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R. M. KELLOGG'S

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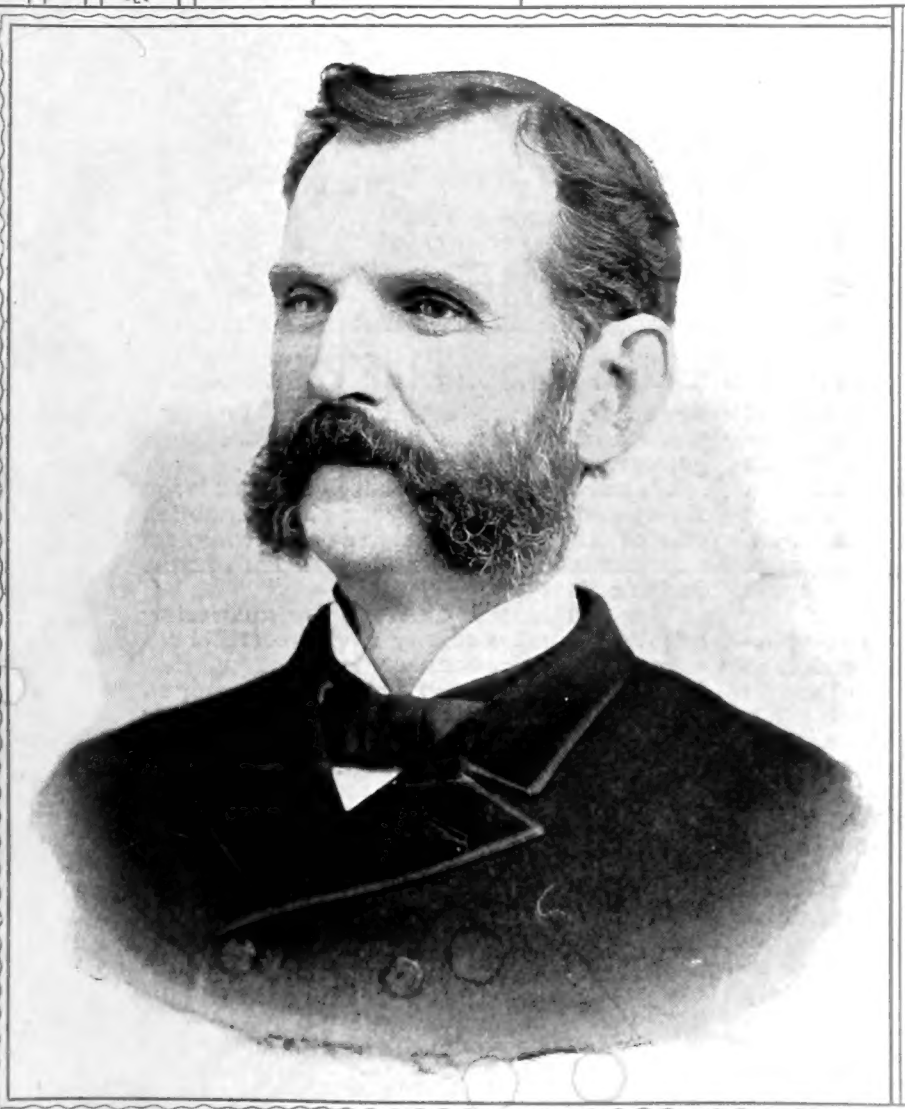
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Great Crops OF Small Fruits

✿ AND
✿ HOW HE
✿ GROWS
✿ THEM



Established
in
1869

Being the improved methods of propagating
plants and increasing their fruiting vigor,
as well as of general cultivation on the



Rushire Fruit Farm Ionia, Michigan

One of the largest plantations of small
fruits in central Michigan

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SEP 20 1920



ANSWERING QUESTIONS FOR FRUIT GROWERS THROUGH THE PHONOGRAPH

The commercial phonograph is the most marvelous invention of the nineteenth century. On the right of this office sits Mr. Kellogg with the daily mail before him. In his right hand is seen a funnel shaped tube connecting with the phonograph. After reading and carefully considering a letter, the answer is quickly talked into this machine where every word is accurately registered, to be repeated later by the phonograph to an expert typewriter, and thus the answering of this great mass of correspondence, often exceeding six hundred letters in a single day, is quickly disposed of, giving time for personal supervision of all the departments of the farm operations.

I am often asked how I can accomplish so much. My answer is that nothing is done at haphazard.

The whole work is systematized, and under the supervision of a trained foreman in each department, so that it is impossible for any employe to do bad work or be negligent without our being able to detect and fix responsibility on the right person, and each one is held to a strict accountability, hence the very best results are secured in every instance. If we had an **experimental garden of our own** in every locality in the United States we should have little better facilities for gathering information than this great mass of correspondence affords. These letters come from every State and Territory, Canada, Nova Scotia, and British Columbia. They tell of their success and failures, the remedies they have used and methods adopted, and the various experiments with different varieties, so that you can readily understand how I am able to determine with some degree of accuracy the best thing to be done under given circumstances.

We have been aided by the bulletins of all the experiment stations and horticultural journals, and brought in contact with emi-

nent horticulturists while doing institute work and delivering lectures before fruit growers meetings in different states.

We have recently purchased another large farm, and the coming year shall establish one of the most extensive and complete experimental gardens and small fruit farms in the country.

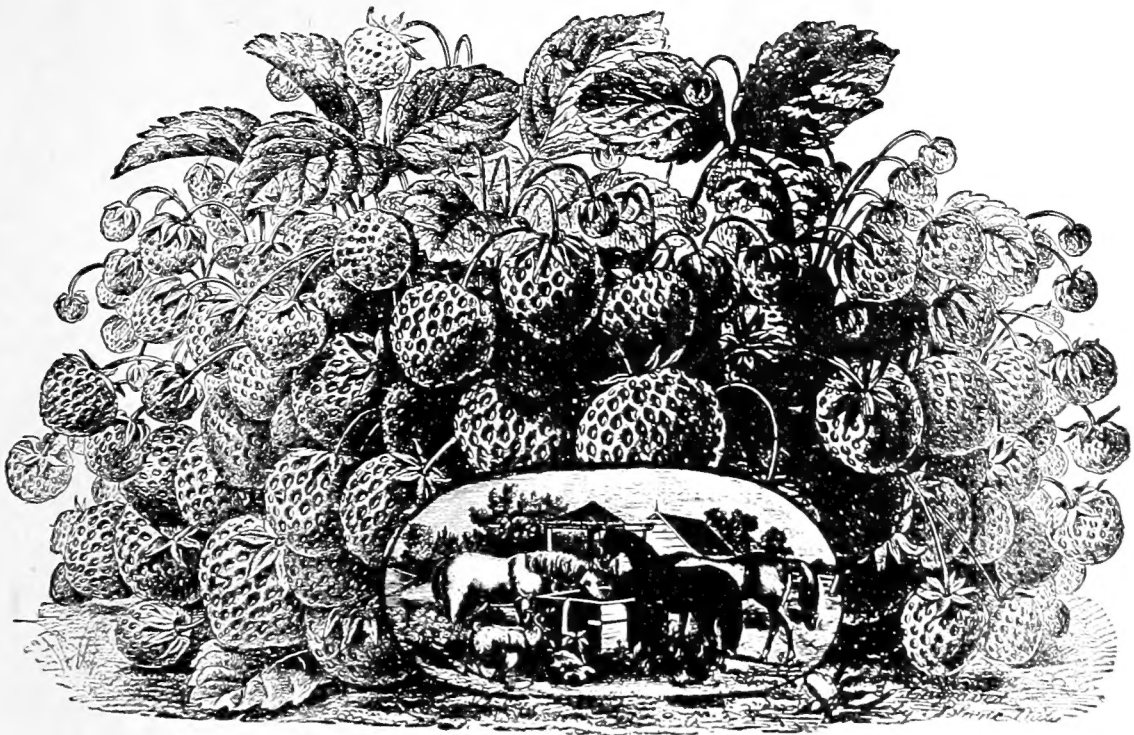
We make no charge for answering questions, and cordially invite correspondence on all topics connected with our specialties (enclosing stamp for return postage). State your case fully, giving details of your plans, with description of your soil and location, what you propose to do and how you intend to do it, and don't forget to mention what particular success you have had with different varieties, and you may expect as prompt reply as possible.

In no case will the prospective sale of nursery stock have any influence in shaping advice. It is now and will be our highest ambition to enjoy the unlimited confidence of fruit growers and correspondents, and all questions are answered with that end in view.

Testing new varieties is an especial feature of our experimental gardens. We shall be glad to receive and place in our trial grounds new and promising varieties, and make an accurate report of their behavior, and we assure originators that their plants will neither be propagated from nor allowed to leave the farm without their consent.

Send the name of your friends who are interested in small fruit growing and we will mail them a copy of this pamphlet free, and write your name and compliments on each, so they will know to whom they are indebted for it.

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.



PEDIGREE IN PLANTS AND ANIMALS.

THE BEGINNING.

When I began to practice what this pamphlet teaches, I soon found myself growing the largest crops of the finest berries, which sold at the highest price and gave me name and fame and such a command of the market that my products were always sold in advance at a price I myself fixed upon them. Although the yield has been more than doubled under this system, I have never been able to keep abreast of the increase of customers.

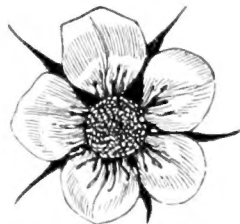
The people demand a better grade of fruit delivered to them in better shape and stand ready in every community to richly reward the person who can furnish it. It is the poor fruit that people will not eat that gluts the market. In the following pages I propose to point out in detail some of the methods I have employed to produce this result.

To grow strictly fancy fruit does not involve an extra amount of labor, but we must adopt better methods and look for causes which produce desired results.

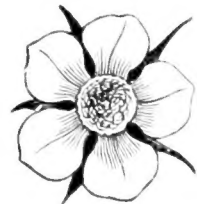
Fruit growers are accustomed to look upon one plant the same as another without any regard to its history or pedigree. Indeed, they regard it as an unconscious, inanimate thing, incapable of responding to generous treatment or congenial surroundings. This is a grievous mistake.

Plants are male and female. The sexual organs have all the different parts and each bears the same office as that of animals, and fecundation takes place for the multiplication of their species just as it does among animals. All fruit grows only to multiply species, and to this end God gave to every plant as he did to every

animal an almost uncontrollable desire to accomplish this object, and when left to itself unrestricted will throw its whole life and being into this one effort, even to utter exhaustion which results in impotency and inability to fruit.



STAMINATE, OR
MALE FLOWER.



PISTILLATE, OR
FEMALE FLOWER.

Take the finest thoroughbred stallion to be found and let him give all the service he can possibly render. His first colts will be true to his type, but will rapidly deteriorate until the last "get" will be only scrubs. He will soon be in such a condition of exhaustion that no amount of feed or good care will enable him to stamp his good qualities upon his offspring, and he soon becomes a scrub himself. When an animal is once seminally exhausted he cannot be restored to his former value by any process of treatment and is abandoned for breeding purposes.

Let me repeat with emphasis that the fruit or pulp grows only as a receptacle for the seeds to develop in and wherever the pistils are not fertilized or impregnated by the pollen from the male plant or the pollen is weak in potency the fruit will not develop.

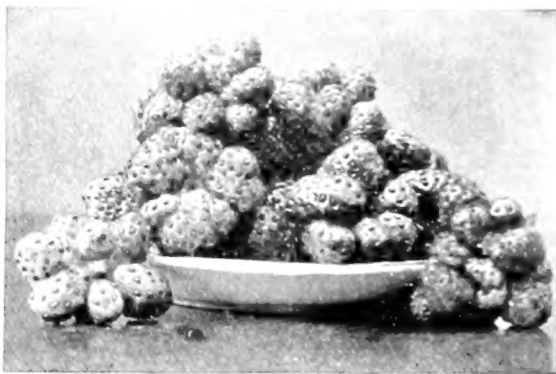
Like the horse above referred to, if the male plant has been allowed to secrete and mature pollen to exhaustion thereby destroy-

ing its potency or life giving power, the pulp or fruit will be scrubby and fail to attain its natural size, nor will it take on the same brilliant color, firmness or flavor.

Good culture and plenty of manure will help it but it cannot be made to furnish the potency and vigor necessary to the fullest development of fruit, without the male plant has been restricted to its ability to give the greatest vigor to the seed. Have you ever noticed that when apple trees bloom to excess—"white as snow"—that comparatively little fruit sets, and often for several seasons following they bear very little fruit. Excessive shedding of pollen explains the whole matter.

What is the remedy? How are we to make every plant fruit and the whole row be evenly loaded with fine specimens? I answer, adopt the same measures used by stock-breeders. Restrict pollen and seed bearing and keep them within their ability to impart to pollen and seeds the highest potency so that when the pistils are impregnated it will not only be sufficient to bring life into existence but will give to the seeds the greatest vigor and cause the fruit to take on the highest degree of development.

But let us stop here and inquire what has been the universal practice of fruit growers in this regard. Strawberries have been allowed to open their flowers year after year and throw their whole strength into this pollen production until they cannot impregnate the pistils of the flower.



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

Not one fruit grower in a thousand has given this subject a single thought, and so not a plant can be found among them which is not more or less sexually debilitated. I appeal to you as a grower, examine your own plants and those of your neighbors and you will find hundreds of blank plants (not fruiting). Some have dwarfed and bottony fruit, others have one or two fair specimens while here and there are plants fruiting fairly well, all showing different degrees of exhaustion or partial recovery. It is impossible for such plants to give a return for the care bestowed upon them.

Bear in mind the passion to multiply and fruit would compel them to fruit heavily every year unless there was a good cause for failure.

Plants, like animals, are subject to diseases which extend to every part of the plant and when we make cuttings from them for propagating purposes, we carry the disease or weakness into the new plantation. In selecting ideal specimens, entirely free from disease and insect pests, we eliminate or throw out all these defects, thus securing healthy foliage, uniformity in fruit, and great productiveness.



SMITH'S SEEDLING.

Strawberries multiply in two ways, by seeds and runners. They first throw their energies into reproducing themselves by seeds (or fruiting). If they are allowed to shed pollen each year without restriction, the pollen as previously explained loses its potency and the pistils become weakened and it will then make a mass of foliage and runners, but produce but very little fruit.

Many growers labor under the impression that a strawberry runner is a seed instead of a mere bud or cutting, and when we take runners from it, it is only dividing the old plant and whatever disease, weakness or exhaustion the old plant contains, is in the new runner, and its fruiting capacity and vigor of foliage will not exceed that of the mother plant, except so far as it is strengthened by new roots and new soil, but the grower cannot receive the same reward for his labor he would if cultivating healthy plants, possessed of strong fruiting power. **The failure of berry men** to recognize these defects, has caused more loss and disappointments and driven more beginners from this most delightful and profitable part of the whole system of agriculture than all other causes combined. A large majority of growers are today expending their money and labor on plants utterly unable to respond to the most generous treatment. *Let me ask candidly,* do you know anything about the history of the plants you are cultivating?

What is bud variation? All varieties of plants sport more or less. That is, they change from the usual type, both in fruit and foliage. Sometimes they are decidedly

larger, finer flavored, more vigorous in every way. Then again they are much inferior. The general tendency is to go back to the wild state. Now we may take advantage of this and fix our ideal of what a plant should be and every year accumulate good qualities, by propagating successively year after year from those that vary in the right direction, until we have reached the greatest perfection. **Long and continued selection** will fix the characteristics in the variety so the tendency to reversion or going back to original type has disappeared.

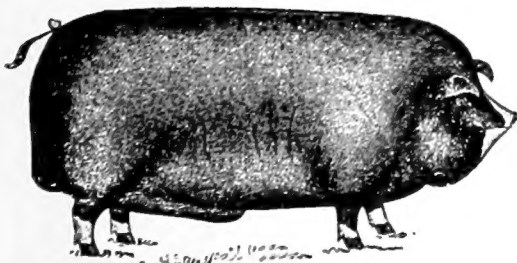
A PEDIGREE PLANT.

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 continued selection of ideal plants through a long series of years. Taking advantage of bud variation to secure the greatest uniformity of fruit and by restriction of pollen bearing to secure the highest development and productiveness.

Breeding up plants. Having given the definition of a pedigree plant, let me give in detail my method of producing them. Breeding up plants is a work involving many years of study and painstaking. We must study the variety until we know all its faults and learn how to correct them, and must be able to detect the slightest variation in the right direction.



THE OLD RAZORBACK.



BRED UP BY SELECTION.

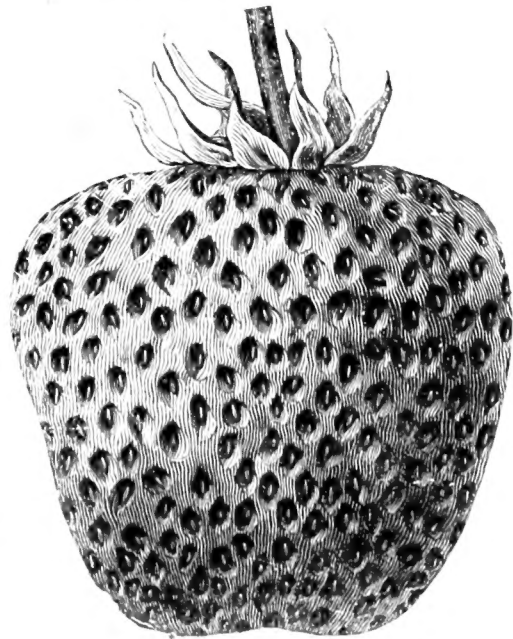
Early in the spring, as soon as buds are developed and before blossoms begin to open, we go to the fruiting field set the previous year, to search for the ideal plant from which to propagate. It must be stocky, bright, clean and thrifty, with large crowns and fruit buds. We select as many as pos-

sible, setting a stake by each and numbering it, so that the field book shall contain a perfect record of each plant, using a scale of one to ten in noting all points of excellence.



WILD STRAWBERRY.

In all perfect flowering varieties we cut off all blossoms except one or two before they open. This is a vital point as the potency of pollen can only be increased by restriction. When remaining blossoms are open, stamens and pistils are carefully examined and all plants not showing proper development are thrown out.



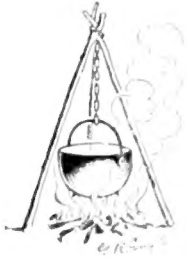
THE MARSHALL.
(Bred up by selection.)

In pistillate varieties we do not remove the blossoms until after they are open because there are always more or less stamens (male organs) which are only partially developed but may have enough vigor so that if stimulated by restriction they might impregnate their own pistils with their weakened pollen and thus greatly injure the development and growth of fruit. In selecting "ideals" of pistillate varieties we choose those destitute of stamens, so that the pollen from the perfect flowering sorts set near shall fertilize them.

Seed bearing being the great exhausting element must be held in check the first year. Two berries only are allowed to mature on each plant selected to determine color, shape and general good qualities. When all is done the **blue ribbon** or stake is given to the one showing the largest number of points of excellence. In order to place this plant under the most favorable condition, we now hoe up all plants near it and give it extra cultivation and as soon as runners appear they are rooted in small flower pots sunk in the ground under the plant and when well rooted are cut off and trans-

ferred to a special propagating bed previously prepared for the purpose, where they are allowed to make runners for next year's planting.

A test. If you desire to test the correctness of this theory as to seeds producing exhaustion, take two cucumber vines; on one pick off the young cucumbers as soon as set and before seeds begin to form. New flowers will appear and vine continue to bear till killed by frost. On the other plant pick no young cucumbers, but allow all to ripen and as soon as seeds begin to form no new blossoms will appear and the vine will turn yellow and die of sheer exhaustion from its effort to bring so many seeds to maturity. It is well known among florists that to pick all flowers before they go to seed will induce new bloom to start, all going to prove that seed formation is the great devitalizing process we are to guard against.



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.

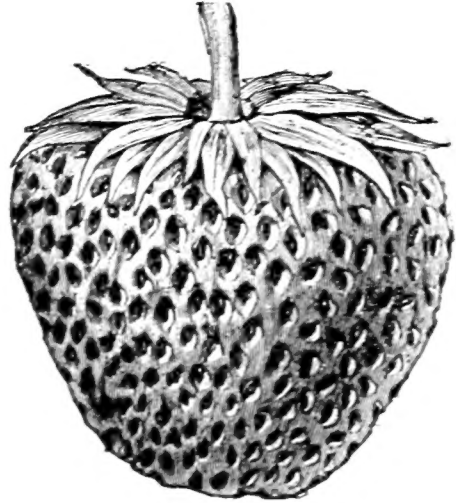
V. **That a plant taken from a pedigree plant** possesses its good qualities in as high degree as the offspring of thoroughbred animals.

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.

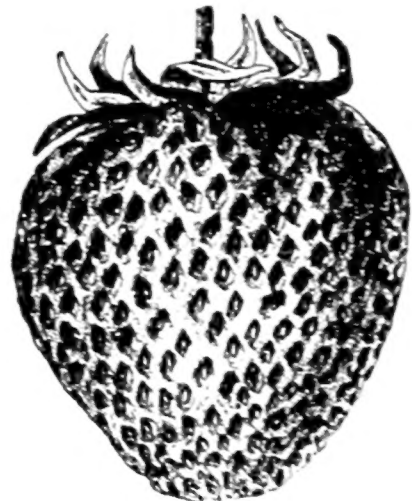


THE EPPING.

WILL IT PAY?

It will be well now to figure up whether it will pay to put on this extra work and use thoroughbred plants. Let us make some rough estimates and get some data that will enable us to determine the difference. It is not to be expected that we can control all the elements—frosts and storms—and yet we can guard against them by proper tillage so as to produce quite uniform results.

My farm was established in 1869, and while some seasons have been a little below that of others we have never had an unprofitable year. If in your particular location and environment you might not meet with the



THE PRINCESS.

same success attained here you can reasonably expect to approach it very closely. **On strawberry crops** we rarely go below three hundred bushels per acre and have exceeded five hundred bushels. About one hundred and fifty bushels of raspberries and one hundred and fifty to two hundred bushels of blackberries per acre. Understand

this is fancy fruit and brings the highest price. Now for the additional cost:

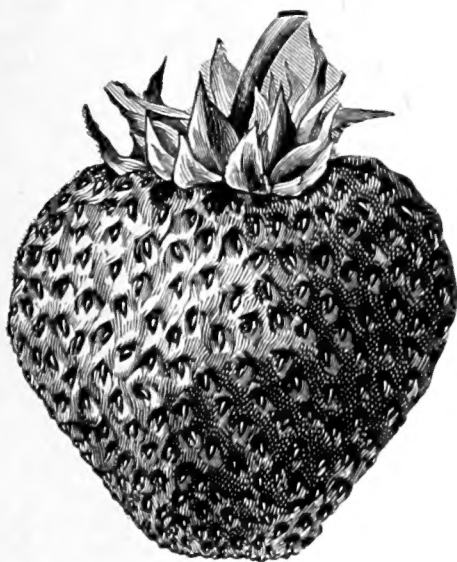
Pedigree plants cost from \$1.50 to \$2.00 per thousand more than "alley plants" or those from between the rows or plants grown on swamp land, all of which are of low fruiting power. Subsoiling costs the same as plowing. Extra harrowing, rolling and surface fitting not over \$4.00 per acre. Here we get all the manure we can draw for nothing and unleached furnace ashes for five cents per bushel.

Credit labor saved by using automatic runner cutter and the time in weeding by machine, etc., and the extra time saved in selling by having fruit that will secure permanent customers and the further fact that such fruit always commands several cents more per quart to say nothing of the large annual sale of plants.

Now visit growers in your vicinity and ascertain average yield and grade of their fruit and make all the allowance you think necessary and get the difference of profits of the two systems.

You need not fear competition from old growers. Depend upon it they will stick to their old ruts. They will continue to do things as their fathers did.

I have the pleasure of a wide acquaintance among fruit growers and while many towns are surrounded with fruit gardens not one in twenty makes an effort to grow fancy fruit but all sell "slop stuff" in the open market for what they can get instead of an extra price for fine fruit to select customers.



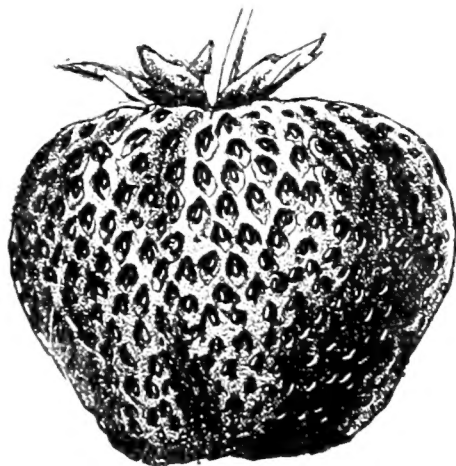
THE GREENVILLE.

GETTING A START.

You may say you cannot have all these tools and do all this work, and therefore cannot make a beginning. It costs too much. Very well, you do not have to have them all to make a beginning. I did not have them at first, neither did I have fine horses and carriages and a fine bank account to meet all contingencies and pay bills at sight, but after I got my plants worked up to high fruitage these things came to me very fast.

If you can't do it all at once, do what you can.

Begin right, go ahead, follow the directions of this booklet carefully and if you get stuck, write me full particulars and I will give you the benefit of my experience. It gives me a great deal of pleasure to give a beginner pointers that will place him on his feet.



THE ENHANCE.

No capital. If you do not have the capital to buy land, rent the best piece of land you can get for a term of six or eight years and go for the manure piles. What I have done you can do. I had to study out these things as I went along. I had no one to give me a pointer and it costs many dollars to experiment and prove the correctness of the ideas advanced in these pages.

Don't be a wage earner all your life. Be independent. Be your own master.

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. I have now pur-

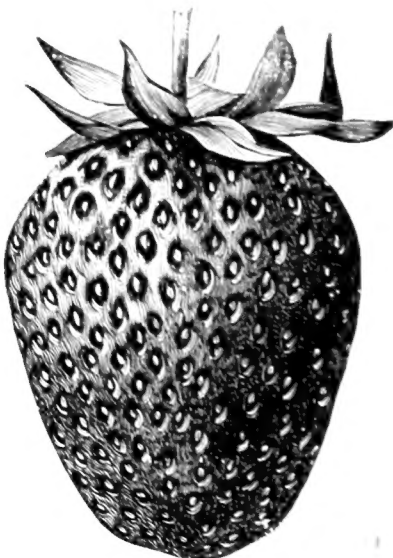
chased a new farm and shall conduct extensive experimental gardens, growing all the fruits introduced to the public so as to determine their true value before sending them to customers.



THE BUBACH.

SPURIOUS VARIETIES.

Where plants are fruited more than once many berries are allowed to rot on the ground and the seeds grow and take their place among the other plants. These seedlings are almost invariably from berries which were not large enough to pick. This is usually the result of low potency of pollen. Now these plants may and usually do resemble the parent plant and yet not one in ten thousand will be equal to them in fruiting qualities. They always make runners very much more freely than good fruiting stock and thus soon thoroughly occupy the ground and drive the genuine plants out. Thus it is that nursery men who keep "stock beds" are deluging the market with this mixed or spurious stock, incapable of giving returns for labor expended on them.



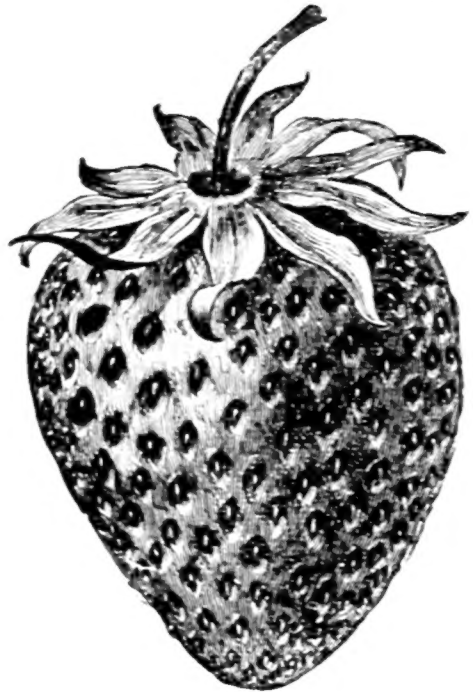
THE HAVERLAND.

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 LOVETT.

THE SEASON OF 1895

Has proven the most disastrous for many years. Heavy May and June frosts were followed by a drouth without a parallel in the history of the country. The season of 1894 was precious little better. They are seasons not at all likely to occur again in many years. It will weed out only the poor and slovenly growers and elevate the standard of production, and thus greatly increase consumption of fruit by raising the quality.

Dry and frosty seasons have always been our most profitable years (we have never had an unprofitable season). There is no



THE MODEL SMALL FRUIT WAGON.

occasion for discouragement. Farmers lost their hay crop, wheat and all other farm crops were greatly reduced and prices not proportionately increased, yet none of them will abandon their farms. Compare the standing of fruit growers with any other branch of agriculture and you will find them at the head of the list even in the drouthy, frosty seasons, of 1894 and '95.

THE MARKETS.

Beginning the last of April with asparagus, we are on the market every day till frost comes, finishing the season with grapes. Asparagus is cut every day until strawberries are well in market and raspberries, blackberries and grapes overlap each other so there is no break and customers are held throughout the season. We are taking in money every day all spring, summer and fall. Have something to offer your customers every day and they will soon get the idea they can't get along a single day without fruit of some kind. If they tire of one kind, have some other variety to tempt their appetite, so big in size, so bright in color, so delicious in flavor that they cannot resist.

One of my customers who had been examining his family ticket one day approached me with a frown and said, "See here, Kellogg, you are ruining me. That berry ticket actually shows over four dollars per week for berries with only four in a family. Before you attacked us I never had to pay over fifty to seventy-five cents per week for what berries we wanted to eat. I can't stand it," to which I replied that I had tried to get his wife to "slow up" as I did not have enough for other "waiting customers," but it was no use. Later when the season's bill was presented for payment I repeated the statement of his wife who said that the family had had a great feast, had never been so healthy, and that all doctors agreed a fruit diet made a clear head, better brain, blood and brawn and that he, himself, had been able to earn more in conse-

quence of it, and so the bill was cheerfully paid with an urgent admonition not to forget him next season.

The following is the family ticket we use. Print on manilla card board about three inches wide and eight inches long:

This card is retained by the customer.

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.
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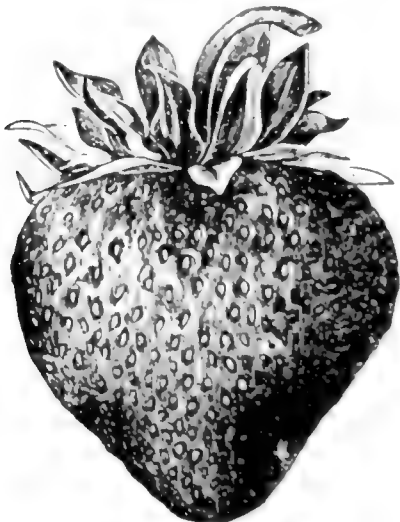
The market is what you make it. Furnished with poor and flavorless berries, a small dish once per day will suffice for each member of the family. Given a large and luscious berry and each one passing the *big* dish back a second and even third time to be refilled makes the quarts disappear. I have made most money by selling direct to regular customers private families. I have a beautiful wagon finished as fine as a phaeton and lettered in large gold letters artistically shaded, drawn by a big, shiny black horse, with well blackened harness and polished brass trimmings.

I have a second wagon which brings the berries from the field and I remain on the market all day. I always wear shoes well blackened and don't wear a dirty shirt collar. A neat personal appearance is cheap and goes a long way among the tony families who "dispense cash freely." Never give

a customer berries in a dirty box or wrangle about the price.

Make your price what it should be and stick to it. Never overcharge nor accept a low price for a fancy article. If you do not like selling to private families you will have no trouble to arrange with a leading grocer to handle all your fruit, by having it announced in all the local papers that he sells your fancy fruit. Keep the paper full of "squibs" about your berries. It costs something but pays big. Customers will flock to your dealer so he will be glad to handle your fruit and pay you full retail price, as customers will purchase many other things. He will not expect over one cent per quart in any case for handling them. We have families in Detroit and Saginaw who have one or more bushels sent them direct every day by express and they divide them among themselves. Other "groups" see the berries and order and thus orders come from all directions so we are put to our wits end as to how we can supply the demand.

A glutted market. It takes only a small quantity of little dirty berries that people will not eat, to glut any market. I have never seen the market fairly well supplied with fancy fruit. Enquire of your dealers and they will tell you the demand for fine fruit has never been met.



THE WILSON ALBANY

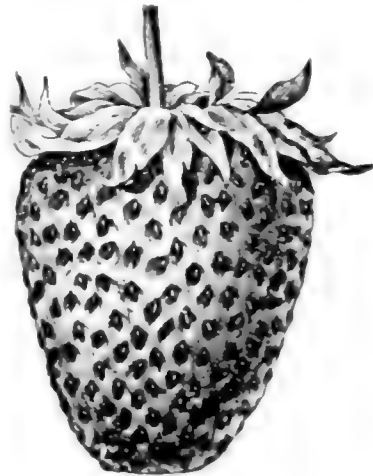
THE FARMER'S FRUIT GARDEN.

No place on the farm will furnish so much health, pleasure and profit as a small plat 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 BANQUET.

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

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.

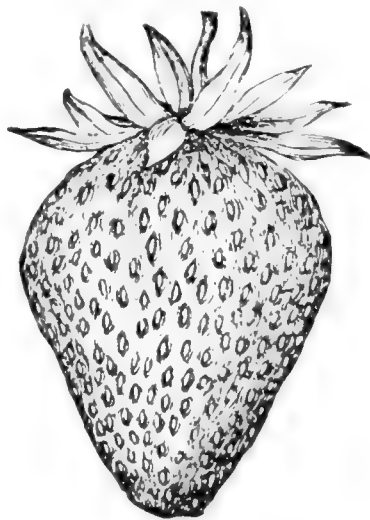
HOW PLANTS FEED.

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.

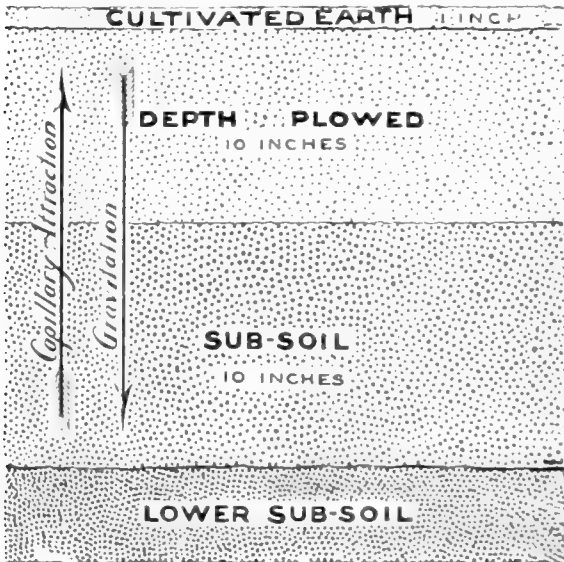
WHY WE PLOW AND SUBSOIL.

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

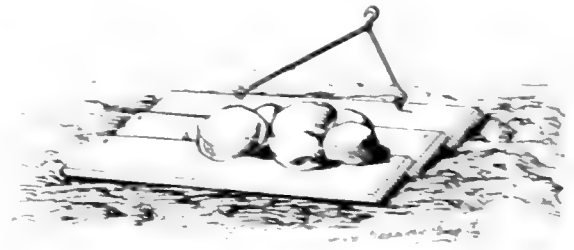
of the plant. We take the weeding machine or fine tooth cultivator and separate the particles of earth, breaking up the capillary passages so that gravitation will not let the water come any higher and the loose earth and dust excludes the sun and wind so the water cannot get away, but will collect under 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.

As an evidence of the value of this method of cultivation in a drouth permit me to cite my plantation of forty-one acres of strawberries set last spring. The year 1895 will be long known as the year of the great drouth in Michigan.

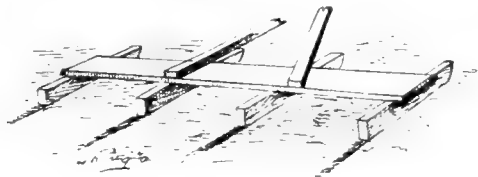
No rain fell the previous fall and the deep snow of winter went off when the ground was frozen and found its way direct to the rivers. There were no spring rains nor did we get any more than enough to lay the dust until nearly the first of August, and yet there was not a day during the summer when by removing less than an inch of the surface you could not take up a handful of earth containing so much water you could mould it in the hand and the growth of our plants has been a marvel to all who have seen them. I have never seen such truly large and magnificent plants. They were cultivated regularly twice per week until fall rains came.



A FLOATER.

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

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 siled 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.

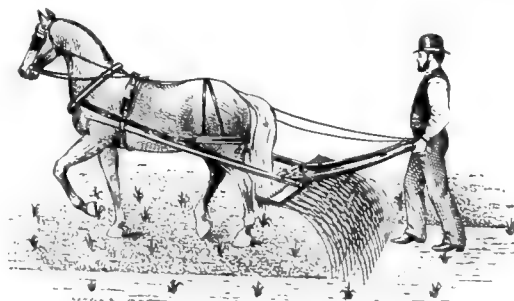
We herewith give a description of some very desirable tools with name and address of the manufacturers. We do not handle them and you should address the parties direct, who will advise you as to where they can be had, with price, etc.

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 sason opens.

The Perfection plant setter and automatic runner cutter can be had only of R. M. Kellogg, Ionia, Mich.

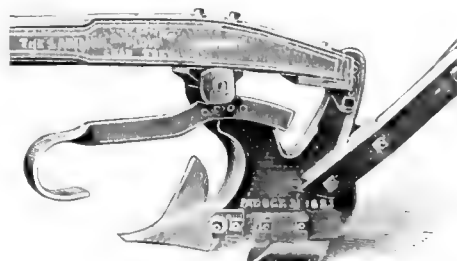
Among the greatest inventions of modern times is the **weeding machine**. We do very little or no hand weeding in our straw-

berry 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



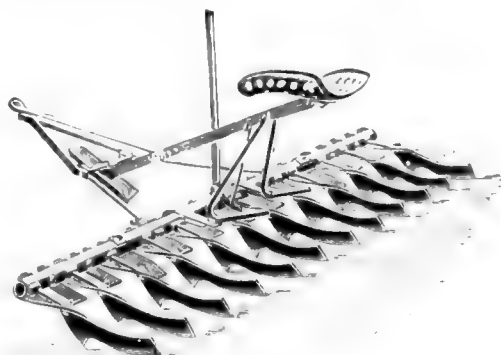
THE Z. BREED WEEDER.

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.



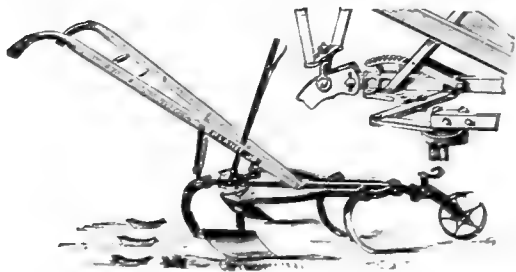
LARIMER SUBSOIL PLOW.

For a subsoil plow that breaks the strata fine and accomplishes the work to the greatest perfection and is of itself a perfect ditching machine, especially for laying tile, nothing equals that invented and manufactured by the Larimer Ditching Plow Co., Crab Tree, West Moreland county, Pa.

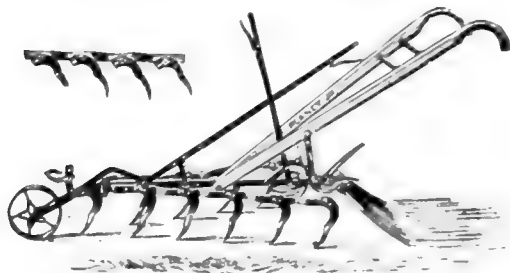


ACME HARROW.

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 fine, 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 Nash, Millington, New Jersey.



PLANET JR. HORSE HOE.



PLANET JR. STRAWBERRY CULTIVATOR.

In cultivators nothing approaches the Planet Jr. The twelve tooth with its pulverizing attachment, cannot be equaled. The horse hoe is made of steel and has a "hang" and ease in working possessed by no other make. They also make a complete line of garden tools which cannot be equaled. Manufactured by S. L. Allen & Co., 1107 Market street, Philadelphia, Pa.

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 three methods of growing strawberries, hill culture, 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.



(NOTE.—The above plant was photographed Sept. 23, showing five feet one inch. Nov. 10, another plants showed seven feet nine inches in circumference.)

New roots are constantly starting and going down deeper and deeper and spreading farther out in search of food and moisture to bring its great load of berries to the highest perfection in size, color, texture and flavor.

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

Its advantages may be summed up as follows:

The entire surface of ground admits of cultivation and the whole work of tillage can be done with weeding machine thereby conserving moisture during the most protracted drought and avoiding all hard work. The field can be kept in continuous heavy fruiting for five or six years without renewing the beds, while in the matted row it is necessary to plow under after one or two crops are taken off. The reason is that it is the seeds that exhaust the plant. There are as many seeds in a small berry as in a large one. By this method nearly all berries are large and are picked as soon as ripe while in the matted row each plant generally produces a large number of berries too small to pick and thus great numbers of berries are left on the vines to rot, thus sapping the vitality of the plant.

Light and air are the great promoters of plant growth. In the thick matted row much of the foliage is shut in from the light and cannot perform its duties in assimilating the food taken up by the roots and the development of fruit is greatly retarded.

Plants grown in hills spread out their foliage so light comes in contact with every leaf and a rapid and continuous growth is maintained.

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, and so may perform its service uninterruptedly for years. Additional fertilizers can be applied in the fall or winter and placed within reach of the plant without injuring crown or foliage which cannot be done in the wide matted rows.

The berries will sell for several cents per quart more than common matted row berries, often for enough more on the crop to pay entire expenses of cultivation, to say nothing of enabling you to choose customers, sell out quickly and get home early.

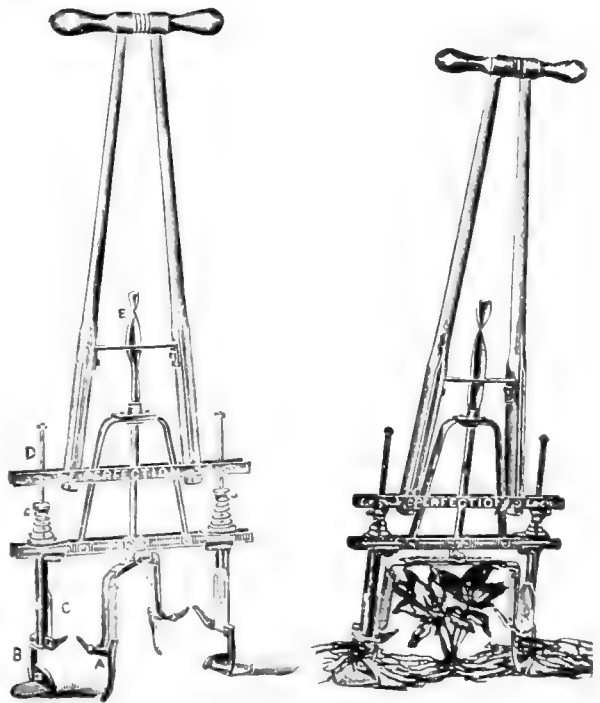
The picking can be done for half that of matted rows. The berries are literally piled up around the big plant and the pickers are able to gather them without hunting through dense foliage. It only requires a few of these big berries to fill the box.

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, Beeder-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 36x18 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*. During the past year some improvements have been made and its work is perfection itself. 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),



AUTOMATIC RUNNER CUTTER.

when the two 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. It is the only machine ever invented that will do the work well and fast. Not a runner can escape the fingers or knives, and they are so protected they cannot be dulled or broken. 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 commission to agents or reduction in price, and must be sold direct to planters. Only large stones or rubbish that would prevent the fingers from passing around the plant will interfere with its working.

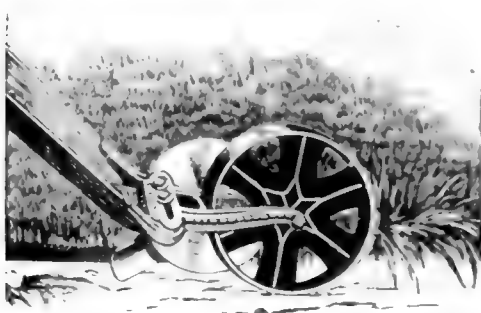


HALF MATTED ROW.

This is the next best way to grow berries. Make rows three and a 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 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 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. The rows should never be allowed to form over eighteen inches wide and plants from six to ten inches apart in the row. As soon as one new plant is formed take a sharp hoe and chop the runner off beyond it. We use the



PLANET JR. RUNNER CUTTER

Planet Jr. runner cutter which can be had of S. L. Allen & Co., Philadelphia, Pa., or any of their agents which are in all principal towns. Go along each side and allow the wheel to clip off the runners which forces the sap back to the first new plant, making it double its size by forming new crowns and additional roots and fruit buds.

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 or half matted row, and fruit is always of a lower grade and rarely more than two or three crops can be taken off before it must be plowed under.

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.

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 purpose. 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.

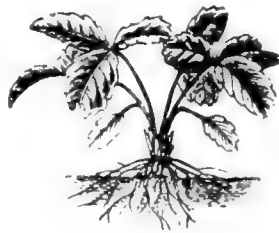
Set a plant and step on it in the usual way and then dig down by the side of it and see how many "rat homes" you will find with roots hanging in free open air (see figure). You will be surprised to find that often more than half are exposed. Another objection is that the lower ends of roots are buried 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.



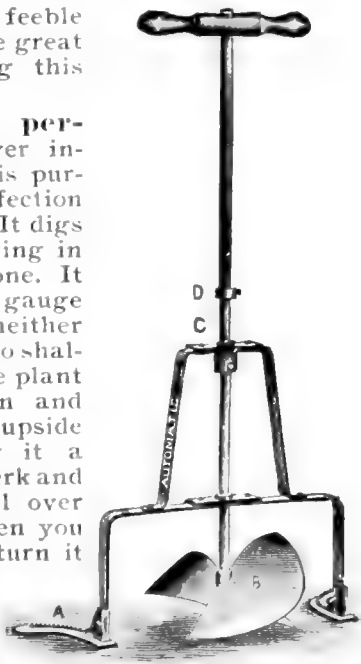
TOO DEEP.



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



PERFECTION PLANT SLITER.

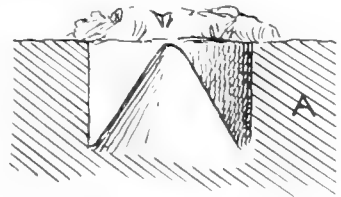
evenly around it. Then the dirt is quickly brushed back into the opening and firmed. The cone comes clear up under the center of the crown, the bottom of cone being about five inches in diameter and roots so distributed there can be no tangled mass as it gives a circumference and immediate root pasturage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

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.

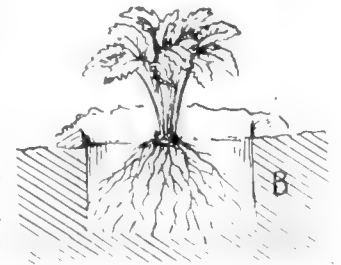
An absolute necessity. I wish to impress the necessity of loosening the earth around the plant by cultivating with weeding machine immediately after plants are set, so that capillary action will bring the water up above the roots and collect under the loose earth or dust mulch and nourish the plant during 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



THE CONE.
(Ready for the plant.)



SEPARATING ROOTS.



READY FOR COVERING.

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.

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 "	7,200		

RASPBERRIES, BLACKBERRIES, ETC.

3x5 feet	2,904	3x7 feet	2,074
3x6 "	2,420	3x8 "	1,811

PISTILLATE VARIETIES.

Why do people use them? Simply because there is big money in them. As already explained production of pollen is the great strain just at the time the fruit is setting and developing. The pistillate varieties are entirely relieved from this burden and can throw their whole energies into the most complete development of fruit, enabling them to bring a greater quantity to full maturity. In all of our plantings we use only perfect flowering sorts sufficient to impregnate the pistils of the female plants. The general tendency is to not set enough perfect flowering sorts to properly pollenize the pistillates.

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 mussed 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.

KESHIRE FRUIT FARM PICKER'S CARD

No. _____

1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16
17	18	19	20
21	22	23	24
25	26	27	28
29	30	31	32
33	34	35	36
37	38	39	40
41	42	43	44
45	46	47	48
49	50	51	52
53	54	55	56
57	58	59	60
61	62	63	64
65	66	67	68
69	70	71	72
73	74	75	76
77	78	79	80
81	82	83	84
85	86	87	88
89	90	91	92
93	94	95	96
97	98	99	100

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.

HOW MANY CROPS?

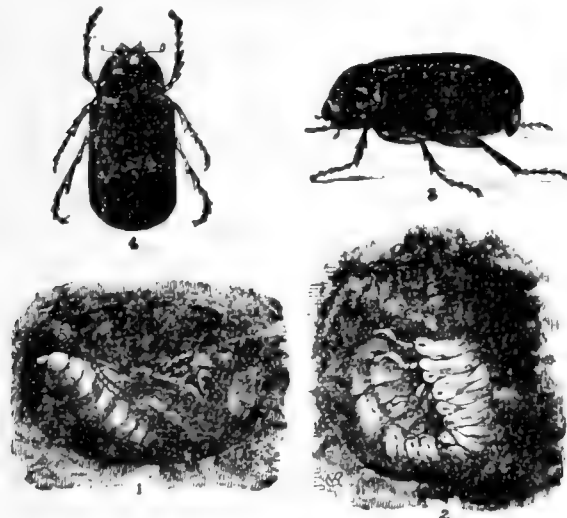
How many crops can be taken before plowing under depends on the method of cultivation. In hills fruiting vigor can be maintained from four to six years. In the half matted row two or three years and if matted very thick, one big crop ends the usefulness of the patch. If as explained elsewhere, the plants 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 crop costs 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.

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.

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 larvæ 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.

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.

The following are varieties of perfect flowering sorts to be set by pistillates as fertilizers, or may be set alone as they fertilize themselves, although I believe there is a decided advantage in setting in blocks as many flowers will not receive their own pollen. For convenience they are placed in alphabetical order:

Early—Beder-Wood, H. W. Beecher, Beverly, Burt Seedling, Banquet, Cyclone, Eleanor, Meek's Early, Michel's Early, Rio, Splendid, Tennyson, Van Deman and Wilson Albany.

Medium—Brandywine, Cumberland, Dayton, Iowa Beauty, Lovett, Parry, Pearl, Sharon, Smith's Seedling, Stranger, Sharpless, Shuckless and Wolverton.

Late—Dew, Enhance, Gandy (very late),

Jessie, Marshall, Mount Vernon, Muskingum and Parker Earle.

Pistillates which must have some of the perfect flowers ripening in the same season set near them. Set perfect flowering sorts every third row.

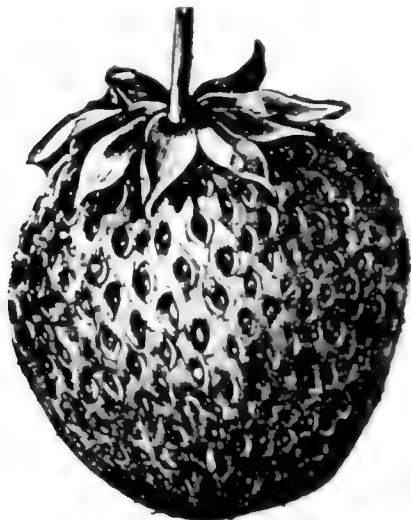
Early—Bisel, Crescent, Cloud, Miami and Warfield.

Medium—Bartons, Eclipse, Epping, Greenville, Haverland, Princess and Weston.

Late—Aroma, Bubach, Edgar Queen, Eureka, Jewell, Middlefield, Timbrell and Mary.

VARIETIES IN ALPHABETICAL ORDER.

Aroma (B). Berries large, bright color, very late and will likely take the place of Gandy. The berries are large, even and but few small ones. Moderately firm, but fine for near market. Quality very good. Foliage vigorous and will succeed on light land. Price 30c per doz., 75c per 100 and \$4.00 per 1,000.



THE BREMER-WOOD.

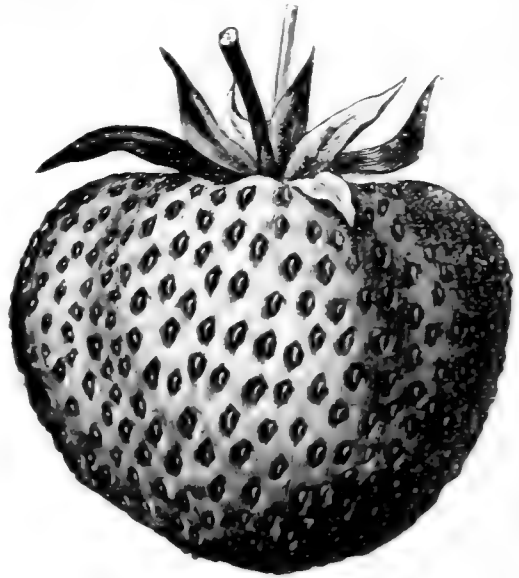
Beder-Wood (B). Enormously productive, very early, above medium size, and good quality. One of the best pollenizers for Warfield and Crescent. Price 25c per doz., 60c per 100 and \$3.00 per 1,000.

Bubach (P). A large late show berry of fine quality. Must have rich heavy clay loam; fails on light sand. Where it succeeds it is among the finest. Price 25c per doz., 60c per 100 and \$3.50 per 1,000.

Beverly (B). Medium early. Fruit large, conical and a beautiful glossy red, fine quality, foliage vigorous and excellent in every way. Price 30c per doz., 75c per 100 and \$4.00 per 1,000.

Brandywine (B). Plants received from introducer. No berry is receiving so many encomiums and beyond all question will come into general cultivation. Everybody growing it is loud in its praise. It is pronounced the most hardy in transplanting, vigorous in foliage and possessing more good points at experiment stations than any other variety. The berries are large and

ripen all over at once. 40c per doz., \$1.50 per 100 and \$8 per 1,000.



THE BRANDYWINE.

Burt Seedling (B). In general habit it somewhat resembles the Wilson. Medium size, a fine shipper and very productive. The Geneva experiment station placed it at the head for productiveness and I feel like according it that place. 25c per doz., 60c per 100 and \$3.50 per 1,000.

Banquet (B). Its great value lies in its quality. It more nearly approaches the wild strawberry than any other berry and should be in every garden where delicious fruit is desired. 30c per doz., 75c per 100 and \$5.00 per 1,000.

Barton's Eclipse (P). A luxuriant grower and heavy fruiter. Would do well on light land. Berries are large, quite firm, beautiful and of average quality. 25c per doz., 60c per 100 and \$3.50 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 drought splendidly and for this reason succeeds on light land. Berries above medium and ripens very early. 30c per doz., 75c per 100 and \$5.00 per 1,000.

Cyclone (B). Now here is a berry I wish to recommend first for great productiveness, vigor of foliage, and general good qualities. I believe it will succeed anywhere. No failures are reported. Everybody sounds its praise. Berries considerably above medium size, very early, fine color, uniform size and a splendid pollenizer for early sorts. I urge upon you to give it a trial. 25c per doz., 60c per 100 and \$3.50 per 1,000.

The Crescent (P). It's that old money getter and one that I have selected and constantly improved. No berry ever introduced has met with such universal success. While the quality is not so high, yet, when well grown, it ranks high as a market berry. It's a great berry for canning. Growers who have found their stock wanting are invited to renew it with this pure pedigree stock. 25c per doz., 50c per 100 and \$2.50 per 1,000.

Cumberland (B). As even and true as a top, a perfect cone shape, very large, moderately firm and very attractive in the box. A great advertising berry—one that sets people to talking about your fruit. Good quality, pale crimson in color. Medium early, good pollinizer. 25c per doz., 60c per 100 and \$3.50 per 1,000.

Cloud (P). Very vigorous in foliage and hardy, berries medium early, medium size, very productive, quality fair. Does well on light land. 25c per doz., 50c per 100 and \$3.00 per 1,000.

Dayton (B). Above medium in size, quite productive, quality high, foliage good, season quite early. 25c per doz., 60c per 100 and \$3.50 per 1,000.

Dew (B). One of the largest and richest

Iowa Beauty (B). One of the most beautiful berries in cultivation. Large size, fine shape, foliage strong and vigorous, quality good, berries moderately firm, a good pollinizer, season medium early. 25c per doz., 60c per 100 and \$3.50 per 1,000.

Meek's Early (B). An extra early berry with strong, waxy foliage on which there is never seen a spot of rust or sunburn. Very productive, berries above medium size and quality fine. An extra strong pollinizer for early varieties like Warfield, Crescent, etc. Few berries have become more popular in so short a time. Succeeds everywhere. 25c per doz., 60c per 100 and \$3.00 per 1,000.

Mary (P). One of recent introduction but of great promise. Berries very regular, large size, quite firm, bright color, high quality and in every way desirable. Season medium late. 40c per doz., \$1.50 per 100 and \$7.00 per 1,000.



THE CYCLONE.

Epping (P). One of the most vigorous and valuable berries, of large size and general good qualities. Roots deeply and stands drouth very nicely. Its fruit is large and regular and of fine quality. Beginning quite early its season runs to the latest. 30c per doz., 75c per 100 and \$4.00 per 1,000.

Enhance (B). The most productive perfect flowering sort and strong in potency of pollen. The proper fertilizer for all late varieties. Very large, dark crimson, good quality and possesses a flavor rich and peculiarly its own, succeeds everywhere. It is our main crop for a late berry. Has few small berries. 25c per doz., 60c per 100 and \$3.50 per 1,000.

Eleanor (B). Plants received from introducer last season. Described as the very earliest, bright scarlet color and enormously productive, equaling the Wilson in firmness. Well spoken of everywhere. Here the plants are very vigorous. 50c per doz. and \$2.00 per 100.

Eureka (P). Large, late berry, moderately firm, quite productive, good quality. 30c per doz., 75c per 100 and \$4.00 per 1,000.

Edgar Queen (P). Strongly resembles the Sharpless. 30c per doz., 75c per 100 and \$4.00 per 1,000.

Greenville (P). Another of the grandest berries introduced to the public in recent years. Strong waxy foliage, without spot or blemish. Deep rootage, succeeds everywhere. Not a failure reported. In fruit it is simply enormously prolific. Berry resembles Bubach, of large size and a good shipper. Let me urge you to give this a trial. Don't pass it. 25c per doz., 60c per 100 and \$3.50 per 1,000.

Gandy (B). The leading extremely late berry. Many growers have discarded it because they preferred Enhance which picks its last berries only a day or so before Gandy. Berries large, quite firm. 25c per doz., 60c per 100 and \$3.50 per 1,000.

H. W. Beecher (B). First year here. Original plants from introducer, who describes it as a great berry, large yielder, large berries and good quality. Experimenters speak well of it everywhere. 40c per doz. and \$2.00 per 100.

Haverland (P). The most productive berry ever introduced. It is right to say that under good culture its berries just lay along the rows in piles. The berries are large and very few small ones. Moderately firm but all right for near market. It has been a great favorite with me and I urge growers to try it. Lovett should be used as a fertilizer as it blooms just right. It should be mulched at least under the berries as the stems can't hold the great loads from the ground. 25c per doz., 60c per 100 and \$3.50 per 1,000.

Jessie (B). Its quality is high and size large, succeeds on strong, rich land but there are many failures reported in my correspondence. 25c per doz., 60c per 100 and \$3.50 per 1,000.

Jewell (P). A beautiful large berry, as regular in shape as a top and of excellent quality. Succeeds on moist clay ground where it is very productive. Not good on sand. Makes very few runners. 30c per doz., 75c per 100 and \$4.00 per 1,000.

Lovett (B). Here we strike another grand berry. It's simply splendid and you must make a note of that fact. Its strong point is that it succeeds everywhere, produces large berries of high quality in great profusion and one of the strongest pollinizers. Especially adapted for Haverland. Season medium early. We have kept it under close selection and restriction since its introduction. 25c per doz., 60c per 100 and \$3.50 per 1,000.

Marshall (B). The largest and richest berry under cultivation, hardly excepting the Dew. It possesses a rich wild berry flavor, is firm to the center and deep blood red all through. It has taken more prizes than any other berry and has come to stay. Season late. The great show and advertising berry. 40c per doz., \$1.00 per 100 and \$6.00 per 1,000.

Middlefield (P). On heavy land very desirable as a beautiful large berry, perfect cone shape, rich in flavor, quite firm and

productive. Few berries look more beautiful on the table. Season late. 30c per doz., 75c per 100 and \$4.00 per 1,000.

Miami (P). Strongly resembles the Crescent. Roots very deep and generally succeeds on light land. Berries medium. Moderately firm but good. 25c per doz., 50c per 100 and \$3.00 per 1,000.

Mount Vernon (B). An old standard sort, medium size, rather late. Very popular in some localities. 25c per doz., 50c per 100 and \$3.00 per 1,000.

Muskingum (B). A berry of much promise, very late, large size and desirable. 30c per doz., 75c per 100 and \$4.00 per 1,000.

Michel's Early (B). One or two days earlier than Beder-Wood. Very popular in many localities and being generally discarded in others. 25c per doz., 50c per 100 and \$2.50 per 1,000.

Pearl (B). Berries large and showy. Very popular in some localities. On light soil its foliage is liable to rust but it a ways matures its berries. 25c per doz., 60c per 100 and \$3.50 per 1,000.

Princess (P). A very desirable berry being much above medium size, good quality and color. Popular in the north-west where it originated. 25c per doz., 75c per 100 and \$4.00 per 1,000.

Parry (B). Most excellent in quality and productive of large bright colored berries. Fine show berries on account of their beautiful color. It should be in every garden on account of its delicious flavor. 25c per doz., 60c per 100 and \$3.50 per 1,000.

Parker Earle (B). On rich strong land where it has plenty of moisture and plant food it will "manufacture" an astonishing load of berries above medium size and quality. If you have such land, set this berry, but on drouthy or poor soil it fails to mature its crop. It makes few plants. 30c per doz., \$1.00 per 100 and \$5.00 per 1,000.

Robinson (B). Berries above medium, very firm and a good shipper. It originated in Kansas where it is a leading variety. Early enough to make a good fertilizer for medium early varieties. One of its numerous good qualities is that the last berries are as large as the first. 25c per doz., 60c per 100 and \$3.50 per 1,000.

Rio (P). Fruited only once, but makes a fine showing and is decidedly promising. Great things are said of it wherever tested. Foliage very vigorous. The berries large, uniform and glossy red. 50c per doz. and \$2.00 per 100.

Smith's Seedling (B). Very vigorous in foliage and in matted row liable to set plants too thick. Seems to succeed on light soil. A good pollenizer. Berries above medium, quite firm, bright scarlet, and good. 25c per doz., 60c per 100 and \$3.50 per 1,000.

Stranger (B). We found this berry in this county without a name. I am sure it is a chance seedling. Its vigor of foliage and splendid large bright red berries of high color attracted general attention. I procured fine plants and tested it, keeping

those for propagating restricted and take pleasure in offering it to my friends. 40c per doz., \$1.50 per 100 and \$5.00 per 1,000.

Sharpless (B). The monster berry of former times. A great favorite in many localities although not reliable as a fruiter by reason of its susceptibility to frosts. Berries very large, good quality and moderately productive. 25c per doz., 60c per 100 and \$3.50 per 1,000.

Shuckless (B). Called "shuckless" because it parts readily from the stem in picking. As a garden berry it is very fine, when picked is already for the table. Berries above medium, scarlet color and good quality. Very vigorous and succeeds well on heavy or light land. 25c per doz., 75c per 100 and \$4.00 per 1,000.

Splendid (B). This is another new berry seeking favor and making many friends. Whenever tested is very highly endorsed and promises to come into general cultivation. Described as medium early, above medium in size, good quality and very productive. 40c per doz., \$1.25 per 100 and \$5.00 per 1,000.

Timbrell (P). A late, large berry which should never have been introduced. It does have good quality and size and is quite productive, but it colors so badly that it can never make a market berry. "Ring, streaked and speckled" is the way growers describe it from all parts of the country. 30c per doz., 75c per 100 and \$5.00 per 1,000.

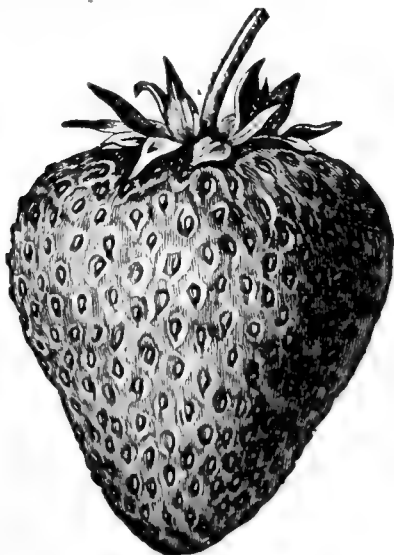
Tennyson (B). A new sort received last year from the introducers. Claimed to be the best everbearing berry yet found and to fruit all the fall in paying quantities. It is certainly highly recommended by good authority and well worth testing. 40c per doz. and \$2.00 per 100.

Van Deman (B). Fruit much resembles the Wilson. Medium size, dark color, good quality, and generally productive. 25c per doz., 50c per 100 and \$3.00 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.

Weston (P). Of recent introduction, but beyond all question a berry which has come to stay. It has been widely tested by leading growers and experiment stations, and everywhere received highest endorsements. There will not be half enough plants to supply the demand. They sold last year at \$2.00 per doz. and \$75.00 per 1,000. Berries very large, firm, good quality, and look neat in boxes. One of the most productive berries in cultivation and its foliage seems per-

fect. Try it *sure*. 50c per doz., \$2.00 per 100 and \$8.00 per 1,000.



THE WESTON.

Wolverton (B). A splendid berry and a pollenizer of strongest potency. Foliage very vigorous and free from blemish. Berries large, bright color and good. Succeeds everywhere. Medium early. 25c per doz., 60c per 100 and \$3.50 per 1,000.

Wilson's Albany (B) comes at the foot only because of the letter in the alphabet. It never did succeed on all soils, but has long held the boards as the most popular berry ever introduced. We have it of its old time vigor, enormously productive, and the best shipper ever introduced. All dealers like to handle it because it stands up. 25c per doz., 60c per 100 and \$3.50 per 1,000.

RASPBERRIES.

In looking over the raspberry plantations of the country it is surprising that they are in as good condition as they are. It is a universal custom among growers to fruit their plantations until all run out and then begin a new plantation by taking plants from the old patch and again fruit them till exhausted and then replant from them in the same way.

Nurserymen as a rule set out a few of each variety and take plants and fruit from them just as long as possible giving little attention to fruiting vigor. Many of these plantations are not properly pruned so that they become not only weak in potency of pollen, but are allowed to set more fruit than they can bring to maturity and thus the plants become weakened and give way to attacks of disease and fungi which goes into the tips and is thus transmitted to the new beds. It is the same old raspberry patch in the new plantation only supported by new roots.

More than half the labor is thrown away because they cannot respond to fertilizers and extra culture. Every grower knows that anthracnose works many times as bad in an old plantation as in a new one. The

fact that the plantation should fruit heavily eight or ten years makes the loss by using poor exhausted plants very heavy. Never set a raspberry plant which comes from a plantation which has borne a heavy crop.

On good soil the annual yield should be from one hundred and fifty to two hundred bushels per acre, and yet under the system above referred to the average yield is very much less than half that amount.

The proper way is to select ideal plants, just as in the case of strawberries and renew every two years in the propagating beds and prune the second year very closely so as to restrict and develop fruiting strength and general good qualities. The extra fruit for one year would pay for the plants several times over. Now multiply this by the years the plants are in fruit and you can determine the difference between common exhausted plants and those bred up to high fruiting power.

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



THE COURATH (The King of all Blackcaps)

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 Courath. Preeminently at the head of the list stands the Courath. Its

marked qualities are its great hardiness, its wonderful productivity, its great size, its quality and largeness, and ability to resist frost and disease alike in this season. It has now been widely tested and its merits are fully and uniformly known and have stood the test surely the greatest any set of black caps in recent years. All the government experiment stations have been started on their introduction. No one has reported any injury from cold or any instance of failure. The demand for plants will exceed the supply for several years. The lithographic engraving represents a section of the bushes and shows how thick and numerous the berries are distributed. It shows the exact size of the berries, shiny black, and they present a beautiful appearance in the fall. It is a

a lucky man who has a plantation of these berries in advance. Season medium early. 10c each, 75c per dozen, \$4.00 per 100 and \$15.00 per 1,000.

The Columbian. A large purple berry of the richest flavor, the greatest vigor and probably the most productive berry under cultivation. On the back of the cover of this pamphlet is found a photograph of a glass of these berries showing the exact size and shape of this grand berry. In a field of raspberries of fifteen acres, selected on our pedigree plan of all the varieties under cultivation here, this variety catches the eye as far as the field can be seen. It was claimed to be the same as Shaffer's Colossal but the difference is very wide. It is more hardy (no reports of its injury by cold are yet received). The canes grow to fully twice the size and berries are larger and much less of the objectionable bloom than the Shaffer. In quality it stands at the head of the list. As a canning berry it has been placed above any variety of raspberry. 40c each, \$3.50 per doz. and \$30.00 per 100.

Eureka. This berry has been tested several years and is taking a high rank in Ohio where it is extensively cultivated. It is conceded to be fully twice as productive as Palmer, berries larger and as early. It is likely to become generally cultivated as an extra large black cap. The supply of plants will be short for many years. Prof. W. J. Green of the Ohio experimental station has been watching it for several years and pronounces it unquestionably the leading early berry. \$1.00 per doz., \$3.00 per 100 and \$15.00 per 1,000.

The Kansas, a large early berry ripening immediately after the Palmer. It has made many friends in consequence of its hardiness and productiveness and will remain with us as one of the leading berries. Season quite early. 10c each, \$2.00 per 100 and \$10.00 per 1,000.

The Palmer is the leading extra early berry. Ripens some time before strawberries are gone and keeps the flow of berries full until other varieties arrive. 30c per doz., \$1.00 per 100 and \$7.00 per 1,000.

The Older. This is not now regarded as a new berry, it having been widely tested in the west and north. Its good qualities are especially deep rootage and ability to withstand extreme drouth and cold. More are reported to have been set in that section than any other. The engraving shows the berries of natural size. 40c per doz., \$1.50 per 100 and \$8.00 per 1,000.

The Gault. This berry is attracting much attention as an ever bearing sort. The

horticultural division of the agricultural department at Washington made an especial inquiry as to its merits and gave it a warm indorsement. Prof. W. G. Green, of Ohio, experimental station places it at the head of the list of ever bearing sorts. It produces berries in regular season about with the Gregg and then the new canes bloom and fruit profusely till frost comes. 25c each, \$2.00 per doz. and \$10.00 per 100.

Shaffer's Colossal is a hybrid, a cross between the black and red, purple color, covered with a fruit bloom and a rich sub-acid flavor. One of the best berries for the table and has no superior (except possibly the Columbian) as a canning berry. Season medium late. 30c per doz., \$1.50 per 100 and \$8.00 per 1,000.



THE OLDER.

Souhegan. An extra early variety ripening with Palmer and being superseded by that variety. The objection to it is its sprawling habit and reports from growers are that it is subject to anthracnose. 25c per doz., \$1.00 per 100 and \$5.00 per 1,000.

Johnson Sweet. This is the richest and sweetest black cap grown. Entirely hardy and productive and should be in every garden on account of its delicious flavor. Its berries are larger than Palmer and ripens only two or three days later. 30c per doz., \$1.25 per 100 and \$7.00 per 1,000.

Gregg is still the standard late variety of the largest size. I have frequently found them one inch in diameter. Reports do not show it to be entirely hardy in all sections, and yet there are few entire failures reported. It always manages to show up a good crop

at fruiting time. It should be allowed to hang on the bushes until fully ripe, when its flavor is very delicious. Season the latest. 30c per doz., \$1.25 per 100 and \$7.00 per 1,000.

Ohio and Miami are the same. Their season follows the Palmer, and they have long been known as the old standards. We have taken pains to restrict them and build up a strong fruiting vigor. For evaporating they have no equal. 30c per doz., \$1.25 per 100 and \$6.00 per 1,000.

Earhart. An ever bearing variety of much value. It bears a heavy crop at the usual time (medium early) and then in September ripens another large crop of fine berries if the season is generally moist through August. It is difficult to propagate on account of being loaded with berries, and there being a great demand for plants the price remains high. 50c per doz. and \$4.00 per 100.

Nemaha strongly resembles the Gregg but is reported from every point as more hardy. It is a great favorite in the north-west and Wisconsin. 30c per doz., \$1.25 per 100 and \$7.00 per 1,000.

Pioneer (Progress), an early hardy variety. Berries medium size, very productive, and being largely set in many localities. 30c per doz., \$1.25 per 100 and \$7.00 per 1,000.

Muskingum. A new variety resembling Shaffer's Colossal. It originated in Ohio, where it is very largely grown on account of its great productiveness. Berries purple, good size and rich flavor. Season late. 30c per doz., \$1.50 per 100 and \$8.00 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 Hansell which has long been regarded, and we have recommended it, as the best extra early red, but careful tests show that the Thompson's Early is superior in vigor and fruitfulness and ripens at the same season, and we shall discard it in favor of the Thompson. 30c per doz., \$1.25 per 100 and \$8.00 per 1,000.

Thompson's Early is now acknowledged as the best extra early red berry. Its superior qualities are vigor and hardiness of cane and bud, good size and firmness of berries, bright color and a good shipper. It will supersede Hansell. Ripens with Enhance strawberries. 40c per doz., \$1.25 per 100 and \$8.00 per 1,000.

The Marlboro comes next in season and will probably long hold that place. Berries are good size and firm so they can be shipped any reasonable distance. 30c per doz. \$1.50 per 100 and \$7.00 per 1,000.

The Cuthbert is still the queen of the market and the best shipping berry grown. Berries are large, of bright color (unless over-ripe), firm and of excellent quality. Season the latest. 30c per doz., \$1.25 per 100 and \$7.00 per 1,000.

Golden Queen. Same as Cuthbert except in color. It is undoubtedly a sport of that variety. Color bright golden yellow. When canned is most beautiful and takes the ribbon at the fairs. Not so good for shipping as it takes on an unsightly appearance several days after it has been picked. 30c per doz., \$1.25 per 100 and \$7.00 per 1,000.

The Loudon. A new variety that is rated higher than any red berry introduced since the Cuthbert. It is superior to that grand old berry. It is finer in quality, more hardy in cane and much more productive. It is surely the coming market berry. 40c each and \$3.25 per doz.

BLACKBERRIES.

Blackberries are a great money crop when rightly managed. The demand for this luscious fruit is not supplied in one town in a hundred, and even then, as grown by ninety-nine out of a hundred, they are poor in quality and the consumption is far below what it would be if the berries were properly grown.

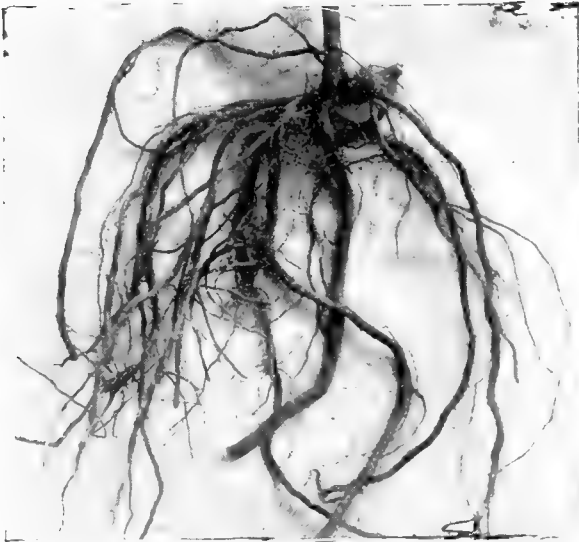
It is, as in the case of raspberries, a common practice to fruit a field eight to ten years, and when the plantation is so worn out, diseased and exhausted that it will not fruit longer, shoots or suckers are taken from between the rows to start a new plantation, and as explained in raspberries and strawberries, the disease and weakness is in the roots and goes to the new plantation.

Such a field yields, as you will find among fruit growers, from fifty to seventy-five bushels per acre a method of growing which actually throws away more than one hundred bushels per acre.

An acre of good land started with plants propagated as I shall hereafter explain, should always yield from two to three hundred bushels per acre, of such a grade of fruit that would sell from two to four cents per quart more than common berries.

It should be free from disease and all exhaustion. This is accomplished by selecting the most vigorous and healthy bushes. Dig them up and cut the roots in pieces about three inches long, callous these during the winter months, and plant in nursery rows in the spring. Every diseased or defective root will fail to grow. Under no circumstances should the roots be taken from a plant more than two years old.

In the fall the plants are again taken up and roots shortened to about ten inches and placed in clean sand in a callousing cellar and kept at a degree of cold exactly even at all times and within three degrees of freezing point. Innumerable callouses will form all along the sides of the roots, and great numbers at the ends where the roots have been cut off, and when set out in the spring, roots emit from these callouses and



ROOT CUTTING (Plant ready to set).



ROOT CUTTING (Plant showing roots after one year).

literally fill the ground with a mass of feeding roots close to the plant, so you know where to put fertilizing so the roots can get it, and where to cultivate to conserve moisture. Plants grown in this way send up comparatively few suckers.

What is a callous? It is the bringing together of certain wood cells in a root, and the growth of a gristle-like substance out of which a new root will grow. It is a law of nature extending to plants as well as animals, that wherever a cut or injury is inflicted that the plant shall expend its energies in repairing the damage and for this reason it should be placed under the most favorable conditions to accomplish this end. To form a callous requires a good deal of time, and if kept at a low temperature many more will form, and be more perfect than at a higher temperature, besides if warmer there is a great risk of starting growth, causing a loss of all the cuttings.

Cut the roots in the fall and keep them at a temperature within three degrees of freezing. The roots will utilize the long winter months for forming these callouses, which being perfect and in great numbers, very few fail to start a new root at once when planted out in warm ground. As all start at once, or nearly so, they receive the same support from the foliage and start a vigorous growth of leaves early in the spring, filling the ground with a perfect mass of feeding roots.

It needs no argument to show that a plant supported by such a root system can produce and bring to perfection a great crop of berries without exhaustion to the plant, and therefore enable it to accomplish the same work for a long series of years. Such a plantation should fruit heavily from ten to fifteen years and not only produce an extra amount of fruit but under proper cultivation it should put into the berries a quality that cannot be approached in the old way of starting a plantation.

Objections to sucker plants. It is well known that the roots of a blackberry

grow from the end and each year's growth is added to the previous year. So that within five years they have been known to grow more than fifty feet long, and send up suckers all along their length which makes them an interminable nuisance in cultivating to say nothing of taking the strength of plants.

There must be a balance between root and branch and as long as these long, wandering roots take the strength of foliage no new roots will start out.

If on the contrary we dig up a sucker plant in the spring and set it out at once the few roots already there will start a growth at the ends and absorb the strength of the foliage so that comparatively few roots will start as there is little encouragement for callouses and new roots to form and if new roots do start, it will be late in the season.

The digging of sucker plants cuts off the feeding roots and mutilates others so that if persisted in the general health and vigor of a fruiting plantation will soon decline. All suckers should be treated as weeds and cultivated up as fast as they appear, and while the row may form a hedge, it should never be allowed to grow over one foot wide in order that the entire surface may be cultivated to prevent evaporation.

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 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 BLACKBERRIES.

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 has been for seventeen years the main crop on our farm, and all these years has never received any winter protection, nor have we had a failure. A big crop comes every time. No berry has brought us so much money. Its great qualities are extreme hardiness, good size and quality, and freedom from orange rust or disease. Its season is very early. Berries are rich and free from hard core. 50c per doz., \$2.00 per 100 and \$12.00 per 1,000.

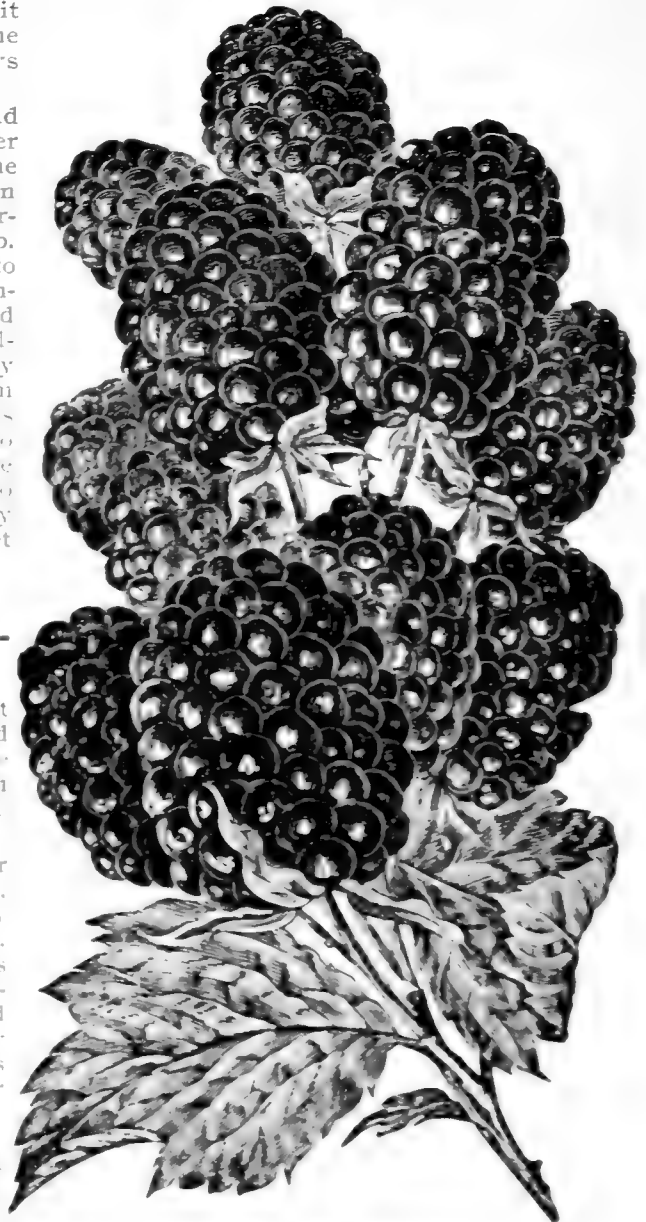
Taylor Prolific follows the Western Triumph and makes a long season on the market. It is generally regarded as very hardy and of the highest quality of any blackberry grown. Don't overlook it in your collection as a late berry. 50c per doz., \$2.00 per 100 and \$12.00 per 1,000.

The Erie is everywhere regarded as a success, and of the greatest value, and is being largely planted. The berries are large, luscious and free from hard core, and very productive. Season medium early to very late. 50c per doz., \$2.00 per 100 and \$12.00 per 1,000.

Snyder is that old iron clad which succeeds almost anywhere. The fruit is of good quality, medium size, a grand berry and good seller. Season early. 50c per doz., \$2.00 per 100 and \$12.00 per 1,000.

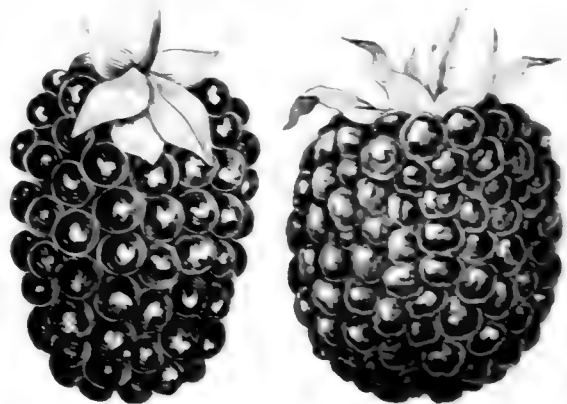
Ancient Briton. This is the leading berry in Wisconsin, where they grow to great perfection, and is taking high rank all over the country. While it is classed as hardy, they find it profitable to give it winter protection. 50c per doz., \$2.25 per 100 and \$14.00 per 1,000.

The Eldorado is one of the coming berries. It has been tested at all the experi-



THE WESTERN TRIUMPH

ment stations, and very high words spoken of it. Its especial good qualities are extreme hardiness, delicious flavor, large size, and great productiveness. 20c each, \$1.50 per doz. and \$10.00 per 1,000.

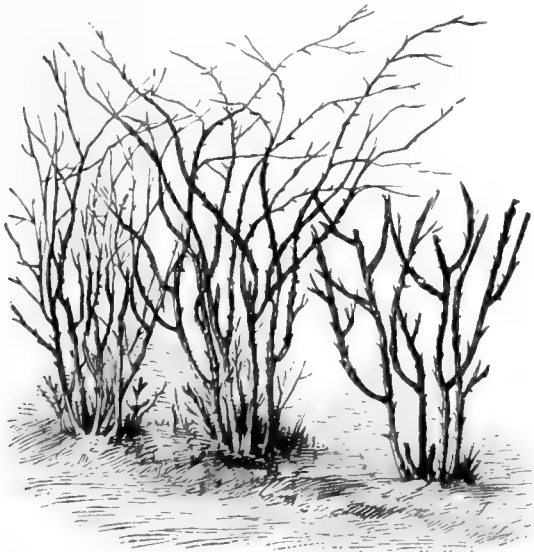


THE ANCIENT BRITON.

THE ERIE.

PRUNING RASPBERRIES AND BLACKBERRIES.

Our object of pruning is to secure a larger, richer and better flavored fruit as well as to prevent exhaustion of the plant. The pulp or that part we call fruit does not devitalize the plant, and were it not for the seeds the more wood the better, and the next season there would be no diminution of the crop; as already explained, *the formation of seeds is an exhaustive process*, and if allowed to overbear heavily will so deplete the plant's energy that in most cases a large crop will not be secured again in two or three years, if ever. There are as many seeds in a small berry, and they are almost as large, as in a big one, and the plant will give its whole life and energy to bring it to maturity. Now if we relieve the bush of a part of this burden the seeds in the balance will be more vigorous and the pulp much larger and take on a richer and higher flavor. To determine just how much wood we shall remove is a nice point and will require much skill and experience. The bush should be allowed to *bear all it can bring to the highest perfection*. Some varieties can be cut much shorter than others. Soils rich in nitrogen have a tendency to grow much wood and little fruit and should be pruned longer to secure the proper number of buds, while land rich in potash and phosphorus and poor in nitrogen will make less wood and set many more buds, hence must be pruned shorter.



The work can be done at any time after growth has ceased in the fall. Many of our most successful growers prune longer in the fall and winter and then after the fruit has set go over it again and cut away where they require it. If a plantation of raspberries is properly pruned it can be maintained in strong fruiting vigor seven or eight years, and blackberries ten to twelve years; but if not properly pruned will often cease to be profitable in three or four years. The engraving, with these suggestions, will give a correct idea as to how the work should be done.

DEWBERRIES.



LUCRETIA DEWBERRY.

The *Lucretia* is far ahead of any other variety with which we are acquainted. It is a trailing blackberry of immense size, and when properly pruned is enormously productive and of excellent quality. It does not require land rich in nitrogen, but plenty of potash and phosphoric acid in the way of wood ashes will greatly benefit it. It should be pruned to three or four canes and cut back to two or three feet, and if foliage becomes too rank it should be shortened in.

The adverse criticism of this plant always comes from those who have given it no care. Proper cultivation and pruning are as essential with this as in the case of raspberries and blackberries. It pays to cover with straw to protect it in winter.

The berry should be allowed to remain a day or two after it has turned black, when it is delicious fruit. 50c per doz., \$2.00 per 100 and \$12.00 per 1,000.

CURRANTS.

Only a few years ago every family had a bountiful supply of this cooling and delicious fruit. It grew with the least possible trouble in any neglected corner, but the currant leaf eater appeared and people did not know how to fight it, so the bushes all died. The insects appear soon after the leaves start, low down in the center of the bush, all close together. A very weak solution of Paris green and water sprinkled on the insects will dispose of every one. If they appear later dust white hellebore on the plant while the dew is on, or put a teaspoonful in a pail of water and sprinkle on with a whisk broom.

The soil should be very rich and the weeds and grass kept out. Rotten wood or refuse from the chip yard is a favorite fertilizer, but an abundance of barnyard manure will do. I have found that a heavy mulch of coarse manure or a layer of straw will produce the best results. The roots come close to the surface so that cultivation must be shallow.

The *Fay Prolific* is a great favorite under high cultivation and favored localities. The fruit is immense, both in size of berry and cluster. It requires good strong soil and plenty of manure. On poor ground or light soil, it is regarded as a failure. 1 year, 10c each, \$1.00 per doz. and \$5.00 per 100. 2 year, 12c each, \$1.00 per doz. and \$6.00 per 100.

The *Victoria* is one of my favorites. The fruit is of good size and enormously productive. 10c each, 75c per doz. and \$5.00 per 100.

The **Cherry** is under the same cultivation, nearly as large as Fay, and is one of the most productive on the list. 10c each, 75c per doz. and \$5.00 per 100.

Old Red Dutch still holds its own as reliable and productive.

The **White Dutch** resembles the red except in color. 10c each, 75c per doz. and \$5.00 per 100.

The **White Grape** is much sought after on account of its mild and delicious flavor. The fruit is of good size and very beautiful. 10c each, 75c per doz. and \$5.00 per 100.

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 dozen 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.

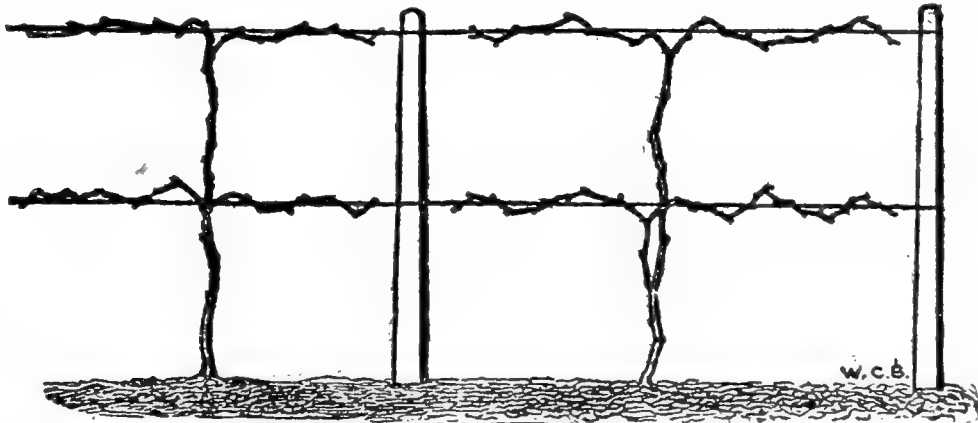
Preparing the ground. The ground should be plowed as deep and made as fine and mellow as possible. Some people dig holes two feet deep and four or five feet across and fill them up with rich top soil to within a few inches of the top of the ground and then set the vine and afterwards fill full. If the 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 con-



THE KNIFFIN SYSTEM OF PRUNING GRAPES.

tinued 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.

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, 25c 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 \$6.00 per 100.

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, 50c each and \$4.00 per doz. 2 year, 60c each and \$6.00 per doz.

The Hosford. This grape was discovered in a vineyard of Concords. 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, 40c each, \$4.00 per doz. and \$30.00 per 100. 2 year, 60c each, \$6.00 per doz. and \$45.00 per 100.

RED GRAPES.

Delawares. Considered by many as the standard of excellence in grapes, requires strong soil and good culture. 1 year, 10c each, 75c per doz. and \$4.00 per 100. 2 year, 15c each, \$1.00 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, \$1.25 per doz. and \$5.00 per 100. 2 year, 20c each, \$1.75 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, 30c each, \$3.00 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, \$1.25 per doz. and \$6.00 per 100.

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, \$2.00 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, \$1.50 per doz. and \$8.00 per 100. 2 year, 35c each, \$2.50 per doz. and \$12.00 per 100.

Salem (Rogers No. 22). Bunch and berry very large. Healthy, hardy and vigorous. A good keeper and fine table berry. 1 year, 10c each, \$1.00 per doz. and \$5.00 per 100. 2 year, 15c 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, 10c each, 75c per doz. and \$4.00 per 100. 2 year, 20c each, \$1.00 per doz. and \$6.00 per 100.

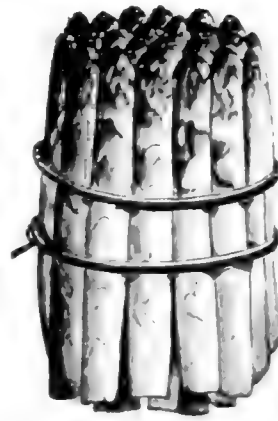
Wyoming Red. One of the most hardy and beautiful very early red grapes grown. Skin rather tough, keeps well, fine flavor, vine very vigorous and hardy. 1 year, 10c each, 75c per doz. and \$5.00 per 100. 2 year, 20c each, \$1.50 per doz. and \$7.00 per 100.

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, 25c each, \$2.00 per doz. and \$7.00 per 100. 2 year, 30c each, \$2.50 per doz. and \$10.00 per 100.

Niagara. Quality about like Concord; bunch and berry very large; vigorous, healthy and hardy. 1 year, 10c each, 75c per doz. and \$4.00 per 100. 2 year, 15c each, 75c per doz. and \$5.00 per 100.

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.

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

IN CONCLUSION.

Let me impress upon you that the fruit garden is the great source of enjoyment and the family physician. Its rich, delicious fruit acids are the panacea for stomach troubles, heartaches and the blues. In preceding pages I have tried to point out the royal road to success, and now wishing you a God-speed in its fullest enjoyment, I am

Cordially yours,

R. M. KELLOGG.

NO SUBSTITUTION WITHOUT POSITIVE ORDERS.

We take it for granted patrons wish to test certain varieties and know what they want. And yet it often happens that if they knew we were sold out of the variety selected they would accept another variety very closely resembling it rather than be disappointed. The first choice will always be sent if it is on the farm. When directed to make the selection for you, we will exercise our best judgment. See notice to patrons. Our stock is so large there is little danger of varieties being sold, except when orders come late. **ORDER EARLY.**

IN PLACE OF	SEND	IN PLACE OF	SEND
Aroma	Lovett.....	.....
Bederwood	Meeks Early .....	.....
Bubach	Marshall .....	.....
Beverly	Middlefield .....	.....
Brandywine	Mary .....	.....
Burt.....	Miami .....	.....
Banquet	Mount Vernon .....	.....
Barton Eclipse	Muskingum .....	.....
Bisel	Michels' Early .....	.....
Cyclone	Pearl .....	.....
Crescent	Princess .....	.....
Cumberland	Parry .....	.....
Cloud.....	Parker Earle .....	.....
Dayton.....	Robinson .....	.....
Dew	Rio .....	.....
Epping.....	Smith Seedling .....	.....
Enhance	Stranger .....	.....
Eleanor.....	Sharpless .....	.....
Eureka	Shuckless.....	.....
Edgar Queen.....	Splendid .....	.....
Greenville	Timbrell .....	.....
Gandy.....	Tennyson .....	.....
H. W. Beecher	Van Deman .....	.....
Haverland.....	Warfield .....	.....
Iowa Beauty	Wilson .....	.....
Jessie	Wolverton.....	.....
Jewell	Weston .....	.....

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.

NO SUBSTITUTION.

On the back of the order sheet will be found a list of strawberries. Opposite the varieties you order please write the name of your second choice, or say "substitute," in which case we will send some variety closely resembling the variety ordered. If no second choice is made, or permission given to substitute, if we are out of the variety ordered when your order is reached, the money sent will be returned. We ask you to make a second choice or consent to substitution that there shall be no disappointment.

When other nurserymen have sold out their stock of any variety they can send to some other nurseryman who has a surplus of that variety, but we cannot do that, for no other nurseryman propagates pedigree plants. Our stock is several times as large as ever before, and the plants the finest we ever grew, but it will be safe to give the permission, especially if the order is sent in late.

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 kind 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. Send for new price list after July 1.

NO DISCOUNTS AND NO AGENTS.

In view of the fact that so many tree dealers and agents have used my catalogs, 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 National Express Companies, Ionia, 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 sent plants last year as far east as Nova Scotia, and west to British Columbia with entire success.

MAIL CUSTOMERS ON THE PACIFIC COAST and Atlantic States can have plants sent by mail as cheaply and safely from here as if the distance was only ten miles. Small orders should be sent in this way. See postage rates above.

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 CHARGES.

On account of the compact manner and style of crate we use, the express company guarantee us a reduction of

TWENTY PER CENT

below general merchandise. If customers are charged more than this, I will see that it is refunded.

POSTAL EXPRESS.

The express companies send small packages at mail rates (one-half cent per ounce), but no packages for less than ten cents, which must be prepaid here same as postage. If no shipping directions are given, we will use our best judgment as to mode of forwarding.

BY FREIGHT.

We have railroads running out of Ionia in five different directions. Raspberries, blackberries, grape vines, currants and gooseberries can be sent anywhere safely by freight. Our new

PERFECTION SHIPPING CRATE

for sending strawberry plants, enables us to pack so they will go safely hundreds of miles. Shipping bills will be sent by mail, and if they fail to arrive on time the railroad companies will send telegraphic tracers, hastening them forward at once. Courts have held that railroads are responsible for holding perishable goods. Customers ordering by freight assume all responsibility, and would do well to consult local agents as to time and route.

A THROUGH CAR TO CHICAGO

leaves Ionia every night, reaching Chicago the next day; and also Milwaukee, across the lake, and calculations can be made for the West and Northwest from these points. Freight rates are very low.

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.

These plants are shipped to everybody who orders them. I have no control over them after their delivery for transportation. I know nothing of the treatment they are to receive, so you can readily see that I cannot possibly guarantee any results whatever. My responsibility ceases when delivered to express companies or freight agent for shipment.

MISTAKES.

Our system of counting and checking off plants ought to secure us against mistakes. We try very hard to prevent them, but we are not infallible, and they sometimes catch us, in which case we are more than glad to rectify them, if notified at once.

The envelope enclosed is made of strong manilla and cannot go astray. It is plainly directed. Please use it when convenient. Orders are acknowledged on the day they are received. If you do not hear from us in a reasonable time write again.



THE COLUMBIAN RASPBERRY

(EXACT SIZE)

ROBERT SMITH & CO., PRINTERS



AND BINDERS, LANSING, MICH.