to itself. 25c per doz., 60c per 100 and \$3.50 per 1,000.



THE CYCLONE.

**Glenn Mary (B).** We have not fruited this plant but it has been widely advertised and spoken highly of. We procured some of the plants last year, and will furnish those who desire to test it. Its foliage and general growth are good and reports from experiment stations commend it very highly. It is described as larger than Sharpless. Quite firm and productive, quite early and a long fruiting season. 40c per doz., \$2.00 per 100 and \$15.00 per 1,000.

**Haverland (P).** Takes the place as being the most productive berry grown.

When grown in hedge rows, hills or thin half matted rows and plants under high pedigree they are simply immense. The berries are all large up to last picking. Its quality is not so high as some others but its size and beautiful appearance makes it sell fast, and therefore a great money getter. The stems are not strong enough to hold the loads of berries up and they must be mulched to keep them off the ground. Season medium early to late. 25c per doz., 60c per 100 and \$3.50 per 1,000.

**Iowa Beauty (B).** A beautiful berry, good size and quality. Moderately firm and productive in hills, hedge or half matted row. Medium early. 25c per doz., 60c per 100 and \$3.50 per 1,000.

**Jessie (B).** A large berry of high quality but very fickle as to soil and location. Many failures are reported and too few successes for general cultivation. With me it has been a success but its numerous failures cause me to hesitate in commending it for large plantings. Brandywine is infinitely better and more reliable and covers the same season. Season medium. 25c per doz., 60c per 100 and \$3.50 per 1,000.

**Lovett (B).** A great favorite with every one who has cultivated it. It has been widely tested and succeeds everywhere. A fine pollenizer for all medium early berries. Berries large, quality high, quite firm and foliage very vigorous. 25c per doz., 60c per 100 and \$3.50 per 1,000.

**Marshall (B).** The most popular extremely large berry. Here it is the largest berry I ever saw, and the most productive of its class. No extremely large berry produces as many quarts to the acre as the more medium berries, but it is a great advertising berry and sells for a high price. It should never be grown in a matted row. It has a strong wild berry flavor. Season late. 30c per doz., 75c per 100 and \$4.00 per 1,000.

**Middlefield (P).** On strong rich, rather heavy soil it is a beautiful large berry as even and smooth as a top. On light or drouthy land is not productive because of shallow rootage. Season late. Makes few runners. 30c per doz., 75c per 100 and \$4.00 per 1,000.

**Miami (P).** Strongly resembles the Crescent in habit, roots deeply and succeeds on light land. Makes runners freely and must be grown in hills, hedge or half matted row. 25c per doz., 50c per 100 and \$3.00 per 1,000.

**Mt. Vernon (B).** An old standard sort of much merit and popular in some localities, but not now widely cultivated. Season medium early. 25c per doz., 60c per 100 and \$3.50 per 1,000.

**Meek's Early (B).** Strong waxy foliage, quite productive though not equal to Cyclone or Beder-Wood. A good pollenizer for early varieties. Berries above medium, moderately firm, quality good. Season very early. 25c per doz., 60c per 100 and \$3.50 per 1,000.

**Michel's Early (B).** Probably the earliest berry grown, and when free from exhaustion and properly cultivated is quite

productive of medium sized berries of good quality and a good shipper. It was fruited to death and then its exhausted runners widely disseminated and in many cases proved unproductive. It makes runners very freely and must be grown in hedge or hills. 25c per doz., 50c per 100 and \$2.50 per 1,000.

**Oreole (P).** A new berry highly commended by those who have tested it. We have not fruited nor selected it, but as so much has been said of it we offer it for testing. It is described as very early and exceedingly vigorous and productive. Its foliage and vigor certainly bear out the claim. 40c per doz., \$1.50 per 100.

**Princeton Chief (B.)** This berry has made many friends and it seems destined to be a leader. The berries are dark glossy red and borne on tall stout stems holding them well up from the ground so they do not need protection from dirt. Its berries are very sweet and delicious. Season medium early to late. 25c per doz., 75c per 100 and \$4.00 per 1,000.

• **Parker Earle (B).** Probably the most productive bi-sexual berry grown. This is its fault. On light or drouthy land it sets more fruit than it can mature. On rich, moist land under high culture it succeeds grandly. Fruit quite large, good quality, dark glossy red. Season late. It makes very few runners. 25c per doz., 75c per 100 and \$4.00 per 1,000.

**Princess (P).** A very desirable berry, being much above medium size, good quality and color. Very popular in the north-west where it originated and is well known Season medium. 25c per doz., 60c per hundred and \$3.50 per 1,000.

**Rio (P).** I am greatly pleased with this berry. It is very vigorous, productive and early. Berries are above medium and very even in size, giving them a beautiful appearance in the box. All who have fruited it are loud in their praises of it. I shall set of it more largely. 25c per doz., 60c per 100 and \$3.50 per 1,000.

**Smith's Seedling (B).** When properly grown it is very productive of large sized rich berries, fine color and firm. It makes runners very freely and if left to itself mats too thickly. Grown in hedge or hills it is a grand success. Medium early to late. 25c per doz., 50c per 100 and \$2.50 per 1,000.

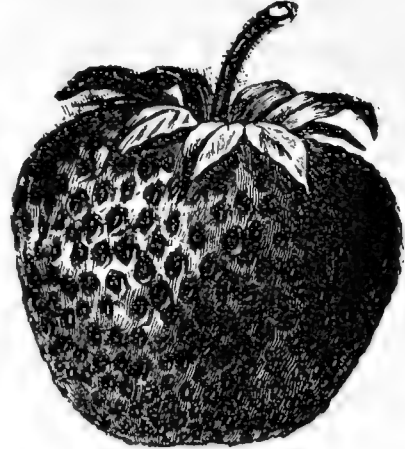
**Staples (B).** A seedling of the Warfield and much resembles it. Berries medium but very even in size, deep blood red to the center which makes it very fine for canning. Its productiveness is great. It will undoubtedly take high rank as a pollinizer and fruiter. Season early. 30c per doz., 75c per 100 and \$4.00 per 1,000.

**Stranger (B).** Believed to be a new seedling. Its vigor and productiveness attracted so much attention that I decided to catalogue it. Berries large, bright red, closely resembling the Bubach. Flavor delicious. Season medium to late. 25c per doz., 75c per 100 and \$4.00 per 1,000.

**Sharpless (B).** The old well known big berry. Its fault is a rather tender blossom and easily killed by spring frosts. In many

localities it is yet a great favorite: Season medium to late. 25c per doz., 60c per 100 and \$3.50 per 1,000.

**Shuckless (B).** I do not care to commend this as a market berry. It parts with the stem in picking, hence its name; it does not handle well for market. For the garden it is fine. Berries quite large, very vigorous and productive. Season medium. 25c per doz., 60c per 100 and \$3.50 per 1,000.



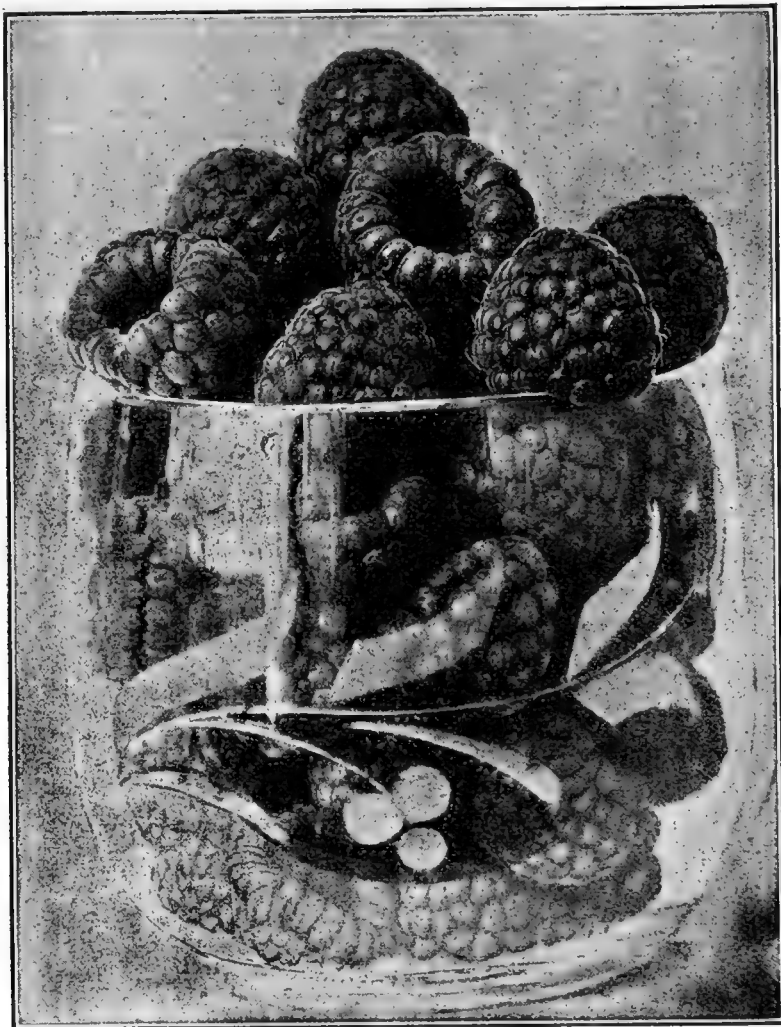
SMITH'S SEEDLING.

**Sunny Side (B).** Introduced only four years ago but now recognized as the late large and productive berry. For heavy fruitage and late it stands at the head at several experiment stations. Its firmness renders it a splendid shipper for parties desiring to ship late berries south and one of the profitable home berries. Season very late. 30c per doz., 75c per 100 and \$4.00 per 1,000.

**Sparta (B).** Another new berry giving great promise. It has not been fruited here or offered as a pedigree plant, but knowing many desire to test it we can furnish them. 30c per doz., 75c per 100 and \$4.00 per 1,000.

**Warfield (P).** The greatest market berry ever introduced. Succeeds everywhere and with everybody. Ships well, sells well, and holds the market well, Where it has been restricted and kept free from exhaustion its productiveness is simply enormous. Berries above medium size, dark color, blood red all through, and the most beautiful berry ever canned. Now more widely cultivated than any other berry. Start with pure vigorous stock and keep it so and you will find it a pocket-book filler. We have kept this restricted and selected since introduction. 25c per doz., 50c per 100 and \$3.00 per 1,000.

**Tennessee Prolific (B).** This is the berry so popular in Tennessee for shipping north. Probably the most productive extra large early show berry grown. It has now been quite generally introduced. We urge our customers to try this variety. It is a good pollinizer for medium early sorts. It is especially valuable on sandy soils as it



THE COLUMBIAN RASPBERRY.

(Exact Size.)

roots very deeply, but does well on heavier land. 25c per doz., 60c per 100 and \$3.50 per 1,000.

**Wilson's Albany (B).** An old favorite. Probably has done more to popularize strawberry growing than any other. We were oversold on our stock last spring and cannot furnish plants this year.

**Wilson Improved (B).** A seedling of the old Wilson and closely resembling it but foliage not subject to rust. It is very productive and I believe will entirely supersede its parent. Season very early to late. 25c per doz., 75c per 100 and \$4.00 per 1,000.

## RASPBERRIES.

Sad havoc has been played with raspberries throughout the country. Not one grower in fifty is receiving one-half the net returns he ought to.

It has been an almost universal practice for growers to fruit plantations until run out and then propagate from these to start a new bed which is in turn exhausted.

**Pruning has often been deficient** so the plants have become pollen exhausted, and while the canes grow large they produce little fruit. The weakened canes succumb to fungi and insects, and after four or five crops the usefulness is ended.

**Nurserymen** have contributed to this condition of things by contracting for plants with parties who grow raspberries largely for evaporating. Size and flavor cut no figure so bushes are allowed to bear every year all they will and are soon destroyed and these plants are then sent broadcast over the country on account of the low price at which they can be offered.

**The true way** is to breed them up by propagating from young ideal canes in rapid

succession. Keeping them under restriction by close pruning, discarding weaklings and thus build up a potency of pollen and breeding stamina that is able to withstand unfavorable climatic conditions and give heavy returns for at least ten years. An occasional big crop does not accumulate money, nor does it give a command of the market. Start right, prune right (see article on pruning), cultivate right, grow large, luscious berries and all other things shall be added.

**Planting.** Rows should be at least seven feet apart and plants three feet apart in the row. Having fitted the ground as for strawberries, plow a furrow about five inches deep for blackcaps, set the plants flat in the furrow with roots spread out in every direction, taking the greatest care to get fresh earth in contact with all the roots and cover immediately.

**Cultivation should be thorough** and frequent until the last berries are all picked, when the old wood should be cut out. It is the greatest blunder to stop cultivating in the driest part of the season, when the bushes are bringing their great loads of fruit to perfection. The feet of the pickers tramp the ground down hard and capillary action brings the water to the surface where it is carried off by wind and sun very rapidly. Let the cultivator go through them after every picking.

**One of the neatest ways** of growing raspberries is to string a wire about four feet high with a stake every forty feet, and tie the canes to this. The expense is not great and it prevents the wind from threshing the berries off and gives clear space for cultivating. In this case I would not pinch them back but let them grow in their natural way, and at winter pruning cut off the upper third, and this will leave enough buds to produce all the berries the bush can mature without exhaustion. I have come to regard pinching off terminal buds when the plant is about eighteen inches high a mistake. Checking natural growth at this time interferes with assimilation of plant food, and if the season is very dry and hot several days often intervene before new buds start.

**But if ground is rich,** canes get so long that cultivation is interfered with and pinching back might become a necessity if wire is not used. Great care should be exercised to remove only the terminal bud and not a leaf if it can be prevented. Never pinch in the laterals. One pinching of the main plant is enough. *Never* tie the canes to a stake in a bundle. They must have light and air and will not fruit without it.

**Red raspberries** should be treated the same as black caps except no pinching should be done. Let them grow in their natural way.

The hardiness of raspberries as well as blackberries depends on securing a vigorous growth early in the season and keeping the ground moist by thorough cultivation during fruiting season. If they are allowed to dry up at fruiting time they are sure to make a late growth and are likely to winter kill.

Set plants in spring in northern latitudes. In the south they may be set in the fall.

## VARIETIES OF RASPBERRIES.

**The Eureka** has stepped entirely ahead this year of any other extra early berry. Not only is it the earliest but the largest and most productive. It will certainly double the crop of Palmer, or Gregg, and the large size, shiny black color with its long season of bearing must give it first place. We urge every grower to get a start with this as the early berry and others should get a few plants with which to propagate for re-setting. The canes have proven themselves hardy wherever tested. 60c per doz., \$2.50 per 100 and \$15.00 per 1,000.

**Conrath.** The Conrath takes the place of Ohio and other medium berries, and must be classed as the most reliable medium berry. Its fruit is large, shiny black and quality high. In cane it resists anthracnose, is entirely hardy and reliable, and especially valuable for evaporating. 30c per doz., \$1.25 per 100 and \$7.00 per 1,000.

**Palmer.** The standard early berry, ripening before the strawberries are gone. Is entirely hardy and very productive. 30c per doz., \$1.00 per 100 and \$6.00 per 1,000.

**The Columbian.** Every claim made for this berry has more than been filled. The canes grow to fully double the size of any variety on the farm and certainly produced twice the fruit and it proves a good shipper. The berries are very large (see engraving), are of the richest flavor, and as a table berry has no superior, while for canning they are the berry. While its color is purple yet it has a rich appearance with little bloom and is a favorite on the market. It propagates readily from tips and a few plants now will give enough next spring to start a large plantation. 20c each, \$1.00 per doz., \$8.00 per 100 and \$60.00 per 1,000.

**The Kansas.** A large early berry ripening soon after Eureka and Palmer. Is placed at the head of the list by many experiment stations and is destined to hold its place for the present. 40c per doz., \$1.25 per 100 and \$8.00 per 1,000.

**The Older.** Its good qualities are especially deep rootage so as to do well on light land. It has been widely set in the west and northwest and is very popular. 30c per doz., \$1.25 per 100 and \$7.00 per 1,000.

**The Galt.** The present season has proven this berry the first really successful fall fruiting berry yet introduced. It is so superior to Earhart that we have ceased to propagate that variety and shall set largely of Galt. It has a large crop at regular season and almost immediately afterwards begins to fruit on the new canes and continues until frost. Propagates readily by tips. 15c each, \$1.25 per doz., \$8.00 per 100.

**Shaffer's Colossal**—that big purple berry. Its heavy bloom is against it but quality and productiveness so good that it has been a favorite for canning and the table. Is especially valuable in the home garden and for near market. 30c per doz., \$1.25 per 100 and \$7.00 per 1,000.



THE CONRATH.

**Johnson's Sweet.** This is the richest and sweetest blackcap grown. Entirely hardy and very productive. It ripens only two or three days later than Palmer. The berries are good size, very even and shiny black. 30c per doz., \$1.25 per 100 and \$7.00 per 1,000.

**Gregg.** The old standard big late berry. We have not yet found anything to take the season from Gregg. The great point is to have the variety full of stamina and vitality, and it will meet expectations. 30c per doz., \$1.25 per 100 and \$7.00 per 1,000.

**Muskingum.** A purple berry of considerable value as a home or garden berry, resembles the Shaffer in fruit except the berry is not so large but quality is good and very hardy. 30c per doz., \$1.25 per 100 and \$7.00 per 1,000.

## RED VARIETIES.

The cultivation is the same as black caps except they should never be pinched back.

The buds are not so strong on the laterals, and do not produce as good berries as those on the main canes. By cutting off the upper third of the cane at the winter pruning all the buds will be left that are desirable. The plantation will last longer and fruit better. Treat all suckers as weeds. It soon spoils a fruiting bed to cut the roots in digging up plants.

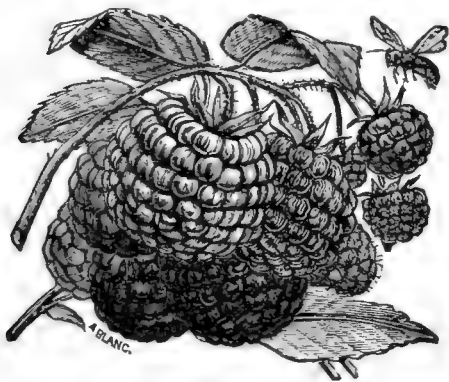
**The Miller.** No berry has come to us which has proven so satisfactory and awakened so much enthusiasm. It begins to ripen more than a week before strawberries are gone. Its berries are large, of a fire red color and most beautiful in the box. We

shall discard all others and set this exclusively for the early red. 40c per doz., \$2.50 per 100 and \$15.00 per 1,000.

**Thompson's Early.** Ripens before strawberries are gone. The berries are smaller than the Miller and not more productive. The canes are vigorous and hardy. 30c per doz., \$1.25 per 100 and \$7.00 per 1,000.

**The Marlboro.** This follows the Miller and is popular. The berries are firm and good shippers. 30c per doz., \$1.25 per 100 and \$7.00 per 1,000.

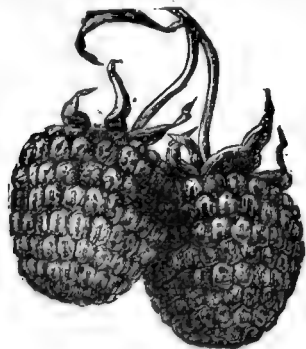
**Crimson Beauty.** A large, vigorous, early berry and one of the most productive red berries grown. It seems nearly a pistillate and must be set with every fourth row or in blocks of say six rows of Miller, Thompson or Marlboro. Its enormous productiveness compensates fully for this extra work. The berries are firm, early and bright red color. 30c per doz., \$1.25 per 100 and \$7.00 per 1,000.



MILLER'S RED.

**The Cuthbert.** This has long been the standard of red berries. The fruit is large and firm so that it stands up well and can be shipped any distance. Its season is the latest. 30c per doz., \$1.25 per 100 and \$7.00 per 1,000.

**The Golden Queen.** A seedling or sport of the Cuthbert and very closely resembles it except the berries are yellow. It is perhaps the best yellow berry. Very fine for canning and near market. After berries have been picked a few hours they



THE CUTHBERT

look dull, hence not good for distant market. 30c per doz., \$1.50 per 100 and \$8.00 per 1,000.

**The Loudon.** It is rated higher than

any late red berry yet introduced. It will soon take the place of Cuthbert. It is finer in quality, larger and better in every way. Growers will do well to procure a few plants and propagate it if they expect to control the market. It is the coming late berry sure. 15c each, \$2.00 per doz. and \$10.00 per 100.

## A REVOLUTION IN BLACK-BERRY GROWING.

Nothing sells better, nothing pays better, nothing is grown more easily. The new method of starting the plantation produces double that of the old way. Its fruit is more luscious and a plantation will fruit heavily under good culture and pruning from fifteen to twenty years, giving annually large crops.

**The demand** for this fruit is practically unlimited. The trouble is blackberries as offered are sour, seedy and lack flavor.

Scarcely a town in the country is supplied at all with large luscious blackberries.

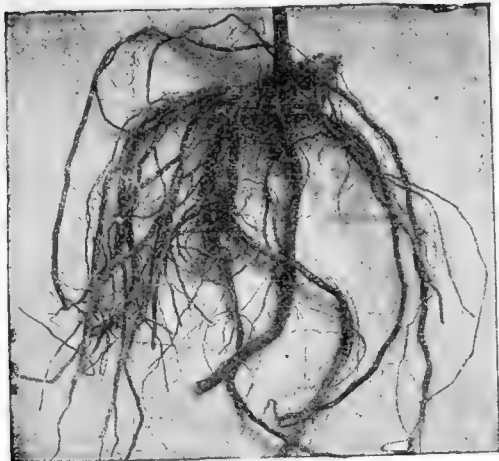
**Under the new system** of establishing the patch every cane is loaded with large, luscious berries of the most delicious flavor and gives a big crop every year because the ground is filled with a dense mass of roots making root pasturage of every square inch of the soil for several feet around the plant, furnishing it an abundance of food to sustain it in bringing its great load of fruit to full maturity without exhausting the plant.

**How it is done.** Pursue the same method explained in breeding up strawberries. Find all the ideal canes bearing the finest fruit, and not over two years old: Early in the fall dig them up and cut roots in pieces about three inches long and pack in boxes of clean, coarse, sharp sand and place in a cold cellar regulated with ice so the thermometer will stand at 35 degrees. An ordinary cellar will not do, for if allowed to get too warm the cuttings will commence to grow and all be spoiled. If allowed to freeze they will not callous and thus fail to emit sufficient roots.

**What is a callus?** It is a law of nature that when a root is cut or injured the plant will repair the damage by sending out new roots but no new root will start until a callus is formed. Certain wood cells and a gristle like substance must form, and out of this callus the roots start. The process requires time and goes on at a low temperature and the longer the root is kept in this dormant condition the more calluses there will be.

Roots prepared in October form calluses in great numbers before planting time the following May. When the cuttings are placed in nursery rows in rich moist sandy soil about three inches apart and one and a half deep. It is quite difficult to make them grow properly without irrigation. *If the plants get dry they will fail.* If buried too deep they damp off and die. Low spring or cold ground will not do. They must have frequent cultivation and not a weed allowed to grow among them. As soon as dormant in the fall, the plants are carefully taken up and roots trimmed to the proper length and again packed in coarse





ROOT CUTTING (Plant ready to set).

sharp sand so it is solid around every root and kept as in the first winter when calluses form all along the sides and ends of roots so that when planted out where they are to fruit in the spring myriads of roots will start at one time and at the end of the season the ground will be full of fine feeding roots as above described. In keeping them in the callousing cellar it should be supplied with ice, for if perchance the cellar gets too warm the plants will grow and be lost. We are thus able to send them to customers while dormant and early in the spring.

The common way is, as in the case of raspberries, to let a patch fruit as long as it will and then mow off the tops and let suckers come up from between the rows and the next season dig them up and start a new patch. Of course the weakness and exhaustion of the old patch is carried into the new. The roots on the plant are few and commence growing always from the end, and I have seen them extend several rods away, while near the canes the ground would not be occupied at all. The sap having to come through these long roots to the leaves for assimilation they are continuously sending up suckers which become a nuisance.

**Digging sucker plants** destroys a plantation very quickly and causes the sucker nuisance to increase.

In cutting the roots, depriving the plant of its feeders when soon to be loaded with fruit exhausts and renders it unfruitful. Treat all suckers as weeds and cut them off a little under the surface.

The location should not be on low or marshy ground. High land is better.

**Hardiness of blackberries** depends on getting a vigorous growth early in the spring and maintaining it all summer. Many growers stop the cultivator before berry picking begins. The ground is packed by the feet of pickers, the water passes out and berries dry up; growth stops and buds form as if for winter. Later the fall rains come and these buds which should have



ROOT CUTTING (Plant showing roots after one year).

formed late in the fall start to grow and do not mature before winter sets in, so it only requires a moderate freeze to kill these "sappy" half-ripened canes.

**The enemy of blackberry growing** is the summer drouth. All this can be managed with entire success. As soon as the ground is dry enough to start the Planet jr. horse hoe, cultivate every five days unless it rains, but cultivate immediately after the rain or as soon as dry enough and always after every picking the same day.

**Keep a fine dust mulch** on the ground all the time till the first of August and later if there is not an abundance of rain. The wood will ripen all right and as solid as an oak plank if you do not let growth stop during the great strain of maturing the crop. Never let the cultivator go deep enough to touch the roots but keep it going all summer. If any one tells you there is no need of so much cultivating and that a recaloused root cutting plant is not worth twenty times as much as a sucker plant, tell them for me they know nothing about great crops of blackberries and how to grow them. Do not pick oftener than twice per week. The berries should have been black at least two days before picking, then they are very sweet. A green berry is very sour. Let them get fully ripe.

## VARIETIES OF BLACK-BERRIES.

All the plants here offered are large root cutting plants, thoroughly recaloused, and under good treatment should produce double the fruit every year of those grown from common sucker plants. This process is a great triumph in blackberry culture.

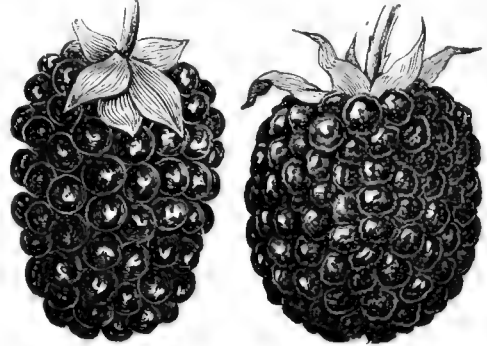
**The Western Triumph.** For eighteen years the Western Triumph has yielded to us every season the largest crops of the finest berries. I have never given it winter protection nor witnessed a failure. It is a good size and free from core and has a delicious flavor. Its season is with Snyder and

Erie. 50c per doz., \$2.00 per 100 and \$12.00 per 1,000.

**The Erie.** The experiment stations and growers who have now fruited this for several years unite in placing the Erie at the head of the list among the most desirable varieties. This season and for many years it has stood equal with Western Triumph or any other berry. While it has not been fruited so long yet I heartily urge it as a leading berry. I have never seen it injured here by cold. It is reported hardy everywhere. 50c per doz., \$2.00 per 100 and \$12.00 per 1,000.

**Taylor Prolific** follows the Western Triumph, Erie and Snyder and the three make a long season. It rarely fails in hardiness and is very productive and desirable. In quality it is probably the richest blackberry grown, having that sweet flavor peculiar to the wild berry. As it prolongs the season to the early grapes it should be on the list. 50c per doz., \$2.00 per 100 and \$12.00 per 1,000.

**Snyder** is that old iron clad which succeeds everywhere a blackberry can be grown. If properly pruned the berries are large and fine. Like all other blackberries under neglect and not pruned it overbears and berries are small. Our stock has been bred up and is in the fullest vigor. 50c per doz., \$2.00 per 100 and \$12.00 per 1,000.



THE ANCIENT BRITON.

THE ERIE.

**Ancient Briton.** A leading berry in the northwest where it grows to great perfection. Its canes and roots are such that it is easy to lay down for winter protection. Its berries are fine. Season medium. 50c per doz., \$2.25 per 100 and \$14.00 per 1,000.

**The Eldorado** is comparatively a new berry, but is coming to the front in great shape. All who have tested it are wild in its praises and it will undoubtedly come into general cultivation. The demand for plants has exceeded supply every year. 15c each, \$1.00 per doz. and \$8.00 per 100.

**The Rathburn** is a new blackberry which propagates from the tips. From 30 to 60 plants are obtained in fall from spring set plants by burying the tips in August. It is without doubt the largest blackberry grown and of the highest quality. When it becomes known, the demand for plants will be very great and by procuring a few now you can have a good start next year. 25c each, \$15.00 per 100.

**Early Harvest.** The earliest blackberry grown, ripening with first raspberries. The berries are not large, but so very even in size and beautiful they sell fast. It comes in long in advance of other varieties. It is not classed as hardy but its long slender growth makes it easy to lay down for winter protection. 50c per doz., \$2.00 per 100 and \$12.00 per 1,000.

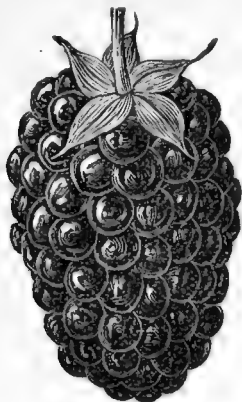
## DEWBERRIES.

When properly grown the Dewberry is very profitable and a ready seller. It comes on the market two or three weeks ahead of the high bush blackberry and therefore always commands a high price. The better way is to put up a trellis of three No. 9 wires and prune in early spring and tie canes to these wires. Pick every other day or for table every third day. Give clean culture.



THE WESTERN TRIUMPH.

**Lucretia.** This is now recognized as the standard berry. They are often found an inch and a half long and an inch through. 50c per doz., \$2.00 per 100 and \$12.00 per 1,000.



LUCRETIA DEWBERRY.

**Austin's Improved** is even larger and finer than Lucretia. It is large, glossy, black and sweet, and so successful that it must come into general cultivation. Its immense size and productiveness is sure to make a great demand for it. Ripens with the first raspberries. 75c per doz., \$3.50 per 100.

### CURRANTS.

They grow so easily, fruit so heavily, are so hardy and easily cared for that it is amazing that every table in the land is not abundantly supplied with this cooling and delicious summer fruit. The ground should be very rich and weeds and grass kept out. Cultivate frequently during dry weather to conserve moisture. Heavy mulching with manure or straw in the garden and small patches is good, but I prefer cultivation for field plants.

**The Currant Worm** appears soon after the leaves start, near the ground in a cluster. If a weak solution of Paris green is sprinkled on the lower center foliage that will be the end of them. If they appear later dust a little white hellebore while the dew is on, or put a teaspoonful in a pailful of water and sprinkle with a whisk broom.

**The London Market** is by all odds the most profitable currant to grow. It sold for half more and produced almost double the fruit of any other variety. More will be set in Michigan this year than any other sort. The fruit is large, fire red and clusters fine. 75c per doz., \$5.00 per 100 and \$40.00 per 1,000.

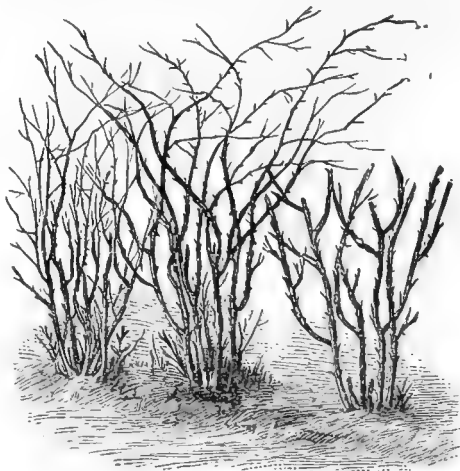
**Victoria** has long been a favorite. Where the currant borer is known to be numerous this variety should be planted, the pith being so small that the worm cannot work in it to do serious injury. Fruit is good size, bright red and very productive. 60c per doz., \$4.00 per 100.

**Fay.** On very rich heavy land and high culture it is fairly productive, and has very large berries. It does not sell better nor produce half as much as the London Market. \$1.00 per doz., \$6.00 per 100.

**Cherry.** The old standard currant, good size, good bunch and very productive. 60c per doz. and \$4.00 per 100.

### PRUNING.

The object of pruning is to make plants more productive and to extend their time of usefulness. If left unrestricted they throw their whole energies into this one act of multiplying their species by seed bearing. While they should be encouraged to bear a large crop of fruit they must not be allowed to bear an excessive crop and so exhaust themselves that they cannot produce another large crop for several years, hence we must determine their ability and relieve them of surplus fruit buds maintaining an equal balance between root and branch, preserve symmetry and beauty and furnish light and free air to all parts of the branches. We cannot cut off too much without seriously injuring the plant. The balance between the amount of roots and limbs must always remain equal. **The little fine rootlets** suck up the plant food in the form of water with a little mineral matter and pass it up through the middle of the stalk by a force similar to capillary attraction until it reaches the leaves where it is digested and assimilated, the leaves performing the same



office as the stomach and lungs of an animal. The digested sap now returns to the roots along under the bark where it builds up wood cells, enlarging the tree or bush and making the year's growth. Now if we cut off an excessive amount of foliage, the roots take up the food and force it to the leaves in such quantities that assimilation cannot take place and a congested condition is brought on and all the effects of a gorged stomach of an animal are plainly seen.

**During the fall months** the bush stores up a large amount of plant food in the wood for use in the early spring before the ground is warm enough for the roots to act. We may prove this by heavy mulching when the ground is frozen so it will not thaw out until very late; the bush will begin to grow in the spring before the roots thaw out. The

temperature of the air causes the buds to appropriate the stored food and they will make almost full foliage without calling on the roots for supplies, hence we can cut away a part of the branches and surplus fruit buds, and this early growth will compensate for it and maintain the balance between the roots and branches. The leaves having an abundance of light on all sides, assimilation is active and the roots being able to concentrate their powers on the fewer buds a very rapid growth is secured early in the spring, so the late summer and fall months are used to mature the wood and buds for the coming winter.

**The removal of surplus buds** while dormant prevents pollen exhaustion and thus enables the tree to impart a potency to pollen that secures full development of fruit, and large annual crops are thus grown.

**Summer Pruning.** The best growers are discarding summer pruning. Unless an undue stimulus to leaf growth is given by rich nitrogenous manure, the more foliage we can have the better results will be obtained. With these suggestions the engraving will show how the work should be done.

## THE GOOSEBERRY

Is now attracting much attention and proving one of the most profitable berries grown. The demand is increasing very much faster than the supply. Their general cultivation is similar to that of currants, and insects are disposed of in the same way.

For picking use a pair of thick buckskin gloves and strip the fruit off by handfuls and run through a fanning mill, or pour them on a blanket so that the wind will blow the leaves out. It's quick work. Keep the bush pruned rather closely, and top of bush open. They do better with heavy mulch.

**The Downing** is the most popular berry for market, large, even, fine grained, and makes a fine large bush. 1 year, 10c each, \$1.25 per doz. and \$6.00 per 100. 2 year, 15c each, \$1.50 per doz. and \$8.00 per 100.

**Houghton** is enormously productive and very free from mildew. Berries are not quite so large as Downing, but in some markets sell better. 1 year, 10c each, 75c per doz. and \$4.50 per 100. 2 year, 15c each, \$1.25 per doz. and \$6.00 per 100.

**Smith's Improved** is a large pale yellow berry of great beauty and surprisingly productive. It is making many friends everywhere. 1 year, 15c each, \$1.50 per doz. and \$8.00 per 100. 2 year, 20c each, \$2.00 per doz. and \$9.00 per 100.



THE DOWNING.

## THE VINEYARD.

Of all the fruit that grows there is none more beautiful and tempting than the grape, with its great rich clusters hidden away in

the cool shade of its dense foliage. They are so easy to grow and afford so much pleasure for the labor expended that a **business man, mechanic or farmer** who should deny his family or the hired help an abundance of this luscious fruit comes close to the borders of cruelty. A few vines, a very little care and the enjoyment is yours.

**The great point** is to have cuttings taken from strong and vigorous vines that have always been kept properly pruned. We have already stated that cuttings taken from exhausted vines will not fruit as heavily as those from canes which have never been allowed to overbear.

**The soil** should be rather dry and neither the stiffest clay nor lightest sand. Good corn and potato land will do. It delights in warm sunshine for foliage and shade for its fruit.

**Fertilizing** should consist largely of ground bone and wood ashes, or *very thoroughly* rotted stable manure which *must not* be brought in direct contact with the roots. Never use rank unfermented manure under any circumstances. If the ground is in fair fertility, about three or four hundred pounds of bone and from twenty to fifty bushels of unleached wood ashes per acre will do the business. They should be cultivated in and thoroughly incorporated with the soil. I give a dressing of ashes every year. I am satisfied it gives a richer flavor to fruit and ripens the wood much better.

**Preparing the ground.** The ground should be plowed as deep and made as fine and mellow as possible. Some people dig holes two feet deep and four or five feet across and fill them up with rich top soil to within a few inches of the top of the ground and then set the vine and afterwards fill full. If the soil is porous or quite sandy so the water will settle away quickly, this is precisely the *right* thing to do. But if you have a firm soil, a stiff clay, it is precisely the *wrong* thing to do; the water will soak into the soft earth and hold it there like a tub and destroy the vigor of the vine. In the latter case break up the ground as deeply as possible and set the vine not too deep.

Never put any manure in the hill when setting. Manure seems to be rank poison to a young grape root. More vines die from this than any other cause. *Don't do it.* Never mulch a grape vine. The soil should be warm where the roots are feeding.

The vines may grow as they please the first year, but the second year must be staked or trellised and pruned to three buds; after they start rub off all but the strongest one.

**Pruning.** There are a great many ways of doing this. Bear in mind that fruit grows on the present year's growth from canes of last year's growth. Very rarely a fruiting bud is found on an old cane.

**The trellis.** We prefer what is known as the *Kniffin system*. Two wires are used; the lower one not less than three and one-half feet from the ground and the second fully two feet above the first. The vine is

allowed four arms, each extending two to four feet out on each wire. Then prune each lateral back to from one to three buds, leaving in all not more than from twenty to forty buds according to the vigor of the vine, and then the grapes should be thinned soon after the fruit sets so as not to leave more than thirty to forty clusters. The clusters will be larger, of better flavor and ripen much earlier. A strong, healthy vine will always set more fruit than it can ripen and the following year will be weaker, so that close pruning and thinning one year with another is the only way to secure continued large crops. If the vines are to be used for propagating they should not be allowed to bear over one-third the above in any year.

It is a great mistake to train the vine so low as to densely shade the ground. It invites mildew and rot. They delight in sunshine and plenty of dry air.

Cultivate frequently and nearly up to the time the fruit begins to color.

Every fruit grower should have a knapsack sprayer or barrel spray pump. The **Eclipse Pumps**, manufactured by Morrill & Morrill, Benton Harbor, Mich., are endorsed by many state horticultural societies and experiment stations, and are the most complete machines made.

## VARIETIES OF GRAPES.

There are too many varieties that are not especially valuable. We describe a few of those we regard as the cream of the list:

### BLACK GRAPES.

It may be said that the introduction of the **Concord** was the beginning of successful grape culture in this country. It succeeds wherever a grape can be grown. It is yet the leading market variety and too well known to need description, but in many localities is giving way to the **Worden**. 10c each, 75c per doz. and \$3.50 per 100. 2 year, 15c each, \$1.00 per doz. and \$5.00 per 100.

**Worden**, I believe is the richest and sweetest black grape grown in this country. Perfectly hardy, fully as productive as **Concord**, larger berry and cluster, and a week or ten days earlier. They are gone before **Concord** arrives. 1 year, 10c each, 75c per doz. and \$3.50 per 100. 2 year, 15c each, \$1.00 per doz. and \$5.00 per 100.

**Moore's Early** is one of the best extra early grapes, ripening fully two weeks ahead of **Concord**. The berry is very large, entirely hardy and on rich soil very productive. It is generally all gone before **Worden** comes on. Must have very heavy, strong, rich soil. 1 year, 10c each, 75c per doz. and \$3.50 per 100. 2 year, 15c each, \$1.00 per doz. and \$5.00 per 100.

**Talman** (or **Champion**) is a prolific and profitable extra early market grape; ripens about the time of **Moore's early**. Flesh sweet, juicy, and a rank grower. Healthy, hardy and vigorous. 1 year, 10c each, 75c per doz. and \$3.50 per 100. 2 year, 15c each, \$1.00 per doz. and \$5.00 per 100.

**Clinton**. Bunch medium, shouldered, long and narrow. Berries round, medium size, covered with thick bloom. Colors early, but does not fully ripen until quite late. The pulp is a little tough, but has a rich, vinous flavor. 10c each, 75c per doz. and \$3.50 per 100. 2 year, 15c each, \$1.00 per doz. and \$5.00 per 100.

**Mills** is a new grape, vigorous and healthy; ripens with **Concord**. Bunch and berries very large and quality superior. 1 year, 50c each and \$4.00 per doz. 2 year, 75c each and \$6.00 per doz.

**Wilder (Rogers' No. 4)**. Bunch and berry, large, early, hardy, healthy, and productive; good keeper, profitable, and of excellent quality. 1 year, 15c each, \$1.00 per doz. and \$5.00 per 100. 2 year, 20c each, \$1.50 per doz. and \$8.00 per 100.

**The Hosford**. This grape was discovered in a vineyard of **Concord**s. The seed had fallen between two branches of a vine in such a manner that it was protected from the hoe and cultivator and was supposed to be a renewal shoot, as Mr. Hosford practiced that mode of culture. When it came into fruitage it quickly attracted attention, and cuttings were made and subsequently the vine was taken up and removed, showing conclusively that it was a seedling of the **Concord**.

It has all the hardiness, productiveness and vigor of that sterling old variety. The berries and clusters are fully double the size of the **Concord**, single berries often being found exceeding an inch and a quarter in diameter. It is superior in flavor and shipping qualities. The leaves are large and leathery, and although other grapes in the immediate vicinity have suffered much from mildew, this has been entirely free from it and has never been injured by the cold. 1 year, 25c each, \$2.50 per doz. and \$18.00 per 100. 2 year, 30c each, \$3.00 per doz. and \$25.00 per 100.

### RED GRAPES.

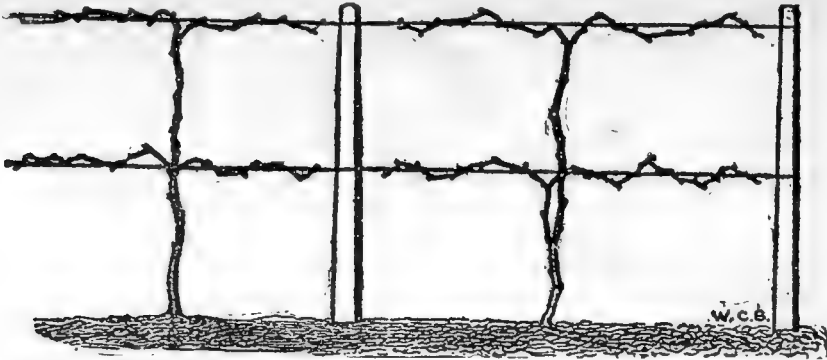
**Delawares**. Considered by many as the standard of excellence in grapes, requires strong soil and good culture. 1 year, 15c each, \$1.00 per doz. and \$4.00 per 100. 2 year, 20c each, \$1.50 per doz. and \$6.00 per 100.

**Diana**. A little later than **Concord**, bunches medium and compact. Flavor peculiar, much liked by some and disliked by others. 1 year, 15c each, \$1.50 per doz. and \$5.00 per 100. 2 year, 20c each, \$2.00 per doz. and \$8.00 per 100.

**Agawam**. One of the longest keepers and best family grapes grown. Can be kept until March. 1 year, 15c each, \$1.00 per doz. and \$4.00 per 100. 2 year, 20c each, \$1.50 per doz. and \$6.00 per 100.

**Jefferson**. One of the best red grapes, a good grower, hardy and productive. Ripens with the **Concord**. 1 year, 20c each, \$2.00 per doz. and \$10.00 per 100. 2 year, 25c each, \$2.50 per doz. and \$15.00 per 100.

**Lindley (Rogers' No. 9)**. Desirable for extensive planting. Strong grower, healthy and hardy. Should be in every garden. 1 year, 15c each, \$1.00 per doz. and \$4.00 per 100. 2 year, 20c each, \$1.50 per doz. and \$6.00 per 100.



THE KNIFFIN SYSTEM OF PRUNING GRAPES.

**Moyer** resembles Delaware in appearance, but is more vigorous and healthy. Hardy and productive. 1 year 15c each, \$1.50 per doz. and \$7.00 per 100. 2 year, 25c each, \$2.50 per doz. and \$10.00 per 100.

**Poughkeepsie Red.** Much larger in bunch and berry than Delaware, but resembles it in color and taste; very early. 1 year, 25c each, \$2.50 per doz. and \$18.00 per 100. 2 year, 35c each, \$3.50 per doz. and \$25.00 per 100.

**Salem (Roger's No. 22).** Bunch and berry very large. Healthy, hardy and vigorous. A good keeper and fine table berry. 1 year, 15c each, \$1.00 per doz. and \$5.00 per 100. 2 year, 20c each, \$1.50 per doz. and \$7.00 per 100.

**Brighton.** Dark red; one of the most desirable of the new red grapes; clusters very uniform and beautiful; quality fine. 1 year, 15c each, \$1.00 per doz. and \$4.00 per 100. 2 year, 20c each, \$1.50 per doz. and \$6.00 per 100.

**Wyoming Red.** One of the most hardy and beautiful very early red grapes grown. Skin rather tough, keeps well, fine flavor, vine very vigorous and hardy. 1 year, 15c each, \$1.00 per doz. and \$5.00 per 100. 2 year, 20c each, \$1.50 per doz. and \$7.00 per 100.

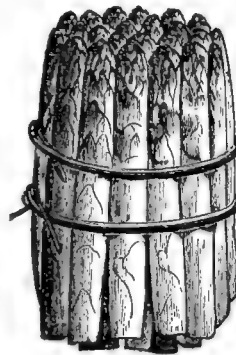
#### WHITE GRAPES.

**Moore's Diamond.** Bunch and berry very large; strong grower, hardy wherever grown, and becoming more popular every year. It has come to stay and will be largely planted and sought for in the market. 1 year, 20c each, \$2.00 per doz. and \$8.00 per 100. 2 year, 30c each, \$3.00 per doz. and \$10.00 per 100.

**Niagara.** Quality about like Concord; bunch and berry very large; vigorous, healthy and hardy. 1 year, 15c each, \$1.00 per doz. and \$4.00 per 100. 2 year, 20c each, \$1.50 per doz. and \$6.00 per 100.

In selecting varieties of grapes, as well as other fruits, have them begin with the earliest and extend to the latest, so the table or market may be supplied every day throughout the entire season. Always have an abundance of some one variety.

#### ASPARAGUS.



This is the greatest money making crop, labor considered, on the farm and will give a family more pleasure than anything else that can be placed in the garden. It sells at sight and people are just learning how delicious it is. Many prefer it to green peas. We have a half acre from which we generally cut about two hundred dollars worth of "grass" every spring. We cut it every warm day from the last of April till the middle or last of June.

It grows from "crowns" and as quick as one shoot is cut another starts in its place so the growth is continuous. I have seen shoots as large as your thumb grow an inch per hour and we are often obliged to cut twice in a single day.

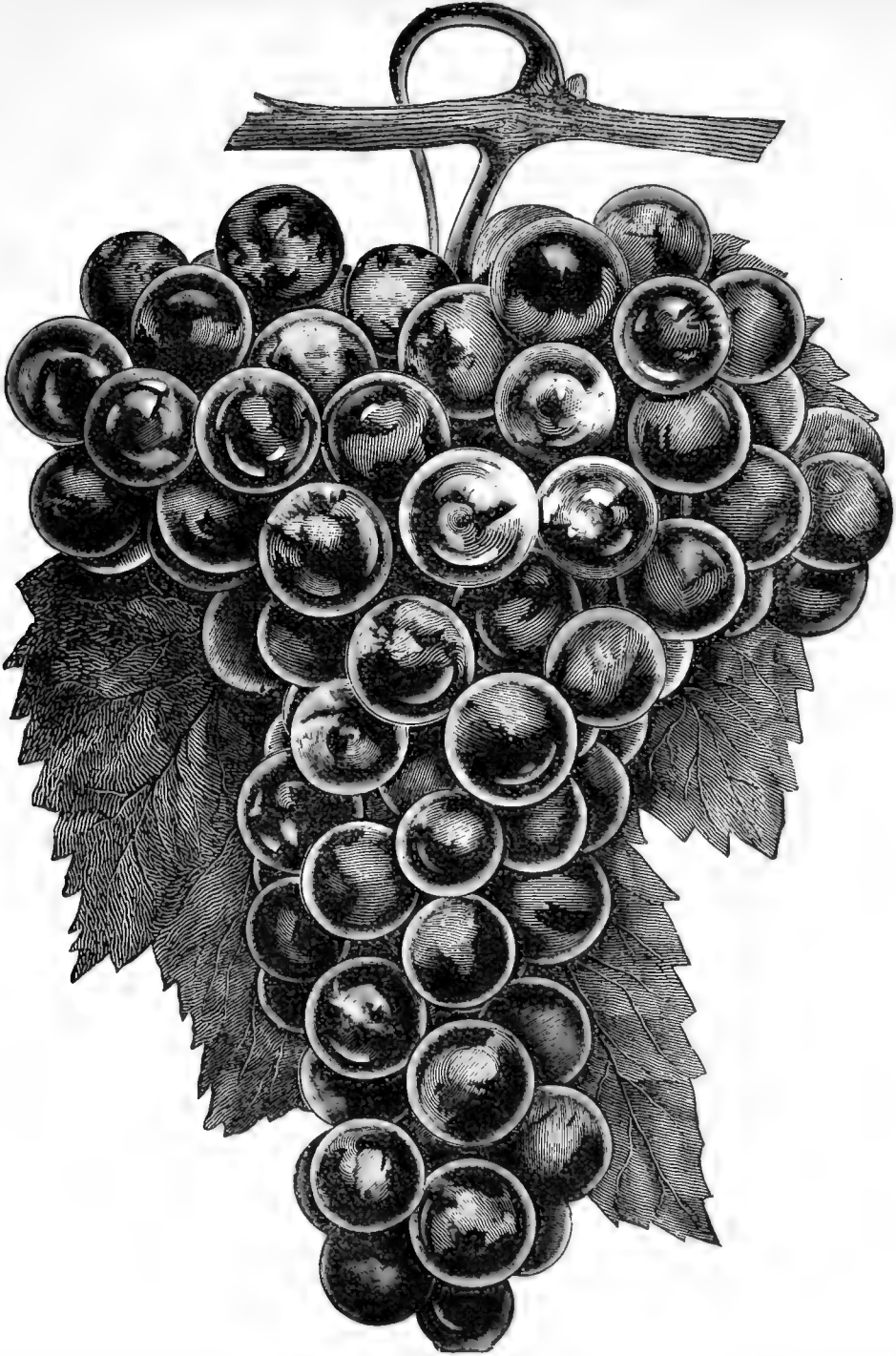
No family can eat as much as will grow from fifty or a hundred plants, and the bed will last more than one hundred years without renewal.

The plants are so cheap and trouble so little, every farmer should have a bed started at once. When the good wife is so bothered in April and May for "sass" she can step into the garden in a moment and gather a supply that in addition to a few other "fixings" will make a royal meal that will be greatly appreciated.

Select a site if possible sloping to the south and make it as rich as possible. Set rows three and a half feet apart and plants two feet apart in the row. Plow a furrow and set plants not less than six inches deep. Make no cuttings the first year. As quick as ground is dry enough in spring cultivate over the entire surface taking care not to go deep enough to disturb the roots.

For family garden set a row along the fence or in a corner with plants about two feet apart.

**Improved Conover.** Strong, large plants by mail, post paid, \$1.00 per 100; by express, 75c per 100, \$3.00 per 1,000.



**The Early Ohio.** This is the earliest black grape known. Ripens ten days to two weeks before Moore's Early. Bunch large, compact and shouldered; berry medium, covered with a heavy bloom. Leaves very large, thick, leathery. Foliage heavy and perfectly healthy, and fully as hardy as Concord. A vigorous grower, very productive, and of good quality. Berries

adhere firmly to the stem. One of the best shippers and the only early grape that will not shell from the stem. It's the early grape that catches the high prices, and those who set of this variety will reap a harvest. 1 year, 30c each, \$3.00 per doz. and \$20.00 per 100; 2 year, 40c each, \$4.00 per doz. and \$30.00 per 100.

## THE PLEASURES OF FRUIT GROWING.

While fruit growing like all other kinds of business is not entirely free from annoyances, yet, when conducted on lines pointed out in previous pages it becomes a source of almost unalloyed pleasure.

**My plants are my pets** and to them I owe a debt of gratitude. They have not only furnished me with a delightful occupation but their annual yield of delicious fruits have enabled me to provide myself with a beautiful home and a competence for old age.

**The greatest pleasure** I have found comes from having pointed out to many young men who were doomed to be life long wage earners and occupants of rented homes, an avenue through which they have become their own masters and are now at the head of a lucrative business, and which has been the means of redeeming many mortgaged homes.

**A case in point** is a family living in Illinois consisting of father, mother and three grown sons. The father was aged and an invalid and the home hopelessly mortgaged. The young men had engaged as brakemen on the railroad. The breaking up of the home rendered the mother almost frantic. She accidentally received a copy of this pamphlet and by tearful, persistent appeal she induced the boys to divide the farm and engage in growing fancy fruits. There was a year of struggle, a big crop of berries, the mortgage foreclosure stayed and in two subsequent years it was entirely wiped out, and today they are out of debt and each has a well established and profitable business, and are recognized horticulturists.

**A long list of names** of those similarly successful are on my books. To have been the instrument of starting these young men on this royal road to independence and competence is the most precious treasure of my horticultural life.

**You ask the question** is everybody engaged in fruit growing equally successful? You have only to visit and investigate the methods of fruit growers in your own vicinity to show that the failures are many.

**Certain conditions** must be complied with to insure success. These have been pointed out in previous pages. A slight investigation will show that these growers have entirely ignored these conditions and are keeping on in the old ruts and are getting small crops of inferior fruit. They are not up to date. The primitive methods of twenty years ago will not do now. If one expects to compete with other growers, modern methods must be adopted. It is only the progressive, wide-awake individual that may expect to reap the rich rewards.

The average grower puts on as much fertilizing, and does as much work as we do in producing his fruit, but the difference in results is very great. The average grower bestows his care upon a weakling, incapable of responding to his generous treatment,

while we deal with a plant strong in breeding stamina that only needs an opportunity to show its powers.

Some men grow rich, apparently without exertion, while others toil with slavish devotion, yet ever remain poor. The latter always work to a disadvantage and the fruits of their labor are wasted by unfavorable conditions, while the man who becomes rich studies the causes that produce great results and thus accumulates property rapidly.

There is no reason why one should not succeed as well as another by adopting the better methods and yet it is true that with examples of brilliant prosperity before them a great majority of growers remain in the old beaten paths. Hence growers who adopt the better methods find it easy to command the market and reap the profits.

**While fruit is plenty** in most markets yet the grade is low and people will not consume it. The market is made by having customers eat two berries instead of one.

**Making a start.** The all important thing is to cultivate a determination to succeed. Don't play second fiddle to anybody. Have the best of everything. Get best results for your labor. If you have a poor piece of land don't use it, but rent the best land you can find. Land rents readily now and is cheap. Put it in the best shape. Work hard but illuminate your mind out of drudgery by the pleasantries of the things which are to come. Make a beautiful home and a competence, the beacon light you are to follow, and dispel instantly every thought of failure.

Anticipation is sweet, often sweeter than reality, hence we may enjoy the future in the present. Nothing is so fascinating as fancy fruit growing. It is a continuous feast to the imagination. The great circle of friends who are to reward you as customers will long for your coming and envy your success.

## NEW SEEDLINGS.

In the past I have devoted my time to breeding up and increasing the value of old standard sorts by restriction and systematic selection of *Ideals* until they are exceptionally strong in breeding or fruiting powers and possess a robust constitution, and now, with other facilities as perfect as can be devised, I propose to inaugurate an extensive system of breeding seedlings with the hope of combining the good qualities of parents by systematic crossing thereby eventually securing the ideal variety in both fruit and foliage.

**Our facilities** and experience with varieties are at the disposal of those who have discovered or originated new varieties free of charge.

Careful records are kept throughout the season and a definite report made of their behavior. Under no circumstances will they be propagated from for the sale of plants or allowed to leave the grounds without the consent of owner. Plants for testing can usually be sent by mail.





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# NOTICE TO PATRONS.

The plants herein offered are propagated from **PURE PEDIGREE STOCK** and ideal plants, as explained in the chapter on "Improvement of Plants." I am confident they are the only plants obtainable propagated in this manner and that their fruiting vigor cannot be equaled. While I practice the highest cultivation I know how to give, I have demonstrated that the vigor of my plants has been the basis of my success.

## Orders Must Amount to One Dollar.

The correspondence, postage, and booking orders for less than that amount are only filled at a loss.

## Substitution.

We desire to furnish each customer exactly what he orders, but sometimes find the variety all sold before his order is reached, all orders being filled in the order in which they are received and booked. If no substitution is permitted we are obliged to disappoint the customer by returning the money late in the season. There are several varieties in the same season and of equal value, and if we are out of the variety ordered, and substitution is permitted we will add 15 per cent in number to the plants substituted. Unless you expressly state "No Substitution" we will understand you desire your order filled as above stated. There is very little danger of not getting the varieties desired, if orders are sent in early.

## Price of Plants.

The prices quoted are net, and the lowest at which they can be grown and placed on the market. This list abrogates all former price lists. Plants cannot be furnished at these rates in July, August or September.

The price is for the quantity specified, but not less than six of any one variety will be furnished at dozen rates, 50 at 100 rates, 500 at 1,000 rates. Plants at 1,000 rates can only be sent by freight or express.

## No Discounts and No Agents.

In view of the fact that so many tree dealers and agents have used my catalogue, and representing themselves as my agents, and then delivered cheap plants from other nurserymen, thus greatly injuring my reputation, I am forced to announce that I do not accept orders from agents. No other nurseryman in this country propagates plants by my method, so when an agent represents he is selling pedigree stock, it will be safe to give him the go by.

## Terms

strictly cash with order. Orders are booked when one-third the amount is remitted, and balance before shipment. Plants will be sent C. O. D., if one-third is remitted with orders.

## Order Early.

All orders are filled in the order in which they are received; hence the earlier they are sent in the better.

## How to Remit.

Send money by postoffice order, bank draft, express order or registered letter. I cannot be responsible for money sent loose in a letter.

## References.

You can get my commercial credit and standing at any bank, factory or store using R. G. Dunn & Co. or Bradstreet's commercial reports; or write to First National Bank, postmaster, agents American and United States Express Companies, Ionia or Three Rivers, Mich.

No charge will be made for packing, crates or boxes and delivery to forwarders.

## Plants by Mail.

Plants are packed with spagnum moss, oiled manilla paper, with leaves exposed, so that they will go safely to any part of the United States for one cent for each two ounces (or eight cents per pound), and to Canada at one cent per ounce. We send plants as far east as Nova Scotia, and west to British Columbia with entire success.

## Postage

is as follows which must be added to price list: Strawberry plants, 5 cents per dozen; 25 cents per 100. One year grape vines, 10 cents per dozen; 25 cents per 50, and 40 cents per 100. Raspberries, 10 cents per dozen, 50 cents per 100.

## Express Rates.

Express charges are twenty per cent less than general merchandise to any part of the country.

## By Freight.

We have through car service every night over the Michigan Central and Lake Shore & Michigan Southern to Chicago, Toledo and Detroit, making close connection with all railroads reaching those points. Freight rates are very low and they generally go through on time, but sometimes delays occur, but we have tracers sent promptly when notified that they fail to arrive on time. Courts hold that property in transit belongs to consignee and railroads and express companies are responsible and must pay for perishable goods spoiled by undue delay in shipment. If no shipping directions are given we use our best judgment without assuming any responsibility.

## Taking Up Strawberry Plants.

The whole row of plants is taken up, and all those poorly rooted are thrown out. The fork used for the purpose is so constructed that plants are not bruised or roots broken off. All dead leaves and stems are picked off and roots straightened by such a system that from the time they leave the ground until they are ready for shipment they are not exposed a half minute altogether.

## Guarantee of Genuineness.

The plants being propagated in special beds and labeled when taken up, would seem to preclude the possibility of mistake, and I guarantee plants true to label, with express understanding that if a mistake happens to be made, I am not to be held for any damages beyond the amount received for the plants.

## Guaranteeing Results.

We send plants with entire success to the most distant states, to anybody and everybody who order them. I am exceedingly anxious that they shall meet their highest expectations and to this end will do all in my power to contribute to success. But after they are delivered to express companies or railroads they belong to the purchasers and I have no control over them. I do not know what treatment they are to receive, hence you can readily see why I cannot, and do not guarantee any results whatever. My responsibility ceases when delivered to express or railroad.

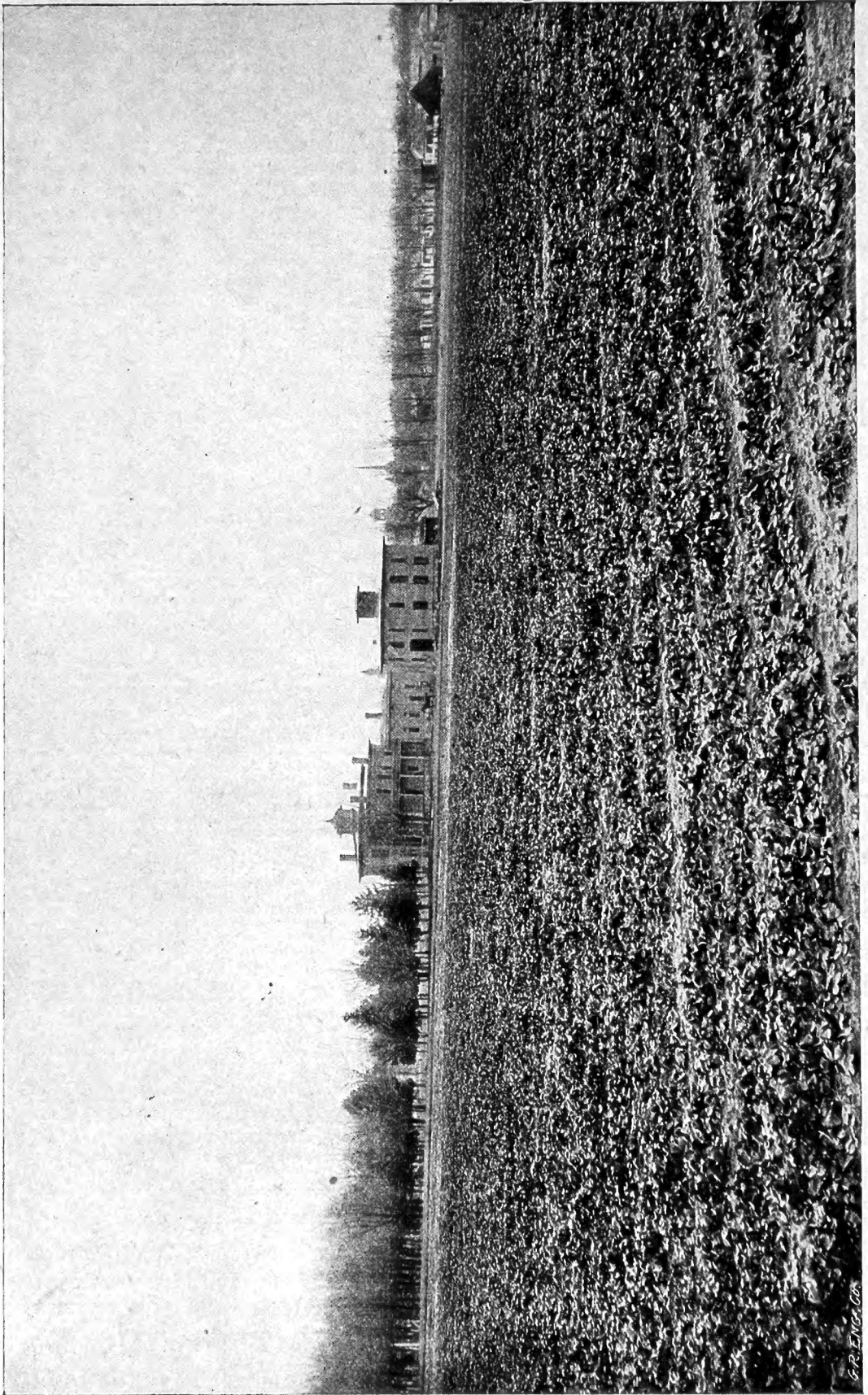
## Orders are Acknowledged

as soon as received. If you do not hear from us after a reasonable time, write again.

## This Pamphlet

Will be revised every year, giving all the new ideas and modern methods of culture, and will be sent free to any one requesting it. If you do not receive one by Jan. 20, 1898,

**.. SEND FOR IT ..**



VIEW OF RESIDENCE AT THREE RIVERS LOOKING SOUTH FROM CENTER OF STRAWBERRY PROPAGATING BEDS. (PURCHASED WITH GREAT CROPS OF SMALL FRUITS.)

G. R. ENGLER CO.