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BIGGLE BERRY BOOK

A CONDENSED TREATISE

ON THE

CULTURE OF BERRIES

BY JACOB BIGGLE

WITH LEAVES FROM THE EXPERIENCE OF MANY PRACTICAL
BERRY GROWERS IN ALL PARTS OF THE
UNITED STATES

ILLUSTRATED

"Doubtless God could have made a better fruit than the strawberry,
but He never did."

PHILADELPHIA
WILMER ATKINSON CO.

1899

FIRST EDITION, 1894
SECOND EDITION, 1899
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A BOUQUET OF GANDYS
(WITH HARRIET'S COMPLIMENTS)

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A DISH OF MILLERS

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CHAPTER I.

THE BEGINNING.

"Let your light shine."

I HOLD that it is right to tell what we know in any line of farming, if our knowledge be of value to others and will help them to success. Now, I have been engaged, more or less, in strawberry culture for over a dozen years, and have in that time learned a little, and this little I am ready to communicate to my neighbors and even to impart to a wider circle, wide enough to take in the whole Farm Journal family and the entire remnant of the population of the country.

The only trouble is I do not know it all ; and yet it may be best that I do not, since I have discovered that those folks who know it all, are apt to get behind the lighthouse and are left in the dark themselves.

Confessed, I do not know it all ; yet Harriet knows some and Tim knows a heap ; together we are so far from a universal knowing that I have not hesitated, in preparing this book for publication, to call on a large number of bright, experienced, enterprising, fearless, obliging men, to tell what they have learned about berries and how to grow them. Nobly they have responded to my call, and the pages to follow will bear witness to their wit, their knowledge, their liberality, their thoroughness and the kindness and good will that

animates their hearts. This book could stand alone upon genuine merit as a treatise on small fruits without a line from my own pen, so rare and valuable are the contributions from those fine gentlemen who have given so freely of their knowledge and experience on this subject.

It will be seen, therefore, that many pages of my book will contain explicit information furnished by berry experts, and that this knowledge is gathered from all parts of the country, in all latitudes and longitudes, and from practical men who know what they are telling about; and it is obvious that a summary of the experience thus brought together must be of vastly more value to the one who would educate himself in this line of horticultural work, than the opinions and writings of any one man, whose operations and observations are mostly confined to one farm or one neighborhood, no matter how smart that man may be.

One of the features of this work which I thought would commend itself to the public is the picture gallery, containing the likenesses of many skilled berry growers, most of whom are contributors, who have had marked success in their calling and who are honorably known the country over.

Certainly it will gratify many readers to look into their honest faces, to come to know them better, and thus appreciate them more.

Another feature is the showing of the berries in natural colors, which has not, to my knowledge, ever been attempted, or at least accomplished before. It cost time, money and infinite pains to procure accurate paintings of the fruits, and to transfer them to the pages of the book, each specimen being printed in eight

separate colors in order to produce the required truthfulness of shading. Of course most of the credit of success in this line must accrue to the publishers, and to them I freely give it. My part was to point the way and to give what aid I could in obtaining correct specimens of the berries during the fruiting season.

When the Editor of Farm Journal asked me to write a berry book, I declined, for I did not think I could do it, and I did not want to engage in the work, having more to do than I cared for already; and Harriet thought I had better not undertake the task, and Tim thought I would be foolish to bother with it; but that persistent Editor took no notice of my refusal, said he would help me, said, "Oh, fie, go ahead!" said something about hiding our light under a bushel, and what a grand thing the book would be; and so here I am engaged in the opening chapter and already filled with enthusiasm in the work and hoping to soon fitly accomplish a useful and worthy task.

CHAPTER II.

THE STRAWBERRY.

A PLEA.

When the culture of strawberries is commenced in a small way and extended from year to year, there need be no failures, for no garden or farm crop is more reliable in annual returns.—TIM.

BEING the first fruit to ripen the strawberry comes to the table when the appetite is capricious, as a welcome visitor. So beautiful in form, color and fragrance, it is among fruits what the rose is to flowers. In flavor so delicious, in healthfulness so beneficial that invalids gain strength while its season lasts. Strawberries fully ripe and freshly picked from the vines may be eaten at every meal, in saucers heaped high like pyramids, and nourish the most delicate stomachs.

The charms of the strawberry do not all end in the eating of it. No fruit is so soon produced after being planted. It affords employment—pleasant, easy and profitable for poor men with little land; for old men with little physical strength; for women, boys and girls who love to till the soil and delve in mother earth. So certain to grow, equally sure to sell at paying prices. It is so suited to all soils, and its culture is so soon and so bountifully rewarded by big berries, that the exercise and joy of success bring with it health and a good conscience.

Note also the labor which is saved to the family

indoors. No lard, tough beef, or dried apple pies to be manipulated and toasted in mid-summer over red-hot ranges. For the strawberry comes from the garden to the table in the most tempting and presentable shape, none of the newer and sweeter varieties requiring sugar or any other condiments, to fit them to grace the table of a king.

In the list of enthusiastic gentlemen who were asked for pointers in strawberry growing is J. H. Hale, of the State of Connecticut, and the United States of America, for he belongs to the latter; and here is one of the things he wrote: "No man should fool himself into telling his wife that he hasn't time to bother with such small trash as berries, but will buy all the family wants; he may not be much of a liar, but those of us who have so often heard that old chestnut about buying all the berries the family wants, know that man is way off. He never did and never will buy one-tenth part as many berries as the family will consume, if he will give them all they can wallow in right fresh from the home garden."

J. H. HALE

Hale is right; few in the country will buy berries when berries are ripe, and after they are gone, of course they will not buy.

The only just and true way for an honorable and manly man is to grow them, and let everybody about the place have all they can eat.

Down in Massachusetts, in the town of Springfield, lives a good gentleman by the name of Adams—J. W. Adams. Along with Hale and a host of other

estimable persons, his portrait will be found in this book, and his is such a face as would grace any gallery, however select. And he has joined Hale in a plea for the strawberry in every garden, submitting an argument that is irresistible. He says, "How many berries will the average farmer buy? Will it be one quart a week?" A housewife was confronted with the promise of her well-to-do husband, that instead of growing them they would purchase of James Harvey all she wanted. At the end of the season she said, "How many berries do you suppose we bought? Not a single quart."

J. W. ADAMS

This forcible question and answer is altogether too common. Farmers who can grow with very little expense, this most healthful and delicious of all fruits, deny to themselves and their families the greatest table luxury which Providence has bestowed upon people of temperate climates, when a single square rod of ground might yield them more intrinsic value than an acre in many other products.

Strawberry growing is to many people a great mystery, as the writer has had impressed upon him by numberless inquiries, both verbal and written. There is no fruit crop so immediately productive, none which attaches to itself so much enthusiasm and quick reward for labor expended. They flourish to a degree in all soils and in all temperate climates. The number of varieties is now unlimited, and suited to all tastes. When the Wilson's Albany was the only berry grown, on account of its acidity many people discarded the strawberry from their tables, who, now that sweeter

and better flavored berries have superseded it, use them at every meal.

One large farmer in the country consigns to his own table a peck a day ; others provide a quart for each person, and dispense almost wholly with meat so long as this berry can be had in good condition. A very intelligent young lady living opposite, who has travelled the world over, enjoys life just as long as the supply of strawberries continues ; but at other seasons she is more or less of an invalid. And yet there are too many who regard them as mere luxuries, and refer you to pork and potatoes for nourishment and substantial sustenance for body and mind.

I sent far and wide the inquiry, "Ought everybody have all the strawberries they want?" and of many responses I beg to quote a few :

Certainly they ought, and every one with a twenty foot lot
A. W. SLAYMAKER should grow his own strawberries. There
are health and amusement in it as well as profit. Del.

Yes, sir, most emphatically. Every-
body ought to have all the strawberries
they want. If they do not care to grow
them they ought to be in some business
so that they can afford to buy them
quart after quart, morning, noon and
A. I. ROOT night. Not only because
they give enjoyment but because they
are the cheapest, best and most natural
medicine to tone up the system that has
ever been invented. They are both vict-
uals and drink. The man who cannot afford to give up his beer,
tea and coffee, yes, and tobacco too, when strawberries are
plenty and cheap, is a man to be pitied. O.

A. I. ROOT

GEO. J. KELLOGG Yes, and some for the neighbors that have
none. Wis.

No one should be without strawberries; they are the first native fruit of the season. Every farmer should have a bed and
 E. W. REID let his boy live on the fat of the land. He would not care to go to town after the day's work for a frolic if he could get all the strawberries and Jersey cream he wanted. O.

A. P. SAMPSON Yes, yes, yes, yes, yes, yes, yes! Mass.

Yes, by all means, and there is no excuse for not, as any one
 H. S. TIMBRELL having a small plot of ground can grow them, and they are so cheap in the market that all others can buy them.
 N. Y.

All they can possibly eat means health to many a poor mortal with weak digestion. In all the world there is not a better tonic,
 EUGENE WILLETT to say nothing of the comfort of strawberries three times a day on the table, and filling up twice or three times between meals from your own little patch. N. Y.

Yes, decidedly, and the man in the country who has a piece of land, either owned or hired, and does not have this delightful
 T. J. DWYER fruit from his own garden on his table three times a day for four weeks at least is behind the age; is doing an injury to himself and to those whom God has placed under his care.
 N. Y.

J. W. ADAMS The progress of human events seems to be tending in that fraternal direction. Mass.

Better go without coffee or tea than to go without strawberries; eat them three times a day and feel happy and healthy. Col.

J. H. HALE This is evident, do not talk about it, just act. Conn.

LOVETT

EDGAR QUEEN

NICK OHMER

PLATE II.

CRESCENT

BEVERLEY AND SALEM

CHAPTER III.

WHAT AN ACRE MAY DO.

Anything you tell it.—TIM.

NOVICES in berry culture will be surprised to know that more bushels of strawberries can be grown on an acre than of wheat or corn and of potatoes, but such is the fact, as testified to by many experienced growers.

A. M. PURDY One hundred and fifty to 200 bushels, but these were exceptional cases. Ordinarily 75 to 100 bushels. N. Y.

G. S. BUTLER From 100 to nearly 200 bushels. Have known of parties growing 250 bushels. Conn.

I have never kept an exact account of an acre of strawberries, but we have fruited them in a small way at the rate of 650 per T. J. DWYER acre, and my next door neighbor, Mr. Crissey, fruited a large bed this year which yielded at the rate of 700 bushels per acre, the season being dry and unfavorable for a yield. N. Y.

W. W. FARNSWORTH Our usual crop is from 100 to 120 bushels. O.

W. C. WILSON Dare not tell. Would be posted as a liar from Maine to Texas if I should tell of my biggest crop. Ill.

M. A. THAYER On the Thayer fruit farms we have raised 225 bushels to the acre. Wis.

GEO. F. BEEDE Over 300 bushels. Small plots at the rate of 500 bushels. N. H.

J. W. ADAMS The only lot we measured and kept any count of is the Crescent, at the rate of 10,600 boxes, or quarts, to the acre. Mass.

GEO. J. KELLOG We have fruited small plantations that have grown at the rate of 700 bushels. Wis.

EDWARD T. INGRAM We picked from our best one-quarter acre 111 bushels and 19 quarts. Pa.

One thousand to 17,000 quarts to the acre at picking. The DR. J. STAYMAN varieties that will not yield from 5,000 to 10,000 quarts to the acre in the average season are not worth growing. Kan.

JOHN LITTLE Two hundred and fifty bushels, sometimes less. Can.

I myself have grown strawberries at the rate of 200 bushels per acre, but one year I expected 300 and got about 50. In each case Haverland and Bubach. Robert H. Gillin, a veteran grower of my own state, sold from one matted row of Gandy, 323 feet long and 3 feet 4 inches wide, in 1892, \$40 worth of fruit; the proceeds of the same row in 1893 were \$50; in 1894, \$45, which is at the average rate of \$1,340 per acre per year. The berries were very large and fine and sold at a high price per quart—from 15 to 25 cents.

TAKE ONE!

CHAPTER IV.

SOIL, AND LOCATION.

THE strawberry will adapt itself to a great variety of soil and location. It is grown successfully in every state of the Union, as it is prized by the people everywhere. Different varieties require somewhat different conditions of climate and soil; thus one that thrives on sandy land may not do so well on clay, and certain kinds will not stand a hot southern sun, that succeed in northern latitudes; but I have thought best to take the testimony of others on these points and let the reader have the benefit thereof.

Light loam for such as Crescents, Michel's Early; heavy
A. M. PURDY loam for such as Bubach, Haverland, Sharpless, etc. N. Y.

Any soil that will produce a good crop of potatoes will
J. W. ADAMS give fair returns with strawberries, or land inclined to be moist and not subject to injury by drought will be best. Mass.

If early bearing is wanted take an early variety, set to sunny southwest lying land; if late fruit, take a late variety, set to east
E. W. REID or northeast and allowing the mulch to remain as long as possible. I have made a failure numbers of times on both fruit and plants to north land, hence would not advise any one to use for strawberries. O.

For raising plants I should prefer low bottom land inclining to sand, made very rich with manure, but for raising berries
A. I. ROOT I would take upland, turn under clover sod and work in all the stable manure I could get hold of. There is practically no such thing as making it too rich. O.

W. F. ALLEN, JR. Strawberries will do well on almost any soil that will produce a good crop of corn. Md.

W. D. BARNES Any good corn land will grow strawberries.
N. Y.

Most any good rich soil will grow strawberries, and sandy
CHARLES WRIGHT soil with slope toward the south will give
the earliest berries, whilst a heavy clay loam produces the largest
crop.
Del.

H. S. TIMBRELL For a good medium crop, a level exposure
with good clay sub-soil will give best results.
N. Y.

GEO. Q. DOW I do not think the soil or location makes much
difference if properly prepared and made fertile.
N. H.

The strawberry will grow in any soil containing sufficient
EUGENE WILLETT fertility and from which water can be kept
by surface or underdrainage, the latter preferred if not naturally
dry.
N. Y.

BENJ. M. SMITH Any kind where you can grow a good crop of
corn or vegetables.
Mass.

G. S. BUTLER The best soil you have and located near a good
market, if grown for commercial purposes.
Conn.

W. W. FARNSWORTH Any location that is as free as possible
from spring frosts and where the ground does not wash.
O.

Soil that has considerable sand in it is best. However, any
good soil that does not bake and become lumpy will answer.
T. J. DWYER The finest and largest fruit is grown on heavy,
black loose land. Land that inclines to the south is of course
best for the early varieties, but for all other purposes we would
prefer the plot as level as possible.
N. Y.

A close, compact, retentive loam with little or no free sand
H. E. MCKAY is best for solidity, strong color and setting
qualities.
Miss.

EDWARD W. CONE Clay will answer if well drained.
Wis.

J. G. BUCHANAN High land and clay loam.
O.

E. M. BUECHLY We like a clay loam well fertilized and
slightly rolling.
O.

JOHN LITTLE Rich loam ; south for early, north for late.
Can.

A deep rich, moist, sandy loam soil, well underdrained, is J. H. HALE best for most varieties, although a few do better in light, sandy soil, while some others require a stiff clay.

Conn.

SUMMARY REMARKS.

The question is answered so well in the above that I can add nothing of value. The point is brought out by several correspondents that for early berries a southern slope and sandy soil are most favorable ; while for late berries clayey loam is better with a shady exposure ; also that certain varieties do better on some soils than others.

THE GREENVILLE

CHAPTER V.

MANURING AND PREPARING THE GROUND.

Prepare thoroughly and manure heavily.—TIM.

WHAT previous preparation should the ground have when strawberries are to be planted and how best to fertilize? On these two important questions I bring in abundant evidence from most trustworthy witnesses, enough, I should say, to settle them in the minds of all who do not now have some special contrary knowledge of their own, inaccessible to the majority of mortals. The first witness is J. H. Hale.

A well rotted clover sod that has been deeply plowed or spaded, with the addition of subsoiling if it has a stiff bottom. After plowing, a heavy top dressing of well rotted stable manure supplemented with potash in some form, or say 3,000 pounds of J. H. HALE fine ground raw bone, 500 pounds of muriate of potash, and 200 pounds each of tankage and nitrate of soda per acre, all evenly broadcasted, followed by a thorough pulverization of the soil by harrowing and reharrowing about four times as much as the average plowman will think he ought to. Conn.

A one year's clover sod well manured and planted to potatoes, and well tilled one year, makes one of the best preparations W. W. FARNSWORTH for strawberries; but any other plan that will make the soil reasonably rich and in good tilth, and free from weed seeds, will answer. O.

W C. WILSON My plan is to manure with barn-yard manure, a year before, and grow a crop of potatoes. Ill.

WM. D. BARNES Strawberries should follow a hoed crop.

N. Y.

Plant on land that has had clover and one corn crop grown. After the clover manure can be best applied in the shape of bone A W. SLAYMAKER and potash, as they will not bring such a crop of weeds. Del.

A potato field covered with manure soon after the potatoes are dug and plowed at once, having the furrow set on edge. If E. W. REID clay soil, plow again in early spring, as it will run together; but if sandy, work with cultivator and apply about fifteen to twenty tons per acre of good manure before the cultivator is put to work. O

Our ground planted this spring was treated a year ago last winter to about one carload of manure to the acre. About June 1st, this, with a heavy crop of clover, was plowed and planted to EUGENE WILLETT potatoes, kept clean and free from weeds during the summer. Had we considered it lacking in fertility then, should have applied from 300 to 600 pounds of some commercial fertilizer containing more or less potash, usually the more potash the better.

N. Y

EUGENE WILLETT

If stable manure is used it should be piled up a year previous S. W. GILBERT and pitched over a few times to kill all weed and grass seeds. Mo.

The ground can hardly be made too rich, but should have been cultivated with corn or some other hoed crop for a year or two years, if the white grub abounds. Any system by which a large quantity of stable manure can be worked into the soil and well pulverized and made light, will be of advantage in setting J. W. ADAMS and after cultivation. Where barn-yard manure cannot be readily applied, equally favorable results have followed the use of commercial fertilizers, ground bone, superphosphate and ashes. Our foreman prefers superphosphate to any other dressing. This he applies in small quantities before setting the plants, and every ten days during the growing season of June, July and August. Mass.

HORACE J. SMITH If the manure is mostly green, plow in a good part of it, and do not put so much in on top. Wis.

The ground should be manured a year before, and cultivated
E. M. BUECHLY in some hoed crop, thoroughly killing all weed germs, and thus saving much labor in keeping the bed clean. O.

SUMMARY REMARKS.

Nearly all wisely recommend preparing the ground a year or two before the strawberries are to be planted by cultivating to hoed crops and then getting the soil mellow and the weed seeds sprouted and out of the way. Some recommend barn-yard manure, while others prefer some commercial fertilizer; but I have no doubt it is best to use both; but the stable manure had better be thoroughly rotted, and should have been well heated and several times turned, so that the hay and weed seeds contained in it will have germinated. However, I do not see how, if green manure be used and plowed under as much as four or five inches, the weeds can sprout and grow to do mischief. This hint I get from Horace J. Smith, of Green Bay, Wis.

Several recommend turning down a clover sod. Can anybody tell what a clover sod is not good for? Hale recommends perfect harrowing and a fearful dose of fertilizers, and I guess the more the merrier. He might have added a word in favor of that splendid implement, the Acme harrow. My plan is to apply fertilizers after plowing, and frequently through the fruit season, along the rows, using a two-row distributor made by Spangler, York, Pa. Little and often is a good motto in the application of fertilizers to the

strawberry bed. It is a good plan to use fertilizers as above, the first season, then with a thick mulch of good horse stable manure, well freed from the seeds of obnoxious plants, put on in the early winter. I do not often fail in getting a fine crop of berries, unless something unforeseen occur.

A BOX OF BEAUTIFUL PARKER EARLES

CHAPTER VI.

PLANTING.

Never set out a feeble plant.—TIM.

I HAVE found the Aspinwall potato planter, with the ridgers on, a very valuable implement for striking out for the strawberry rows. It can be made to ridge up slightly, which is right, and it deposits fertilizer in the row where needed for the young plants. Let the roller follow, and then draw a straight line with a garden rope, press the rope in with the feet for a mark, or set the plants along the rope. See to it that all feeble plants are thrown out and all old plants.

The color of the roots is a distinguishing mark of old plants. Such plants are worthless, and if any are discovered in packages sent from a nursery, they should be thrown away ; it is useless to set them.

Fig. 1

A special trowel, Fig. 1, flat like a mason's trowel, but wide and full at the point, with extra large handle, is the best tool to use for setting. Let a boy go ahead and drop.

Be careful not to set too deeply as in Fig. 2, or too shallow as in Fig. 3, and do not bunch the roots as in Fig. 4, but see that every one goes in like Fig. 5.

Fig. 2

Above all, pinch the earth very hard against the roots of the plant, and this may be done with the toe

of the boot, afterwards scraping some loose earth around the plant with the trowel and fingers, to prevent the earth baking.

To ascertain how many plants are required for an acre, multiply the distance apart of the rows in feet by the distance apart of the plants in the rows, and divide the product into 43,560. Thus, if the rows are four feet apart and the plants two feet, it will take 5,445 to plant an acre.

A spading fork or small sized potato hook are two good implements for taking up plants for setting. A trowel is too slow. Rake the beds with a good steel rake before digging, which takes off most of the old runners and leaves the plants in good condition for cleaning.

Fig. 4

If the plants are in plant beds dig up the whole row, throwing out the old plants. If plants are to be taken from a fruiting bed dig from the side of the rows.

As fast as shaken from the soil have men and boys gather them up, holding the plants in the left hand. Crown of the plants as near even as possible, and when the hand is full trim off all runners and lay in a handle basket, roots straight, and all one way.

Take to the packing house. Clean and bunch them and dip the roots in water, and if to be shipped, pack in moss and forward as soon as possible. If to be set out at home, put them in the cellar for twenty-four hours before planting. The tip ends of the roots are cut off just before setting.

Fig. 3

Fig. 5

For summer planting take up the plants with dirt adhering.

To grow strawberries successfully, beginners should order their plants very early in the spring. If a dozen, thirty or a hundred only are wanted, they can be sent by mail free of cost. Five hundred, or more, should go by express. If ordered early in April the nurserymen will send them as soon as the ground is fit to plant them.

When plants are received by mail or express from a distance they should be opened at once and the roots should be dipped in water. If the ground is not ready for them, break open the bunches, spread out the roots, and pack them closely together, so it will be impossible for the roots to dry out.

GETTING ACQUAINTED

CHAPTER VII.

THE PLANTING SEASON.

For family beds fall or spring; for market only in the spring.—PURDY.

THE time of year to set out the strawberry bed will be considered in this chapter, and here I offer the concentrated wisdom of a legion of practical men.

Early spring every time. Every day's delay means a loss in J. H. HALE vigor of plant growth the fruiting season, as, for the most perfect fruitage, we must have the best developed plants. Conn.

H. S. TIMBRELL Early in the spring is the best time. N. Y.

W. W. FARNSWORTH April or early May in this latitude. O.

G. S. BUTLER Very early spring. Conn.

EUGENE WILLETT Spring will always be found most satisfactory. N. Y.

All planting should be done medium early, say late in March CHARLES WRIGHT or during April. If planted before frost in the fall the ground is apt to be heaved; if planted too late in the spring the heat soon kills them. Del.

A strawberry bed for market should be set in the spring as WM. D. BARNES soon as possible after the ground is fit to work and men and teams can be employed. N. Y.

BENJ. BUCKMAN As early in the spring as the ground is in good condition to work. Ill.

As a general thing early in the spring, although market gardeners and some other people find it very convenient to plant A. I. ROOT them at any time of the summer that crops can be taken off the ground. The earlier this summer planting is done the better. O.

GEORGE F. BEEDE Early in the spring. N. H.

EDWIN BEEKMAN In New Jersey the first week of April. N. J.

The month of April is the best one month of the year in
J. W. ADAMS which to transplant strawberry plants, especially for beginners. Mass.

SAMUEL MILLER In this latitude the first of March. Mo.

There are two objections to late setting. First, plants past
EDWARD W. CONE full bloom are not in condition to be moved successfully. Second, there is always danger of failure in case an early drought should prevail. Wis.

GEORGE J. KELLOGG Early in the spring. Planting in August or later is not profitable in the north. Wis.

SUMMARY REMARKS.

These people plainly focus early spring as the best period for setting out a strawberry bed, just as early as the work can possibly be done. To accomplish this, however, it is necessary to procure the plants early, which cannot always be done unless provision be made for it in time. It is well, therefore, if one has to send to a nursery for plants, to apply to one who makes a point of having plants at the proper time; or, if one grows his own plants, as he should, let it be in a southern exposure, in light soil, and take the mulch off early, so the plants can get a start.

But is early spring the only good time to set out a strawberry bed? Well, on this point, as on many others, it will not do to be positive, until we probe the question to the bottom. My own judgment is that the advice given in this chapter is good and will do to follow, at least by beginners, but let the reader proceed to the next chapter, and read what our good friend Adams says about summer planting.

CHAPTER VIII.

SUMMER PLANTING.

Have had good success in August.—ANDREW WILSON.

SO much has been said against the transplanting of strawberries at any season than spring, says Mr. Adams, that I purpose to show a more perfect way for many people, if not for all, and to remove from farmers especially their threadbare maxim that “It’s cheaper to buy than to bother to grow ’em.”

If a person wishes to begin or to try new varieties, it is advisable for him to get his plants as early in the spring as it will be safe to sow early pea seed, and plant them in a row where they will have room to make runners. When the blossoms appear they should all be removed. The ground about the plants should be kept mellow by that best single tool—a fine tooth wooden rake. Encourage early runners to take root by fastening them to the ground with hooks or stones or clods of earth, that they may not blow about.

As early in August as strong young plants can be had, without destroying too many younger runners not yet rooted on a belt of land which you are supposed to have already prepared by deep plowing and enriching, draw a heavy line where you wish to plant the first row. With a flat wheel or with a common hoe you can press this line into the soil, when it can be removed altogether. By this simple method your rows will be perfectly straight.

A marker made in the form

of a rake with fine teeth fifteen inches apart, can be drawn first lengthwise and then crosswise, keeping the end tooth in the line already imbedded in the soil. Where the lines cross will be the points at which plants are to be set, and no runners must be permitted to grow.

If more than five rows are wanted it will be for the convenience of cultivators and pickers to omit the sixth row for a path, and then as the arithmetics would say, proceed as before.

It is very important that these young plants at this season should be removed without cutting or even disturbing the roots. Small pots are often used into which the roots are induced to grow and this method is to be commended if properly done. They must not be allowed to remain until they are too compactly rooted, that is, pot-bound.

The picture represents method of potting runners.

When we ship them to a distance, in order to protect the young roots, we send in the pots instead of knocking them out and wrapping the balls of earth in papers.

In our own garden, however, our land being somewhat inclined to clay, we can take up the plants with a round trowel with a lump of soil adhering and thus remove them to their new quarters without loss. Their growth will not in the least be retarded. The best crop we have ever produced was from plants set out on the nineteenth day of August, the plat being 250 feet long and five rows wide. It was a trial bed with numerous varieties, but the product of one end

GREENVILLE

JUCUNDA IMPROVED

PRINCESS

CLYDE

PARKER EARLE
OR
HAVILAND

CARRIE
OR
MCKINLEY

BEDER WOOD

was measured and proved to be at the rate of 10,500 baskets per acre, all grown within ten months from time of setting. Had they been transplanted with less care, the value of the crops would have been of little account.

When planted in the spring it requires the best part of two seasons to perfect a large yield, thus losing the use of the land for one entire season and adding much to the labor for so much longer a period; for the cost of cultivating so short a time in hills is trifling compared with hoeing and weeding where runners are permitted to grow.

SUMMARY REMARKS.

I desire to add my testimony to the advantage of growing berries by this plan, for it is the method of Ezra Bell, one of the most successful growers of fine strawberries to be found in the model State of New Jersey. The Ezra Bell berries, for size, appearance and quality have long been famous in the Philadelphia markets.

CHAPTER IX.

SUMMER PLANTING.

(Continued.)

Time may be saved by summer planting of rare varieties.—TIM.

THIS subject is partially treated in the previous chapter, but I think it best to give it a little more ventilation, and present the views of several growers on layer and potted plants for late summer and fall setting.

The illustration represents a nice potted plant, ready to be set out in late summer. Such can be had of any plant nurseryman, and will make strong bearing plants the following June.

A. M. PURDY My experience is, nothing is gained by fall planting, considering the extra expense and work. N. Y.

Potted plants I have not practiced with, but depend on layers
SAM'L MILLER well rooted, and if these are set at any time before the middle of October, can bear a fair crop of fruit the following year. Mo.

Layer plants, if properly set at a favorable time, do as well
G. S. BUTLER as potted, but for dry weather the latter are safest. The advantage of fall setting of plants is time gained in early spring. Conn.

Potted plants will only give good results when set out just
A. W. SLAYMAKER at the right time or before they have become cramped in the pots. Fall planting is not satisfactory here. Del.

We get good results from both layer and potted plants.
T. J. DWYER Layer plants can be planted with safety in September, October, and the first half of November. **N. Y.**

Potted plants I have given up and do not bother with.
GEO. Q. DOW Would just as soon have strong layer plants such as I grow. **N. H.**

I would rather have good layer plants than potted plants at
H. S. TIMBRELL the same price at a dry time. The roots of a potted plant do not go deep enough to get moisture. **N. Y.**

I prefer layer plants, if to be set in the fall. Potted plants
M. A. THAYER are not worth the difference in price. Layer grow just as well, and bear just as well. **Wis.**

Our seasons are too short and too cold to practice fall setting, and I want a full season or more to get good strong plants.
A. G. SHARP **Mass.**

Have never set potted plants; do not believe in fall setting here.
BENJ. BUCKMAN **Ill.**

There is nothing but time saved in fall setting, and I would not recommend it for this section. We do much setting in the fall, but it is expensive, and we do it
E. W. REID to save time, nothing else is gained. Pot grown plants are not profitable for fruit growers, they are too costly, but are well enough when one wants a bed for home use, or to get a set for some new variety. **O.**

E. W. REID

I prefer layer plants, they are more thrifty in my soil than potted ones and are sure to live. I never could get much of a crop of fruit from fall set. After the first frost, plants will not
GEO. F. BEEDE grow much; this often happens in September. A few varieties will bear about one-fourth of a full crop and plants are just up for next season as much as spring set plants. **N. H.**

Potted plants and fall setting do not pay. Have quit it entirely.
R. D. MCGEEHAN **Ia.**

I do not consider potted plants any better than layer. If
J. G. BUCHANAN not planted exactly at the right time they
are worthless. O.

J. H. HALE We have put little faith in potted plants and fall
setting on a large scale. It can be done in a small way. Conn.

SUMMARY REMARKS.

Very interesting details of the best method of summer planting have already been given by Mr. Adams, and I especially direct your attention to his plan for obtaining early layer plants discussed therein. It is interesting to note that many of the experts condemn potted plants and say they have better results with layers for fall planting. If one wishes to test new varieties that were not obtainable the spring before, he may be wise in buying plants in the fall but not for growing fruit for market.

Matthew Crawford says, that the soil for fall set plants should be rich, so that their roots may find what they need near by, for they have not time to go far after it. It is well to prepare the plat a week or two in advance, so as to let the ground get settled. And it is very important that the crown of the plant should not be covered.

If it is desired to test a new variety, the fall is the best time to plant it, for the reason that it will bear the next season, and enable one to decide as to its value and give ample time to greatly increase the stock.

The later the work is done the closer should plants be set to each other, so that they may fill the row

with roots and shade the surface with their leaves. If set twelve inches apart in the row in July, ten inches will be enough in August, eight in September, and six in October. The sun should never be allowed to shine on bare ground between plants in the row during the winter or early spring.

Southern people who wish to buy northern grown plants should do it late in the fall. They cannot get them early enough in the spring, and their summer and early fall are too hot for plants grown in the north.

THE YOUNG PICKER

CHAPTER X.

SAVING LABOR.

Never let the weeds get a start.—TIM.

NOT only does it take brain work to grow strawberries successfully, but it requires hand work as well. But in this, as in most operations of the farm, the brains can save the hands a heap of

Planet Jr. Horse Cultivator at work

drudgery. Any one who does not possess a well-organized brain had better not undertake berry culture,

for he will have so much to do with his hands in order to obtain a compensatory crop, that his efforts

Planet Jr. Narrow Tooth Cultivator

will most likely result in failure. He will soon become disgusted and declare that it does not pay to bother with growing strawberries. It is not much bother to the one who has a good share of gumption, a little spunk, was not born tired,

and has a genuine love for the fruit after it is grown.

It will be noted that the Planet Jr. narrow twelve tooth Cultivator is generally approved as the correct implement in the strawberry bed; nothing could be better; nothing else so good; so I have taken pains to give it here and to show the clean rows it leaves behind.

The teeth are all adjustable and those nearest the row may be turned backward, enabling the user to run shallow and avoid tearing the roots of the plants; every berry grower must have this tool. I also show another essential implement for those who have only

Two Wheel Hand Cultivator

a garden bed, this is made by the Allen firm and is called the two wheel hand cultivator. By pushing this along the rows frequently all weeds are kept down, the ground kept mellow, and hand hoeing lessened.

Again I call on our good friends to tell us how to save hand hoeing in strawberry culture, and how the heavy end of the labor can be done by horse power.

W. W. FARNSWORTH

Destroy as many weeds as possible the year before after the potato crop. Cultivate close and shallow both ways until the runners are set and then only one way. W. W. FARNSWORTH Use Planet Jr. with sweeps one time and scraping shovels to scrape away from the plants the next time, and harrow often to prevent the weeds getting too large. O.

On my soil it is not possible to dispense with hand hoeing. The Planet Jr. EUGENE WILLETT Cultivator and a light thin bladed hoe in the hands of an active man are the surest, safest, and, in the end, quickest way I have ever found. N. Y.

I never could get along without considerable hand hoeing. For cleaning out old beds I use Boss Plow that has a mold-board about as large as one's hand, which H. S. TIMBRELL leaves the ground level and all the rubbish on top, and I use a fine tooth cultivator which cleans them out of the row which will have to be hand hoed.

N. Y.

W. C. WILSON Planet Jr. Cultivator and Horse Harrow supplemented by hand hoe.

H. S. TIMBRELL

III.

The best way to save hand hoeing is to use cultivators every T. J. DWYER ten days or so. A careful man, steady horse and proper tools are very essential requirements in the care of strawberries. We use the Planet Jr. Cultivator. N. Y.

GEORGE Q. DOW Use a fine tooth cultivator. The Planet Jr. people make one with lots of fine teeth. N. H.

M. A. THAYER Cultivate strawberries both ways just after setting and continue until time to set runners. Wis.

To save hand hoeing, plant in rows that are $3\frac{1}{2} \times 2\frac{1}{2}$ or $2\frac{1}{4}$ feet and cultivate both ways until plants commence to make W. F. ALLEN, JR. considerable runners and then cultivate only the wide way. By this method only one or two hoeings will be necessary. Md.

A. G. SHARP

Use Planet Jr. eleven tooth Harrow-Cultivator, teeth fine; does not throw dirt A. G. SHARP on the plant and can be run very close This harrow is changeable in width and can be changed while in motion. Mass.

Plant in rows four feet apart. As fast as the runners are large enough to take root let them run in the rows to the right and left so as to stand in a narrow line, A. I. ROOT then you can get close up to the plant with the cultivator. I do not know of any tools better than the Planet Jr. fine tooth; this can be run close up to the plant and not injure the leaves. O.

Cultivating should be done soon after rains when the ground is soft. A special trowel for setting plants like a mason's trowel, GEORGE F. BEEDE wider and full at the point with extra large handle is the best tool for setting. A toothed Sunnyside hoe is the tool for hand work. I enclose cut of trowel. N. H.

I am prejudiced in favor of the good old hand hoeing. Absolutely clean culture is not possible without it. By mark- EDW. W. CONE ing ground as for corn and planting so as to admit of cultivation both ways, hand work may be lessened considerably. Wis.

Early runners make the best plants; GEO. J. KELLOGG cut off the late runners. Wis.

EDW. W. CONE

We use one heavy fine tooth cultivator and a lighter one HORACE J. SMITH with fourteen teeth. There will be still some hoeing to do as well as weeding, which later, as well as the setting of runners, we do with a crew of small boys. Wis

BENJ. BUCKMAN Cultivators should have many teeth and run shallow. Ill.

WM. JACKSON I plant in check rows and use Planet Jr. Cultivator, running both ways, as long in the summer as I can. Ill.

The best tool to save hand hoeing is the Planet Jr. Horse
WM. HOOVER Cultivator. We use one and a quarter inch
steels and can cultivate within one inch of the row. Col.

J. R. HAWKINS The best hand hoe is made about two and a
half or three inches wide, attached to an ordinary handle. N. Y.

REMARKS.

When I go out to work in the berry patch after Allen's Cultivator has done all it can, I take a hoe like
this, and am sure to keep it sharp.
The blade is three inches wide. I
generally work this by proxy and
find it easier that way and more effective.

Here you have it: Plant in rows both ways; use Planet Jr. Cultivator, going over the ground once a week, killing weeds when they are young; get the ground free from weed seeds by previous clean cultivation in hoed crops; apply no fresh manure containing weed seeds. After the runners are spotted out in July and August, use hand hoe among the plants when necessary, keep the ground mellow, and let no weeds get a start; give abundant space to each plant, and fertilize liberally, so you will not have small berries to pick.

When the runners begin to grow in June or July, the first ones should be cut off, so as to allow the plant to acquire strength. Later it will send out new runners on all sides instead of on one side.

Attend to these things, and you will find it is not such a serious matter to grow plenty of strawberries.

CHAPTER XI.

DISTANCE APART.

Call all plants from late runners weeds.—TIM.

I CONSIDER this one of the most important chapters in the book, for strawberry culture depends largely on the distance the plants stand from each other at fruiting time. Most growers have too many plants on the ground, which insures small berries, low prices for those marketed, much extra labor in picking and general failure. It is not so important how closely the rows or plants are as first set out, but how thickly the plants are allowed to remain in the matted rows is an essential consideration, which does not receive the attention that it deserves.

Rows a Month After
Planting

Hills at Bearing

I will illustrate the matted row and hill systems of culture. Some growers prefer the wide matted row, some the narrow; some prefer to keep the plants in hills, cutting off all runners. For myself I like best the wide matted row, for I believe if the plants are not allowed to become too thickly matted, they do better this way. Strawberries must be shaded from the sun, they color better, and hold out better

through a hot spell, which is sure to come, and this condition is better obtained than in hills or narrow rows.

Wide Matted Rows

Narrow Matted Rows

Here is what the experts say about distance apart for best results :

SAM'L MILLER Rows three and a half feet apart and the plants eighteen inches apart in the rows. Mo.

Vigorous varieties set four feet and two feet in the row. Set **GEO. F. BEEDE** well growing varieties fifteen inches in the row ; have plants thick or thin, as suits the variety. N. H.

Rows four feet apart and plants two feet apart in the row ; **A. I. ROOT** thin before freezing weather. I would thin the plants out so they are about six inches apart from centre to centre. O.

WM. D. BARNES

Three and a half feet is the proper distance for the rows, and fifteen inches in the rows. Varieties like Michel's **WM. D. BARNES** Early and Crescents, that throw out a great many runners, should be set six inches further apart each way. N. Y.

Plants should not be closer in the **H. S. TIMBRELL** matted row than six or seven inches at picking time. N. Y.

The rows should be planted three and a half feet apart, and **T. J. DWYER** the plants in the row should be twelve to fifteen inches apart at picking time. The matted row should be from twenty to twenty-four inches wide. N. Y.

It makes a difference what varieties are planted ; Warfield, Crescent, Michel's Early, etc., should be planted not less than two feet apart in the row, as a rule ; while kinds that make EUGENE WILLETT a slower stand should be much closer, say from twelve to eighteen inches. While we formerly planted five feet apart, now we plant only four feet, and make the middle space narrower.

N. Y.

We put all rows out three feet four inches apart every ten feet, which can be easily measured and marked by stakes containing three rows. Had we planted to rich land four feet apart might be better, but we think not. The plants might be set the same distance apart and have the soil cultivated both ways. On a large scale this would be our plan. Should anyone prefer to set the plants nearer together, as many do, they could be planted twenty inches apart, and still be cultivated both ways, or in rows, by the modern steel frame cultivators. It is a common custom, recommended in all books, to run the cultivator through the rows, always in the same direction, thus pushing the rows aside and massing them together, and for what purpose? To save J. W. ADAMS labor ostensibly. What is the result? A dozen or so of unproductive plants to the square foot, stunted in growth, in flower and in fruit. At the Field Day Show of the late P. M. Augur, two young men sat down and counted more than 200 berries on one plant, the fruit being of good size. How much space do you think that single plant occupied? Would you grudgingly give that plant a square yard of ground? If you would have maximum results select your runners as they appear, allot them a space more than a foot square for every three or four plants, and then defend them in their lease of land against all weeds or runners. Then it has been our practice, as soon as the runners well cover the ground, or about October 1st, to cut out all of the old plants set out in the previous spring. In this way we obtain less in number, but much larger berries.

Mass.

I believe the best and cheapest way of setting plants is to mark the ground both ways in checks, in hills, three to four feet S. W. GILBERT and cultivate both ways. Keep all runners off until the plants are well established, and then train the runners to fill the three foot space. Six inches apart is close enough for the plants, and a foot would be better.

Mo.

I set my plants about one foot apart in the rows, and rows one foot apart. Only two rows in a bed, alternating the plants so as to take up all the space in the rows. I always cultivate JOHN F. BEAVER the plants in the spring, and in planting alternately in the rows, I can cultivate each plant, which will make a very material difference in the growth of both foliage and fruit. I cut off all runners. O.

(Mr. Beaver is an amateur grower, who has only a garden patch, but is famous for big and beautiful berries, often exhibited at his county fair.)

GEO. W. ELVINS We have the beds twelve inches wide, with six inches for the growth of each plant. N. J.

DR. J. STAYMAN

It is better to set the plants rather close in the rows, to get a good stand as DR. J. STAYMAN early in the season as possible, and then cut off the late runners, as they are often blank plants that do not fruit. Kan.

ROBT. H. GILLIN The plants at picking time should be eight to nine inches apart. Pa.

BENJ. M. SMITH Plants in matted rows should be thinned so they will stand eight to ten inches apart at picking time. Mass.

SUMMARY REMARKS.

The novice in strawberry culture, and even the veteran, may well read this chapter over two or three times. The lesson should be learned by heart that each plant should have plenty of room to develop and perfect its fruit, and that some varieties require more than others. I do not believe any sort will do its best in less space than fifty square inches, and some kinds should have double that.

Another lesson which ought to be well studied is the importance of obtaining strong plants from the early runners, as advised by Mr. Adams and Dr. Stayman. Some varieties, like the Gandy, bear scarcely any fruit at all on feeble plants, while on the early started strong ones, they yield quite well. Many have discarded this splendid berry, because supposed to be a poor yielder, when the whole trouble is as indicated above. I would say, set your plants in rows four feet apart; place the plants two feet apart in the rows, and let the rows run both ways, so the cultivator can run both ways until July; then spot the runners eight inches apart, as they form over a space thirty inches wide, and cut off every supernumerary runner after the ground is filled.

CHAPTER XII.

MULCHING.

Do not rake off the mulch in the spring, loosen it up.—TIM.

THE importance of mulching is becoming better understood than formerly, and the work is done with more thoroughness. The advantages from it are well set forth below.

A. M. PURDY Doubles the crop. N. Y.

Mulching is almost indispensable, and with underdraining
SAMUEL MILLER and facilities to irrigate, strawberry growing
successfully hardly can fail. Mo.

Underdraining adds much. It retains moisture and admits
E. W. REID air from below that makes it much better for
working. O.

A. G. SHARP Mulching keeps fruit clean and helps to carry
through drought. Mass.

CHARLES WRIGHT

I have never seen any advantages here from mulching. I have tried straw but got less berries where I used it and not
CHARLES WRIGHT half so good, either. Wet ground should certainly be underdrained. Moisture is always essential for strawberries. Del.

A. P. SAMPSON We have to winter mulch and use meadow hay. Mass.

We mulch in the fall after the ground freezes. It keeps the ground from thawing in the hot sun and prevents heaving or wintering out. It
H. S. TIMBRELL keeps the foliage green and fresh, and a heavy mulch during the picking season keeps down weeds and the berries clean from sand and dirt, also keeps the pickers clean, helps hold moisture in a dry time, and answers for manure when plowed under. N. Y.

ERIE OR LIDA

FELTON

WARFIELD

WM. BELT

The advantages of mulching are that when applied at the beginning of winter it prevents the plants being drawn up by the frost, disturbing and breaking the roots. If left on late in J. W. ADAMS the spring it helps to escape frost while the plants are in bloom, and it also retards ripening of the berries. When renewed in the spring it keeps down weeds, and the fruit from sand and dirt. Mass.

Mulching is absolutely necessary at the north for winter protection. Some varieties, such as Parker Earle, absolutely need four inches of well-rotted manure, GEORGE J. KELLOGG covering the entire space between the rows to protect them from drought and feed the enormous burden of fruit, and the same treatment will pay on all varieties. Wis.

Without mulching, the bed becomes Z. T. RUSSELL thoroughly set with weeds and grasses, and is ruined by a few days' drought. Mo.

SUMMARY REMARKS.

I have but little to add to the above arguments in favor of careful mulching. Early winter is the best time to do the work, after the ground becomes hard enough to bear a team. Swamp hay, straw and cut corn fodder are all good materials for the purpose, but the best thing is well fermented and rotted horse manure. The plants should always be covered up clear out of sight during the winter, and in the spring the mulch should be retained around the plants, but not directly on them. A heavy mulch left on late in the spring insures late berries. The plants must have some vent if covered deeply after the weather warms up, but do not rake the mulch off the row.

It is somewhat remarkable that a close cover like a leaf of a turnip, put upon a plant, will surely finish it, but a pint of sand will do it no harm. The moral is to have a loose mulch for the strawberry bed.

Spring cultivation is a delusion and a snare. Keep the ground moist and mellow by a suitable mulch, not by cultivation.

Taking the mulch off too soon is a fruitful cause of injury from frost.

For a late crop of late berries four inches are not too deep for the mulch.

A THIMBLEFUL

CHAPTER XIII.

UNDERDRAINING AND IRRIGATION.

Too much water in the soil is as bad as too little.—TIM.

THE strawberry is such a thirsty plant when it is loaded with fruit, that ample provision should be made to give the bed all it can use of water. In ordinary seasons on some soils this can be done by thorough mulching, retaining the moisture provided by spring thaws and rains throughout the fruiting season; but in dry weather the crop is often shortened through lack of water unless underdraining or irrigation, or both, are resorted to. Underdraining is needed on all soils with a hard clay bottom, whether the season be wet or dry, and a bed should never be set in such a soil without underdraining, as failure, partial or complete, will result if the season be either very wet or very dry. Underdraining will double the crop. Irrigation is not practicable on ordinary farms, but when a bed can be planted near a stream or pond that will yield an abundant supply of water it has been found advantageous to irrigate, which will largely increase the crop and greatly lengthen the bearing season.

E. G. TICE Underdraining makes a larger and much better crop. N. Y.

Underdraining by first drawing off the surplus water encourages the plants to make a much deeper penetration of the soil with HORACE J. SMITH their roots, which is an immense aid to the production of fine large berries during a critical time in the life of plants. Wis.

Strawberries require an immense amount of water to achieve
 EDWIN BEEKMAN perfection, hence the advantage of low
 lands well ditched. The ditches can be stopped so the beds can
 be flooded at night. N. J.

Underdraining renders the soil loose and protects against
 ANDREW WILLSON wet and dry weather. Irrigation is rarely
 needed when the ground is underdrained and mulched. O.

BENJ. BUCKMAN Underdraining is valuable on all ground in
 some seasons and on wet ground in all seasons. Ill.

We have practiced irrigation for raising plants but not for
 A. I. ROOT fruit. For filling orders for fruit promptly in
 summer we find irrigation a necessity. O.

A. G. SHARP Underdraining lightens a heavy soil. Mass.

All fruit land must be underdrained either naturally or
 artificially. When the subsoil is porous gravel or sand the
 WM. D. BARNS natural drainage is complete. A clay or hard
 subsoil should be underdrained before a crop of strawberries
 can be grown with any certainty. N. Y.

W. C. WILSON I believe that underdraining pays on any soil
 except a very dry sandy one. Ill.

Underdraining lightens a heavy wet soil, keeps it from bak-
 ing, makes it more porous with a better circulation of air
 through it, draws off all stagnant water, which some varieties
 H. S. TIMBRELL of strawberries will not stand at all. The
 Crescent and Manchester die on a heavy, wet clay soil, and
 also others of the same strain, but such as the Sharpless, Tim-
 brell, etc., may thrive on it and produce large crops. N. Y.

Underdrainage is a great benefit to any wet soil, and some
 lands not called wet would be greatly helped. Heavy land is
 EUGENE WILLETT kept more pliable by lessening the chance
 of its baking after a heavy rain. It is sooner worked and easier
 kept tilled. N. Y.

No use to try to grow berries profitably without under-
 W. W. FARNSWORTH draining unless the soil be naturally
 well drained. O.

Underdraining is conducive to health, growth, and moistens heavy soil for various reasons. It removes stagnant or muddy water and thus warms the soil, which is very important. All rains which fall then pass through the soil. The stagnant water having been drawn out, the land is capable of receiving and retaining for the use of plants as much water as will fall in ordinary showers. Irrigation is beneficial in many ways, but J. W. ADAMS especially so when the fruit is swelling, for the strawberry loves moisture, and cannot perfect its fruit without it. How and where to apply it has caused many doubts. We have usually let it run between rows on the surface, our land being neither level nor steep. Water runs a long distance without soaking away too soon and without washing. We have never tried plowing a light furrow and laying small underground tiles, but the plan seems feasible for steep side hills, and not too expensive to be profitable. Mass.

Strawberries want water ; more of it than they are likely to get. Irrigation makes big berries out of what otherwise might be little ones, or helps to make the last picking almost as fine as the first. It makes big, showy berries, and also makes J. H. HALE them with less color, soft in texture and not so good in quality as without it ; and it is a sight more satisfactory to sell water in the strawberry than in milk, especially after it has been drained from the cow. Conn.

REMARKS.

I said in the beginning of this chapter that in stiff clay soils underdraining will double the crop, and I wish to emphasize the statement by repeating it here ; but it is without the compass of this book to describe methods of underdraining, and I refer the reader to a capital little work on the subject, written by W. I. Chamberlain, and published by A. I. Root, of Medina, Ohio.

I notice a very interesting chapter in J. H. Hale's catalogue on irrigation for strawberries, telling how he makes a success of it.

THIS IS NOT A CALIFORNIA BIG TREE—ONLY A STRAWBERRY, LIFE SIZE

CHAPTER XIV.

STAMINATES AND PISTILLATES.

(Perfect and Imperfect.)

Be sure to provide plenty of pollen.—TIM.

THESE terms are now well understood by others than novices in strawberry culture, but beginners may need to be told that the staminate plants are those which carry their own pollen, and are, therefore, called perfect flowering, while blossoms of pistillates contain no pollen, are imperfect flowering, and, therefore, require the aid of a staminate variety before they will produce fruit. A strong staminate blossom is

Fig. 1

shown in Fig. 1, a pistillate in Fig. 2, while a feeble staminate is indicated in Fig. 3, which has a few stamens only, and they not fully developed. The

Fig. 2

Fig. 3

Haverland, and some others recognized as pistillate sorts, have a few stamens, and furnish sufficient pollen for self-pollenization, under favorable conditions; and such kinds are usually more prolific of fair fruit than pistillates which are entirely devoid of stamens. Staminates can be grown in a bed by themselves, and

will bear fruit; pistillates are fruitless, unless they have staminate nearby to fructify them. The necessary pollen is carried from staminate to pistillates by the aid of the wind and of bees, and rainy weather in blossoming time is apt to interfere with the distribution of pollen, and cause an imperfect crop of fruit, in which many specimens are shortened at the apex, small and ill-formed. Wet weather likewise interrupts the perfect development of fruit on staminate varieties, but to less extent than on pistillates.

It is a question often discussed among berry growers, whether it is best to discard the imperfect flowering varieties entirely, owing to the inconvenience of always having to plant a suitable pollenizer near them; and I have asked the opinions of the experts on the subject, and also what proportions of the two kinds should be planted together.

The imperfect will never be discarded. They are most productive, yet we find the most of them soft and only good for home market. One great point in favor of imperfect is, they are less liable to be killed by late frosts. I would always have one-
E. W. REID third of the perfect blooming varieties, but would have them of two varieties, one to be an early bloomer, and the other a late. This makes a fine change in the size of the fruit of the imperfect at the last of the season. They are not so apt to run irregular or knotty. O.

No; pistillates properly pollenized are better. The produc-
GEO. J. KELLOGG tion of pollen seems to weaken the perfect flowering kinds. Two rows of perfect and two rows of pistillates are better than any less proportion. Wis.

The staminate vary in the amount of pollen produced, and
EDW. W. CONE some varieties are more strictly pistillates than others so-called, and require an abundant and close pollenization. Wis.

ANDREW WILLSON No; every third row should be staminate. Some of the very best are imperfect flowering. O.

No staminate that I know of are heavy croppers, unless it
 BENJ. BUCKMAN may be Parker Earle. Proportion varies, say four rows H. and two rows P. Ill.

Imperfect varieties are somewhat of a nuisance, but cannot
 A. I. ROOT be discarded, especially such varieties as Bubach, Haverland and Warfield, and some others, until we find some other varieties that will give the same results in berries. O.

By all means, as it is a nuisance to have to plant a staminate
 A. G. SHARP to every third or fourth row, as is now necessary with these imperfect flowering varieties. Mass.

H. S. TIMBRELL I think not; as the imperfect are, as a rule, the most productive. N. Y.

J. R. HAWKINS I am not in favor of using imperfect flowering varieties. N. Y.

In planting both kinds equally valuable, I would plant in alternate rows. When one variety is most valuable, then plant
 J. H. HALE two to one. Have sometimes planted three to five rows imperfect, to one of perfect, and found it all right if dry weather prevails at planting time, but more or less of a failure if rains come when plants are in bloom. Conn.

I think we are soon coming to the time when imperfect
 G. F. WHEELER flowering varieties will be discarded. The introduction of a few more staminate kinds will make it impossible to introduce anything but a perfect flowering variety. Mass.

Many growers of plants say, "Give me perfect blooming plants, I do not want the setting of so many kinds." Not so the experienced grower, for he has learned that the pistillates are the ones from which his baskets are filled, and his pockets
 J. W. ADAMS replenished. It is yet a disputed point what proportion of flowering plants to be used. We recollect one excellent crop from pistillate varieties with no other sorts within one hundred feet of them. We have now settled on one stereotyped rule of three of pistillates to one of staminate. Mass.

Not yet. There is no variety among the staminate kinds
EUGENE WILLETT that will yield quite what pistillates do. We
usually plant two of staminate to four of pistillate. N. Y.

BENJ. M. SMITH I do believe it is best to discard, as far as
possible, imperfect flowering varieties. Mass.

One thing I have observed that I have never seen in print, is
E. M. BUECHLY that the pistillate berries are more hardy in
spring frosts than the staminate sorts. O.

SUMMARY REMARKS.

These answers cover the ground admirably. Two of them call attention to the fact that early spring frosts are more apt to injure the staminate blossoms than the pistillates, and I know this is correct. The Sharpless, which is a staminate, is most liable of any to be frost bitten and ought to be discarded, or at least, planted sparingly. Some varieties, notably Haverland, which is considered a pistillate, have some pollen of their own, and require less care in planting a staminate variety near them; in fact, the Haverland will almost fertilize itself. There are other pistillates with similar capacity, especially in favorable seasons.

Ordinarily, I think it best to plant one row of staminates to two of pistillates, or better still, perhaps, plant each in alternate rows.

Care must be taken that the pollenizer be a sort that will bloom abundantly, and early and late, so that the adjacent pistillate blossoms may receive pollen throughout the blossoming period. For this some varieties of staminates are much better than others, some are quite inadequate. It is important, also, that

the staminate and pistillate to go together should be selected so that the fruit will ripen at the same time, and that it be nearly the same shape and color, so that it can be picked and sent to market in the same crate. It requires skill to do this, but it will repay careful study. For instance, the Pearl or Parker Earle is well adapted to fertilize the Haverland, being of the same form and ripening nearly enough at the same time. It is probable that every desirable pistillate sort has a good friend among the staminate that it should be married to in preference to the others, and the wide-awake berryman will look sharp that his varieties be well mated.

A pistillate variety will vary quite perceptibly when fertilized by different perfect varieties; so, if you want firmness, you should fertilize with a firm berry; if sweetness is wanted, fertilize with a sweet one; if dark color is wanted, fertilize with a dark one. In fact, whatever peculiarity you wish to transmit to the pistillate variety, seek it in the perfect variety you would fertilize by. Staminate affect the size, color, solidity, shape and quality of pistillates. Make a study of which varieties planted together bring the best results.

The honey bee will visit 10,000 strawberry blossoms in a single day.

BOUQUET OF SAUNDERS

WITH COMPLIMENTS OF TIM'S WIFE

Showing one plant of Saunders, and berries which grew thereon, taken from our patch after one picking. Saunders is remarkable for vigor of plant, size and beauty of berry, and extreme productiveness.

CHAPTER XV.

TEN VARIETIES OF ESTABLISHED MERIT.

'Tis easy to go further and fare worse.—TIM.

I SHALL not undertake to describe all the varieties of strawberries now before the public. I shall not describe any which are likely to be soon discarded, owing to some fault or lack of positive merit.

For one thing, I do not possess the facility of language, or the elasticity of conscience that will induce or enable me to bestow superlative praise upon a hundred different varieties. I have found it very difficult to decide how best to present the question of varieties, since there are so many with such varying merits and faults in different localities, and under different conditions, and opinions of growers vary so much; but I have concluded to first present a standard list, consisting of ten sorts of established merit, such as have been well tested in all parts of the country, and which have proven to be worthy of trial, and which are pretty sure to give a good account of themselves under fair conditions of soil, climate and culture. Some of them, like the Warfield, are supposed to have run out, and others, as the Parker Earle, are not free from faults; (did you ever know a variety free from faults?) yet I consider the ten named, all things considered, the best ten to be found among all the varieties now before the public.

In the following lists please observe that the staminate, or perfect flowering, are printed in large type; and the pistillates, or imperfect, are in small type.

BUBACH.—The foliage of the Bubach is of medium green color, the plant vigorous and healthy, productive of very large, roundish, conical berries; many of them obtuse conical. Color dull scarlet; flesh pink. It has been before the public for several years, maintaining a high reputation in nearly every part of the country. An abundance of manure will cause it to run to vines. It does well in rather poor soil, where no other kind will flourish. It is rather soft for shipment to a distant market, but for nearby market it is among the very best. Cumberland is a good variety to fertilize it with. Bubach is undoubtedly one of the most valuable and popular varieties ever used. See Plate VIII.

HAVERLAND.—The plant is thrifty, of medium green foliage. Sets plants freely, but not too much so. Productive of long, conical berries, of scarlet color, with some neck. Yellow seeds; pink flesh, of not very high flavor. Under favorable conditions it is enormously productive of very attractive, salable berries, which ripen all over. They grow on long stems, which lie on the ground, and if rains come at ripening, followed by hot sun, are liable to rot. It is hard to say too much for the Haverland as a market berry; it gives us berries moderately early, and holds out well until the last. The Lovett is a good variety to fertilize it, but it has some pollen of its own, and some seasons will nearly fertilize itself. See colored Plate IV.

CLYDE.—A very productive and valuable variety. The plant is clean, healthy and vigorous and very prolific; forms several crowns and numerous runners. Foliage light green and healthy, berries large to very large, and of light scarlet color and of roundish, conical, regular shape; quality fair, season medium; must not be allowed to mat too thickly; a good pollenizer. A good shipper, though not the best. It is a good drought resister, and Hale describes it as “a money catcher, debt destroyer, basket filler and family pro-

vider." The Clyde is an up-to-date berry for up-to-date growers. See colored Plate IV.

SAUNDERS.—This is a grand berry. Originated with John Little, of Ontario, Canada. The plant is healthy and very vigorous, as much so as the Haverland. The berries are very large, glossy crimson, of good quality, with bright yellow seeds and red flesh. It yields immensely under fair conditions, of very salable berries of solidity to market well. It sets fruit almost as freely as Parker Earle, but, unlike that variety, is able to carry to maturity all the berries that form. Elsewhere is shown a group of Saunders, all taken from one plant from my own patch.

PARKER EARLE.—Plant robust, strong and healthy, with many crowns; wonderfully productive of conical, medium sized berries, with slight neck; of rich,

PARKER EARLE

A splendid late berry, but the plant tries to do too much and sometimes fails

glossy scarlet crimson, red flesh, sub-acid, and indifferent in flavor. Sets usually more berries than it can bring to maturity or ripen, and the plant suffers in consequence, and is ruined in dry seasons. Irrigation would probably bring out its good qualities. It is a good shipper; season late. It should be grown in rich, moist ground. Shown in colored Plate IV.

MARSHALL.—This variety must have place in a list of the ten best. The plant is a very strong grower,

A NICE DISH OF MARSHALLS

ahead of most others in this respect, with dark green foliage. It is moderately productive of very large, beautiful, quite dark berries, with yellow seeds; flesh solid, dark red, of rich and high flavor; a good shipper. It ripens with the early berries and continues late. It must have rich soil and plenty of room between plants. Very popular in New England, where

SAMPLE

SAMPLE—INTERIOR

PLATE VIII.

BUBACH

GARDNER

PRIDE OF CUMBERLAND

dark colored berries are liked, and its great merit is becoming widely recognized over the country.

WARFIELD.—A very valuable market berry, though rather tart for home eating. The plant is small and of fragile appearance, but makes a thick matted bed, and bears abundantly. Exceedingly productive, of dark, glossy, red berries, with yellow seeds, which carry well to market and sell well. It is a strong rival of the Crescent, and has superseded it with many growers. Shown on colored Plate V^r.

WM. BELT.—Heavy, stocky plant ; medium to very productive of large to very large bright, glossy, red berries with yellow seeds ; no green tips. Largest first berries a little coxcombed but later ones mostly very regular. Flesh deep pink, firm, rich, sweet and high-flavored ; a superb berry for the family or fancy market. Thrives on any but light, thin soil. See colored Plate VI.

GANDY.—This is one of the best varieties ever introduced. The plant is large and healthy and vigorous, with thick, dark green foliage, bearing very large, roundish, conical, solid red, finely formed berries. There is no finer berry to carry to a distant market than the Gandy, and none presents a finer appearance. It is not only large, but uniform in size, perfect in shape and color, and ripens evenly. In color it is a dark crimson, the flesh pale salmon. The plant must have an early start in the spring to produce a full crop the next season. A group of Gandys, all grown on one plant, is shown opposite the title page of this book. Also shown in colored Plate II.

BRANDYWINE.—This comparatively new variety is now widely accepted as a standard sort. It originated

near West Chester, Pa., and is supposed to be a cross between Cumberland and Glendale. After a thorough trial I am highly pleased with it. The plant is vigorous, throwing out abundant runners. The fruit is large and has a large calyx ; shape somewhat irregular, but not to hurt ; ripens evenly and is red inside ; flavor good, but best as a market berry, and it is very handsome and solid ; it is the best of all for canning and preserves. In season it is medium to late. It does best on loamy or clayey soil. See colored Plate VI.

A DISH OF ROYAL BRANDYWINES

CHAPTER XVI.

NOTES ON OTHER OLD VARIETIES.

Some good yet ; others worn out.

IT is indeed a difficult matter to handle my subject when it comes to varieties. In the last chapter I named ten, which, all things considered, taking the country over, could be least spared. And yet hardly any berry grower would select the same sorts throughout, were he asked his opinion. Some that I have named he would reject as worthless ; some that I have omitted, he would put in. This is a large country with varying soils and climates, and markets are different, so that a variety good in one place is worthless in another, or nearly so.

Many of the sorts mentioned in this chapter are such as do well in some sections, and many growers could doubtless select therefrom three or four kinds that they would unhesitatingly place in the list of the best ten, and in doing so they would not go far wrong. Others of the following list seem to have so run out that they can no longer be depended upon and should be dropped. As in the previous chapter, perfect flowering are in large, imperfect in small type.

PEARL.—This is an excellent berry for family use, and for market too, but the foliage has developed such a tendency to rust, that it had as well be discarded.

JUCUNDA IMPROVED.—An excellent berry in every way, but growers of plants have discovered it to be replaced by newer, if not better sorts. See colored Plate III.

CRAWFORD.—I have been greatly disappointed in the Crawford solely because it rusts badly. I would advise that it be discarded.

EDGAR QUEEN.—Another good sort that seems to have got left. See colored Plate I.

GREENVILLE.—This is a fine, large berry; considered by some an improvement on the Bubach, ripening a few days later. It is very productive. It is not firm enough for long shipments, but the plant is free from disease; berry of fine appearance and good quality. The foliage is strong dark green; the berries are a glossy crimson, bright yellow seeds; flesh medium red. Each plant throws up several fruit stalks, and the berries on each one of them ripen at the same time. Rich, spicy flavor. I commend this for general trial for a market or home fruit. Season medium to late. See colored Plate III.

HOW DO YOU LIKE THESE?

LOVETT.—Very vigorous plant; rich, dark glossy foliage. Very productive of medium sized roundish,

conical, crimson berries, seldom ill-shaped, with light red flesh. Some specimens quite dark red all the way through. Sub-acid without much flavor. Larger and more productive than the Crescent. It is an excellent pollenizer, furnishing bloom through the season. Hale says it does better in loam or clay than in sandy ground. See colored Plate I.

CRESCENT.—The most prolific and best known of strawberries. Thought by some to have run out, but will hold on while a good many new ones die. The plant is light and slender, but healthy and vigorous. The berries are rather small, roundish, conical, slightly depressed at apex, of dull scarlet color; light flesh; sub-acid, with spicy flavor; season early to late. It is often called the poor man's berry because it is sure to yield fruit under adverse conditions. Shown in colored Plate II.

DISH OF BEDER WOODS
Hard to beat

BEDER WOOD.—Moderately thrifty growing plant of Crescent type; very productive of medium, roundish, dull scarlet berries, with white flesh; moderately firm; sweet but insipid. Seems to give fair satisfaction where tried, but I would not plant it for market. See colored Plate IV.

BEVERLY.—A vigorous, upright grower with heavy foliage of the Miner type; medium green; very productive; large, irregular, roundish or obtuse conical berries; red color, similar to Miner; deep crimson-white flesh and good quality, although somewhat acid and not firm; bears a long time, holding out well. See colored Plate II.

SHUSTER'S GEM.—Medium growing plant, moderately productive of medium sized, conical, dull scarlet berries; with white flesh similar to the Haverland, very rich and sweet, but not solid enough for distant market. Season early to medium.

CUMBERLAND.—This is a fine old variety, one of the best for the home garden and good for near market. The plant is healthy and vigorous, and berries are a beautiful light red, of high quality, round and very uniform in shape. A good pollenizer for pistillate sorts and does well on poor soils; season medium. One objection to the Cumberland is its liability to be frost bitten.

BARTON'S ECLIPSE.—Growth rank; foliage light green; leaf stalks long and stiff; leaves large; fruit large to very large, conical, rounding in large specimens; dark red, showy, medium firm; quality fine; a fairly good market berry, though not of sufficient merit to warrant its showing on colored plate.

MICHEL'S EARLY.—One of the earliest varieties grown. The plant is a very robust grower, strong and healthy, although plant is rather small; one of the best of the early pollenizers, as it blossoms early and late. Moderately productive of uniform, small sized berries of good quality; flesh soft, nearly white; roundish, conical; dull scarlet in color.

FELTON.—Of rank growth ; somewhat of Sharpless type ; good bearer of very large, soft berries, not suit-

A NOTABLE QUARTETTE
Too big for the tumbler

able for market ; not recommended except to give the family some prize berries. Shown in engraving of four berries in a tumbler ; or, trying to get in. See colored Plate V.

MUSKINGUM.—Once very promising, with some good points, but the plant is too feeble and it will have to go. No variety will stand the test of time unless the plant is naturally healthy and vigorous.

WOLVERTON.—Much was hoped for this berry, and it has good points, but the white tips condemn it. Not equal in any way to Saunders.

SHARPLESS.—Too well known to need description. Grown yet in many gardens because of its large size and excellent quality, but the blossoms are tender and the fruit is liable to be blasted by frost in early spring. It is time to discard it.

WILSON.—This veteran is still grown in some sections more than any other single variety. But the plant is feeble, the berry small, sour and inferior to many others. Why it is planted at all I cannot imagine.

JESSIE.—A good pollenizer for Bubach and Haverland. The strong points of the Jessie, according to A. I. Root, are that it is exceedingly early, of large size, and that its red cheeks, reminding one of a ripe peach, make it bring the very highest price. The berry is sweet and holds on well to the last. Its disadvantages are that if the soil is not just to its liking it gets feeble, and does not bear much fruit, and its blossoms are likely to be injured by frost.

MARY.—A stocky growing plant with many fruit crowns, productive of large, roundish, conical, dark, glossy crimson berries; very red at the centre; acid and flavorless; productive and late. I am inclined to think that this will prove a good market berry.

Of the twenty varieties mentioned in this chapter all but four have perfect blossoms. Out of the ten best varieties named in the preceding chapter, all but three are self-pollenizing. It seems not unlikely that before very long pistillate or imperfect flowering varieties will be abandoned altogether. The sooner the better.

GANDY.

PEASE.

CRESCENT.

WILLIAM BELT.

PRIDE CUMBERLAND.

WARFIELD.

MAXIMUS.

SHARPLESS.

ERIE.

HAVERLAND.

CLYDE.

MORGAN.

HALL'S FAVORITE.

GARDNER.

GREENVILLE.

LOUIS GAUTIER.

SOME OF THE LEADING BERRIES OLD AND NEW
SHOWING RELATIVE SIZE

CHAPTER XVII.

NEWER VARIETIES ON TRIAL.

Try all things and hold fast to that which is good.—PROVERB.

THERE are many for this list, and not a few which are pretty certain to come to the front in the near future and take their places in the first rank.

There never was greater activity among berry-men than at present to originate and introduce new seedlings, and I am glad that it is so, for this is a worthy work and must result in great good. If they will but give us one variety of merit annually, their enterprise will be justified and they will deserve the thanks of their generation, so I wish them abundant success in their labors. I am indebted to J. H. Hale for some of these descriptions of new berries from his trial bed. As before, staminate in large type and pistillate in small type.

MAXIMUS.—A very odd and remarkable variety for the amateur. Plant of wonderful vigor and berry

of enormous size. The odd thing about it is that partially grown berries are white; half ripe ones light red with white cheek; when fully ripe a beautiful dark red all over. It is unlike any other variety in coloring and is a most striking novelty, just

the sort for the ambitious amateur grower. Similar and as good as that of the old Chas. Downing. Too soft for distant, but will be king in nearby market. See colored Plate IX.

MORGAN'S FAVORITE.—Another grand berry for the family garden. Plant vigorous, berry very large and of superb quality, of the old Triumph de Grand type, rather soft like Maximus; only suitable for a near market and for the family table, where it is a delight. See colored Plate IX.

LOUIS GAUTIER.—A French variety with a French name. Not valuable as a market sort, but is most delicious for the family garden, possessing a rich flavor quite unknown among native varieties. The color is very light, with delicate pinkish cheek, which is very attractive. Spread fifty varieties on the table before you, the Louis Gautier is the one you will eat. A few plants of this kind, with Morgan's Favorite and Maximus in your garden, well cared for, will give you a reputation as a distinguished strawberry amateur expert.

PEASE.—A berry identical in plant and fruit with the Gandy, only that it ripens one week earlier.

PEASE. BROTHER OF GANDY

Gandy men will be interested in it because it will enable them to begin to ship a week earlier than heretofore. It may not be known that there are very successful berry growers who grow only the Gandy. See colored Plate II.

PRIDE OF CUMBERLAND.—Not the old Cumberland, but probably of much greater value. It is a great bearer of marketable fruit, much like the Gandy in appearance but smaller, ripening earlier and a good shipper. Requires deep, rich soil with plenty of space between plants, and then is a good cropper. See colored Plate VIII.

GARDNER.—Strong, free-growing plant of great productiveness, rivaling Parker Earle and Haverland; fruit large, roundish, conical, bright crimson, firm and of good quality; ought to make a good pollenizer for Haverland and they would go to market together. Suitable for light or medium soils and a good berry for markets not far off. See colored Plate VIII.

ATLANTIC.—This is a profitable market berry in some sections of New York State. It needs rich soil, and then the berry is large, firm and sweet; a splendid shipper; color dark red, but not so dark as Marshall.

SAMPLE.—A good late market berry; plant strong growing, healthy and very prolific; crimson fruit of large size, heart-shaped and of regular shape. Only a moderately good shipper. Worthy of general trial. See colored Plate VII.

RIDGEWAY.—Berry handsome and very large, nearly round and smooth, resembling Cumberland; color bright glossy scarlet outside, rose color within, with yellow seeds; a fairly good shipper, about like

Bubach. Quality very good. Keep the plants well apart for best results.

SALEM.—This is a berry originating at Beverly, Mass., and highly recommended by Benj. M. Smith, who is good authority. Plant vigorous; berry very large; color dark, like Beverly and Marshall; sweet,

A PRIZE BASKET OF SALEMS

solid flesh; season early to late. I have seen no berry of recent introduction more promising than this. See colored Plate II.

SEAFORD.—The plant is healthy and a good grower and productive; size of Bubach, and is an early ripener of marketable fruit; color deep rich red outside, and is equally good; calyx green, and looks well in basket. Popular in Delaware, where they want an early shipping berry.

FOUNTAIN.—A large firm and beautiful dark berry, of the Haverland shape; rather tart; plant a healthy and good grower and productive.

MCKINLEY.—Berry large roundish, conical, with pointed tips, of the Haverland type; color crimson; flesh firm, quality good; plant a strong healthy grower; worthy of trial.

NICK OHMER.—Plant large and stocky, of good vigor and productiveness; berry of large size, smooth and round, of the Cumberland type; dark glossy red, firm, and of excellent flavor. See colored Plate I.

GLEN MARY.—A very large berry originating with the man who introduced the Brandywine. Plant vigorous and berry of largest size. Season late; quality excellent; bright dark red in color and very productive. Flesh light red and moderately firm. Said by some to be superior to Brandywine, which is high praise.

TENNESSEE.—This is a seedling of Crescent and Sharpless. The foliage is large and handsome; a great plant-maker. The originator claims it to be as productive as Haverland and far superior to it. Worthy of trial.

GLADSTONE.—A good name, certainly; color medium red, flesh red and rich, high spicy quality; said to be very large and quite early. On trial.

MARGARET.—Plant a large, healthy and vigorous grower, having dark glossy foliage. Fruit of very large size, usually conical, sometimes rather long, often nicked, and quality excellent. It ripens all over, a dark glossy red, and red inside. Flesh quite firm. Season medium to late. Should have rich soil and plenty of room. A good variety for amateurs for brag berries.

BRUNETTE.—A fine berry for the house garden, the quality being unusually good; regular in size; very dark red; glossy and beautiful in appearance.

CARRIE.—Of the Haverland type every way, but darker in color and firmer, with a fine gloss. See colored Plate IV.

CHAMPION OF ENGLAND.—A vigorous variety, medium early; fruit very large, broadly conical; has a bright polished surface, red in color and firm flesh.

These are by no means all of the new candidates for public favor, for their name is legion. Doubtless I have omitted some that are destined to come to the front by and by. My old friend, J. Stayman, of Leavenworth, Kansas, names Sue, Ettenson, Stayman, Magnate, Longfield and Alaska as very promising; E. W. Cone, Menomonie, Wis., ranks Gertrude, Patrick and Arrow as being very valuable; W. D. Barns, of Middle Hope, N. Y., speaks well of the Hunn as a profitable late market berry; Maxwell is admired by some; Improved Parker Earle is said to be much better than its parent; Eugene Willets praises Wilhelm very highly; Ruby is much bragged about, and we have at Elmwood a seedling, which we have named Tim, which looks like a good one. I have mentioned all that I have room for.

CHAPTER XVIII.

BRIEF ANALYSIS OF VARIETIES.

IT may be of advantage to beginners, who have not made a study of the different varieties and know but little about them, to give a classified list, indicating prominent characteristics, as below :

LARGE.

Clyde, Pease, Atlantic, Nick Ohmer, Sharpless, Greenville, Belmont, Saunders, Crawford, Edgar Queen, Bubach, Jucunda Improved, Gandy, Leader, Jessie, Brandywine, Felton, Mary, Iowa Beauty, Wm. Belt, Ridgeway, Margaret, Maximus, Morgan's Favorite, Marshall and Glen Mary.

EARLY.

Leader, Beder Wood, Crescent, Michel's and Meek's Early, Haverland, Bubach.

LATE.

Gandy, Eureka, Parker Earle, Windsor, Equinox, Hunn, Sample, Brandywine, Haverland.

QUALITY.

Wm. Belt, Ridgeway, Pearl, Banquet, Cumberland, Iowa Beauty, Brunette, Louis Gautier, Salem, Atlantic, Margaret, Morgan's Favorite.

MARKET.

Pease, Clyde, Atlantic, Gandy, Haverland, Saunders, Bubach, Crescent, Greenville, Parker Earle, Warfield, Lovett, Brandywine, Sample.

MAXIMUS

MORGAN'S FAVORITE

CUTHBERT

LOUDON

ROYAL CHURCH

GENERAL REMARKS.

I wish to say right here, and please don't forget it, that it is very unwise to select a variety, especially for market, that has a feeble growth, or that shows a tendency to rust. Above all, get a plant of size and vigor, and then take good care of it.

Be sure to manure heavily, cultivate thoroughly, and do not let the runners set nearer than eight inches from the mother plant and from each other. Then, if you keep off the rust by spraying with Bordeaux mixture every two or three weeks, as needed, your fame will go forth as a successful grower of the strawberry.

Some growers make no distinction between the varieties intended for market purposes and those for the family to use ; nevertheless, I believe that different sorts should be selected, because it is not always the sweetest berry that will yield the greatest number of quarts, nor carry to market in the most salable condition. On the other hand, the variety that is most desirable for the family to feast on may be a light yielder, and perhaps of poor color and soft in texture. Buyers in the towns are attracted by size, color and freshness, and are not very particular about the flavor, while for the folks at home nothing is too good for them. A large number of varieties, both of old and new introduction, that have high merit as a home fruit, will not carry to market in good order, and should not be placed in the market list.

The strawberry plant indicates by its leaf what is the shade of color, size, shape and quality of the berry. The lighter the color of the leaf, the lighter you will

find the color of the berry ; the darker the leaf, the darker the berry. The leaf also indicates the size of

ROUND LEAF INDICATING
ROUND BERRY

the berry. An irregular berry is indicated by an irregular leaf, a round berry by a round leaf, a long berry by a long leaf. Leaves on the same plant will vary considerably, no two are alike, but their general form will be the same. Also the relative productiveness of different varieties of strawberries can be told by the number of serratures or saw teeth on the leaf.

The greater the number of serratures the greater the number of berries will be produced on an individual plant.

RIDGEWAY

CHAPTER XIX.

THE OLD STRAWBERRY BED.

No matter what they tell you, plow up the bed after getting one crop from it.—TIM.

IT is a mooted question whether it is worth while to maintain the bed after one crop is taken off. I will first give the views of the brethren and then my own.

J. H. HALE If any one is bound to do so foolish a thing as to fruit a bed the second season, etc. Conn.

JOHN LITTLE Turn the plants under after the picking is done. Can.

Burn over. Plow furrow on to the rows from between the A. M. PURDY rows ; harrow lengthwise of the rows and then crosswise, getting fresh soil well worked into them. N. Y.

We have kept valuable varieties two or three years. Our mode is to simply keep weeds out before, during and after bearing, always. Strawberry beds that are intended for another year's fruiting should be mowed as soon as the season is M. A. THAYER over ; raked and then burned. The rows are then narrowed down by cutting in between the rows with a spade and harrow, removing the centre beds. After this is done it is hoed, weeded and cultivated the same as a new bed.

M. A. THAYER

Wis.

Mow off the growth of weeds and leaves soon after fruiting ; clean out paths and beds. It is possible to burn off the rubbish GEORGE F. BEEDE if dry, but it requires care and experience to make a success of it. Too much heat will kill the plants, too little will not kill the weeds and grass. When rightly done it destroys all insects, and is a great help to future culture. N. H.

Plow out the middle of the row with a plow ; harrow cross-wise until furrows are filled, then weed. Plow should be wide enough to leave a four inch strip on each side. This gives double the number of rows for next year which must be kept underway. Ill.

Never try to get fruit the second season. Plow beds immediately after picking the first crop. No use ; it costs too much. N. H.

SAMUEL MILLER Plow under and start a new bed. Mo.

On old strawberry beds try Dr. Loring's motto, " A short life and a merry one," but do not discourage boys or men by trying to patch up an old strawberry bed. Mass.

After fruiting throw dirt in a ridge on to the centre of the row with a one horse plow. Let lie a few days, cultivate down level, and cross the rows with an Acme harrow. Ill.

GEORGE A. DAVIS Plow it up ; it never pays to keep it for fruiting. N. Y.

SUMMARY REMARKS.

Since it costs less to grow strawberries on a new bed than on an old one, and the berries are finer, it is reasonable to conclude that it is best to plow down the old bed at the end of the fruiting season, according to the weight of advice given above ; and as it appears an old bed is a prolific breeding place for fungi and insect pests, and one cause of plant deterioration, doubtless, as a rule, a thorough plowing, turning everything out of sight, is the best thing to do with the old strawberry bed.

However, there may be circumstances that make it best to hold the patch over for another crop, and

where this is to be done the methods described above are well conceived and will usually bring fair results. Of the ways given, I like the plan of Mr. Purdy and Mr. Goodrich best, wherein the furrows are turned from the alleys over upon the rows, which are then well harrowed, sufficient to uncover the plants. This gives me better results than plowing away from the rows.

The practice of first mowing, then burning the dead leaves and weeds, is a good one, if the burning be carefully done as suggested by Mr. Beede. A very hot fire over the plants will kill them. It is my custom to plow the old bed down and plant to sugar corn July 1st, or to late peas August 10th, for market; or, a crop of potatoes may be grown where this crop does well planted so late.

CARRIE, SISTER OF HAVERLAND

CHAPTER XX.

DO VARIETIES RUN OUT.

That depends.—TIM.

THERE seems to be a difference of opinion as to whether or not varieties run out, and it is interesting to read what my friends say on the subject.

A. M. PURDY Setting plants from old, worn out, diseased plantations. N. Y.

Some varieties run out, others do not. Careless selection in propagating plants for new beds is the main cause for vigorous GEORGE F. BEEDE varieties running out. Seedlings as a rule show vigor for a few years, which does not hold out. N. H.

I am not sure that varieties will run out if they receive A. I. ROOT proper care, and new settings are used in planting each year. O.

M. A. THAYER Strawberries run out from lack of care and proper mode of production. Wis.

Varieties do not run out except by taking plants from old H. S. TIMBRELL beds. Keep setting good strong plants that have never borne berries and they will always be the same. N. Y.

I do not think they would run out if care were taken to plant EUGENE WILLETT strong, healthy plants from new beds every year, and given change of soil once in four or five years. N. Y.

W. W. FARNSWORTH Partly, perhaps, from defective soil, and partly from taking from beds that have borne fruit. O.

Varieties do not run out, they simply fail to succeed, and be perfect except under very favorable conditions of soil and plants. T. J. DWYER In this way they are justly decried "out" until the stock of such varieties becomes exhausted and cannot be had for the reason it is no longer propagated. N. Y.

It seems to be the law of nature that plants not propagated from seed should deteriorate. The strawberry is no exception
 EDWARD W. CONE to this rule, and growers find more compensation in giving attention to new varieties than in trying to improve the old. Wis.

Varieties do run out but the reason is not apparent. It seems to be an established fact that the nearer the plants are
 A. M. PURDY to the seed bed the greater their health and productiveness. Poor culture may have something to do with it, but fungous diseases do much more to weaken certain varieties. N. Y.

A. M. PURDY

By selecting the most vigorous plants
 J. G. BUCHANAN each year to propagate from, plants will never run out. O.

I use the first plant on the runner for my new beds. In fact I will not plant anything else, and the runner must be from a
 S. R. ROGERS vigorous mother plant. By following this rule you can improve the varieties instead of having them run out. O.

A. D. WEBB I have two varieties fruited now seventeen years, with no perceptible deterioration either in plant or fruit. Ky.

I think it is the trouble with the fellow that propagates them.
 J. H. HALE Always take plants from new beds, and above all things do not let them mat too thickly in the beds. Conn.

SUMMARY REMARKS.

For my own part I do not believe varieties will run out if proper intelligence is given their propagation by runners and their after culture. Carelessness and neglect and ignorance on the part of the growers, and enterprise in those who have made it their duty to introduce new varieties, are the main causes of

strawberry deterioration; or, they run out because plant nurserymen cease to sell them, and because improvement is the order of the day, and new and better kinds are discovered or propagated. It is time a variety had run out, though it may not have deteriorated in the least, when something better has come in. One of the greatest errors made by strawberry growers is the discarding of valuable kinds before they give them a fair trial and learn just what treatment is best for them, to take up with some new and costly variety, which, in due time, will go out in the same manner, perhaps being inferior in every way to the old sorts. In this way many have already discarded that wonderful berry, the Gandy, which succeeds admirably where brains are applied to its culture, and the required conditions of a crop are complied with.

BUNCH OF WILLIAM BELTS

CHAPTER XXI.

LEAF RUST AND INSECTS.

To avoid serious effects from either never have an old bed.—TIM.

RUST or blighting of the leaf of the plant is one of the greatest obstacles in many sections to successful strawberry growing. This is not a disease of the plant itself, but the growth of a parasite or fungus upon the leaf, which, if abundant, does great injury to the plant, hindering its growth and development, and causing a failure of the crop of fruit. Some varieties are more liable to rust than others, and the trouble appears to be greater in some neighborhoods than others. The reader will find below some interesting expressions on this subject.

SAMUEL MILLER The Bordeaux mixture, if used as a spray, will prevent leaf rust. Mo.

Beds that are only fruited one season are not usually troubled
G. S. BUTLER with rust or blight. I use Bordeaux mixture, if I see trouble. Conn.

Rust may be effectually checked by spraying, but prevention is better than cure, and there are so many varieties not subject
EDW. W. CONE to this disease that one can easily choose those not liable to it. On ground treated to barn-yard manure, plants are much more liable to rust than where a commercial fertilizer is used. Wis.

CHARLES WRIGHT Have tried nothing to cure leaf blight; usually secure such varieties as are not subject to it. Del

Plant iron-clad varieties, those that do not rust. Such
GEO. F. BEEDE varieties are among the most productive, and
 the best every way. N. H.

S. W. GILBERT The Bordeaux mixture will prevent rust. Mo.

BENJ. M. SMITH If possible, put out the kinds that have not
 a tendency to rust. Mass.

T. J. DWYER

I do not know what will prevent leaf
 rust. It rarely ever attacks a bed of plants
T. J. DWYER until it has become old,
 and should be plowed under; or a bed
 that is on land that has been used continu-
 ously for strawberries. N. Y.

Burning over the beds is the best I can
 mention. If bothered with rust I would
E. W. REID not allow a bed to remain
 over one year, and would not plant the
 same ground more than once in five years.
 O.

Have had no experience doctoring for leaf rust. Avoid by
 planting new beds every year, with strong, healthy plants from
 new beds. If this course would be taken with our growers in
 general, we think there would not be the trouble now com-
EUGENE WILLETT plained of. An old strawberry bed makes
 as near a perfect breeding place for insects and fungi, as it is
 possible to conceive of. Plow them up as soon as through pick-
 ing, and plant to potatoes. These do well after strawberries,
 and your field is in good condition for next spring's setting of
 strawberries. You will see leaf blight in most of heavy yielders
 after producing their crop. The remedy is to set new beds.

N. Y.

The fungi which turns the leaves red in mid-summer we
J. W. ADAMS avoid by planting only such kinds as are not
 subject to that malady. Mass.

SUMMARY REMARKS.

Leaf rust first shows itself upon the leaves as
 purplish or reddish spots; these enlarge, and the

centre tissues being destroyed, they change to a yellowish white color. The spots are often so numerous as to destroy the leaves. The fungus also works upon, and does most injury to, the flower or fruit stalks, and as a result the berries wither and dry up.

The remedy is in planting varieties least subject to attack, to set out only strong, healthy plants, from beds that have not fruited, give careful cultivation, fertilize liberally, and keep a bed in fruiting only one year.

Application of Bordeaux mixture, prepared in the usual way, using three pounds of copper sulphate, the same of fresh lime, and thirty-two gallons of water. Applying early in the spring, and again after the blossoms fall, will hold leaf rust in check until after the crop is gathered. For the new bed apply as often as there is any sign of rust. For an acre, or less, the knapsack sprayer will readily do the work—if one can carry it by proxy.

There are several insects that have special fondness for the strawberry plant, though I have never been bothered with any. The root-borer is about a half-inch long, whitish in color, and bores into the crown in the fall, remaining all winter. The remedy is to dig up and destroy the affected plants.

The crown-borer is a white grub, one-fifth of an inch long, with yellow head; the mature insect is a curculio. Remedy: Mow the field after fruiting, and burn it over.

The leaf roller feeds on the leaves, rolling them up. Burn.

Root lice often appear in great numbers, feeding on the roots of the plants. Plants received from

nurseries should always be examined, and, if lousy, should be dipped in kerosene emulsion.

It is best to be watchful of all destructive insects, and where any of them are troublesome, change plants and ground, burning the bed over after fruiting, and plowing down.

Let me suggest that plant growers establish the rule of disinfecting all plants before sending them out and guarantee the same to be free from insect pests and fungi. A good deal of trouble, perhaps, but it will pay, and to the one who first does this and lets it be known will come the greatest profit. Thousands of berry growers have ceased to buy plants lest their plantations become infested with these enemies. One word to the wise is enough.

MAXIMUS, BIG AND ODD

WHITE WHEN GREEN, DARK RED WHEN RIPE

CHAPTER XXII.

PICKING AND MARKETING.

Correct picking helps ready marketing.—TIM.

WE come now to an important branch of our subject, for picking and marketing are half the battle, so it will require three chapters to get it all in. I begin with a statement of the method of picking of one of the most successful growers I know of.

Procure careful pickers. The berries should be picked with short stems and not rehandled after being placed in the boxes. The boxes should be well filled to prevent the berries from jolting. They should be cooled before shipping. The ROBERT H. GILLIN plants should be so handled as to leave the foliage in the same position as before picking. This treatment secures protection to the unpicked fruit and the berry season will last longer.

ROBERT H. GILLIN

Pa.

A. G. SHARP Pick often, use new baskets and clean and painted crates, and get them to market as quickly as possible.

Mass.

Strawberries should be picked at least once every twenty-four W. F. ALLEN, JR. hours, in the cool of the evening as near as possible, and put up in clean, neat packages. Where and how to market will depend on the section where they are grown. Md.

Strawberries should be picked off the vines with stems and not pulled off without the hulls. If picked with stems a better M. A. THAYER appearance is given them and they stand a much better shipment. Have standing orders for your fruit, and in sending on commission send to a good reliable firm. Wis.

Pickers should pick with stems on, especially if fruit is large.
CHARLES WRIGHT This is hard to get done, especially in a field where several hundred pickers are at work. Del.

A. M. PURDY For long shipments pick every day to have firm fruit. N. Y.

GEORGE F. BEEDE Pick in the cool of the day. Small markets near home are the best. N. H.

The fruit should be graded in picking, being careful to pinch off the berry rather than pull. In topping the basket the berries
E. W. REID should all be turned with the stem down and point up. It makes the fruit more attractive and commands better prices. O.

ANDREW WILLSON Be careful to have the berries clean and as uniform in size as possible. O.

A. W. SLAYMAKER Pick only the best and market in clean packages. Del.

Build packing shed in centre of the patch. Have an overseer
BENJ. BUCKMAN of pickers to every twenty to forty pickers. Use carriers containing six contingencies. Some send their berries too far. Ill.

BENJ. M. SMITH Pick early in the morning, and get them to the consumer as early as possible. Mass.

Picking should be done as early in the day as possible. None
T. J. DWYER but well ripened fruit should be put on the market. It pays well to grade fruit, discarding that which is small, irregular or soiled. N. Y.

Have your baskets and crates neat and clean ; fill baskets so they will go in the market slightly rounded. A few fresh leaves laid on the top of the boxes sometimes add to their attractiveness. Do not hide all the berries but be sure they do not all come on top. If you have not private customers find an honest commission merchant and stick to him ; and if you deliver your own fruit, stand a few hours in front of his store while your stock is being disposed of. It will pay.

N. Y.

In wet weather, pick every day; in fair, every other day. Keep three grades, each by itself. First hunt up persons that are willing to pay a fancy price for a fancy article, and they are R. D. MCGEEHAN to be found, lots of them. Sell the second to grocers or fruit stands, and the third sell at home for what you can get for them or use yourself, or feed to hogs. Take to a cool, airy cellar as soon as they are picked. Always ship in the evening if possible, so they will travel during the night. Ia.

GEORGE J. KELLOGG Pickers by the day are most profitable; they pick better and less fruit spoiled and more satisfactory.

Wis.

G. S. BUTLER Pick dry; handle as little as possible; pack at once and market early.

Conn.

Pickers should never be allowed to walk over the beds or handle berries except by the stem, which should be pinched off one-half to three-quarters of an inch from the berry and the berry carefully placed in the boxes. Good superintendence in the field is better than sorting and packing in the packing house. Select the best method of transportation rather than low rates.

Miss.

WM. HOOVER Berries intended for shipping long distances should be but half ripe, and all small berries and culls thrown out.

Col.

WM. JACKSON I pick no small or unsound berries.

Ill.

I do not object to picking berries when wet, they will soon dry when put under cover if there is a good circulation of air.

N. Y.

Be as honest as you can. Do not allow pickers to put any trashy, rotten or green berries in the box. To avoid this I find W. C. WILSON that it is absolutely necessary to have a superintendent in the patch and directly among the pickers. Use clean new boxes. We use nothing but gift boxes here, costing \$2.10 per thousand.

J. R. HAWKINS

Ill.

A. P. SAMPSON We pay two cents a quart. Each picker has a stand holding six boxes.

Mass.

I charge my pickers to pick nothing but first-class berries for
 S. R. ROGERS market ; all inferior berries to be put in a box
 by themselves. O.

Sort into two grades and aim at uniformity in every box
 EDWARD W. CONE and every package. Plant firm berries
 both for home and distant market. Wis.

GEO. W. ELVINS Do not try to ship immediately after a rain.
 N. J.

The fewer pickers one can get along with the better. Use
 men and women ; young boys and girls are no good. I prefer
 young men, the women's dresses drabble too much ; if women,
 GEORGE Q. DOW then I want them to wear a sort of bathing
 suit. Never send a basket to market the second time ; use new
 ones and clean crates. Do not deacon your fruit, but have it
 alike all through. Sell your own fruit and keep out of the hands
 of the commission men. N. H.

We use six basket carriers, Handy's. The pickers sort the
 berries, put in the small, soft or otherwise inferior fruit in one
 E. G. TICE basket, while the rest are put in the other baskets.
 The pickers arrange the berries neatly on the top of each basket,
 thus presenting a neat appearance. The culls, or seconds, are
 sold to peddlers to do with as they choose. N. Y.

We pick our berries every day in the berry season, there is
 no other way to do it. You cannot pick a strawberry that is two
 days old and send it to market. It must be picked when it is
 exactly at the right stage for picking, and if you take care to do
 that, you can ship them 1,000 miles if you want to. The condition
 PARKER EARLE to which I refer is that which the berry
 has reached when it first begins to color. It is largely a question
 of variety, as some varieties will continue to change color and
 ripen after they are picked, while others will not. Of course the
 ones for shipping purposes are the ones that will continue to
 change. Ill.

KANSAS

GREGG

OLDER

PALMER

BLACK CURRANT

LOVETT

CHAPTER XXIII.

PICKING AND MARKETING. (Continued.)

The ticket system and the punch must go.—TIM.

I FORMERLY used tickets or cards, containing numbers, and a punch, to keep accounts with pickers, but the past season I tried the system recommended by John M. Stahl, in the *Farm Journal*, and liked it so well that I would not think of returning to the old way. It works like a charm, the pickers are satisfied, and it is no trouble. I think Mr. Stahl had his plan, which is in use about Quincy, Ill., first printed in the *Country Gentleman*.

A bulletin board is erected just outside of the door of the receiving and packing room. For each day a paper is prepared, to be tacked on the bulletin board. Heavy book paper of the required size can be got at almost any job printing establishment. This paper is ruled with lines half an inch apart, and horizontal when the paper is on the board. Along the left margin, there is a space ruled off for the numbers, next for the names of the pickers, and then a dozen or more spaces in which to put down the number of quarts brought in by each picker. (See cut). Every picker has a number. This is important; let the pickers be referred to by their numbers, not by their names.

1	John M. Stahl	5	6	8	5	8	27
2	John M. Stahl	5	3	6	2	3	25
3	John M. Stahl	5	6	5	5	6	28
4	John M. Stahl						
5	John M. Stahl						
6	John M. Stahl						
7	John M. Stahl						
8	John M. Stahl						
9	John M. Stahl						
10	John M. Stahl						

As each picker brings in a load, the number of quarts is marked in a space opposite the number of the

picker. As an indelible pencil is used, the pickers cannot accuse you of altering the record. As you put in the number of quarts in the presence of the picker, there will be no oversights or mistakes. The entire record is open to any picker at any time during the day when she comes to deliver berries. You can see at a glance how each picker is working; or, if you desire to know at any time how many quarts have been brought in you can foot it up in a minute.

Each evening the record sheet is taken down, folded, and the date, number of quarts picked, and whatever other memoranda may be desired, are endorsed upon it. It is then filed away. These sheets furnish a complete account of the season's picking. They also furnish valuable information for future use.

I have found it advantageous to supply each picker with a berry tray, on which his boxes, when filled, are borne to the picking shed. My trays were made by the following directions, and seem well adapted to the service required of them: For the ends, use inch strips three inches wide; for the bottom, four strips of laths; and for each side, one strip. No legs are needed. Keep the tray off the plants. A handle is made from half a barrel hoop, spanning the tray lengthwise, and tacked to the end pieces on the outside. This tray is designed to be made large enough to hold six one-quart boxes. Placing the handle lengthwise leaves the boxes easier to get at, and prevents the tray tipping. I only use these trays to put the boxes in after the pickers fill them, and not to pick in, though I believe many growers have the pickers to carry them

Berry Tray

along while picking ; but this jostles and injures the fruit, exposing it to the evil effects of the hot sun, and weights the picker. Especially if the sun be hot, near the middle of the day, it is best, after filling a box, to set it among the foliage, hid from the rays of the sun, until a tray load is picked, and then carry to the picking shed. The tray is worthless, except as a carrier after the boxes are filled.

If wanted for local markets, start picking at daylight, and have pickers enough so the fruit can be gathered and into the market before eight o'clock. For distant market, try to pick in the evening or in the morning after the dew is off the grass and yet before it is too warm. If picking must be done all through the heat of the day, plan some way to cool the berries. Pickers of mature years are best ; and as a rule, girls are better than boys. Have a superintendent for every ten or twelve pickers to assign the rows, inspect the picking, etc. Each picker should be numbered and have a picking stand with like number J. H. HALE to hold four, six and eight quarts. Sort the berries as picked into two grades, and always use new, clean baskets made of the whitest wood possible. Fill rounding full with fruit of uniform quality all the way through. After they are picked keep away from the air as much as possible. Fruit, if dry cooled, will keep much longer and keep fresher if kept in tight crates. Ventilation in crates and baskets does more harm than good ; to prove this, pick a basket of nice berries, put in a shady but airy place, and I will bet at the end of twenty-four hours the only bright and good berries will be in the bottom of the basket away from ventilation and light.

Conn.

In picking, do not allow the pickers to touch the berries at all, but handle them by the stem, and lay in the boxes one by one as they are picked. Pick every ripe berry in the patch every day. Place enough green leaves over the berries to prevent their S. W. GILBERT being shaken around and bruised. The old idea that the strawberry should have plenty of air circulating over, under and through them, has been knocked into a cocked hat. Treat your customer so nicely that once a customer, always a customer.

Mo.

Pay pickers at the end of the season, and pay those who stand by you after the berries get small a half-cent per quart more than transients. This will hold them together as long as TIM you want them. Let the last picking be for halves—half for you and half for the pickers. Small berries must stay at home ; the markets want large berries. Use a spring wagon only to haul berries. Pa.

Berries should be picked, as far as possible, when the vines are dry ; all soft berries thrown out. They should be handled as little as possible. Take a light hold of berry with thumb and finger, give it a little twirl, pulling from where the berry is fast to the ground. Never pull backwards, as you will split the stem H. S. TIMBRELL and destroy the young berries. In looking for berries never bear down on the foliage, but always run the hand under and lift up. In this way the foliage is kept in good shape. In the beginning of the picking season there should be great pains taken to preserve the foliage and green fruit, Women make the best pickers. Round up basket well, and market as near home as possible. N. Y.

I would pick the berries as soon as the people would buy, even though they were white on one side, and I would pick off every- A. I. ROOT thing in the shape of a berry, no matter whether it was sold, given away, or thrown away. Never let berries get overripe on the vines. O.

CHAPTER XXIV.

CONTRIBUTORS' PORTRAITS.

BIOGRAPHY.

I have always observed that the most generous, most intelligent, most progressive, most upright and most useful men are to be found in the ranks of those interested in horticulture, and too much honor cannot be done them by their fellow citizens.—TIM.

SCATTERED through this little book will be seen the portraits of many well-known gentlemen, living and dead, who are, or have been, prominently identified with the cultivation of berries, either for the fruit or for the propagation and introduction of fruit-bearing plants, and it gives me real pleasure to be able to present to the general public pictures of these honorable and eminent men; and at the same time to give the reader bits of their wisdom and experience in the berry business.

This gentleman was born at Newburgh, N. Y., in 1828, and lives near there now (at Middlehope). He is greatly interested WM. D. BARNS in fruit, and was a pioneer in the use of the Bordeaux mixture in the spraying of grapes. He contributes of his store of knowledge to the purpose of this book. Page 44.

Of this gentleman it can almost be said that he was "born in a berry field," having cultivated strawberries for over forty-one years, or since he was nine years old. He grows and takes to Phila-ROBT. H. GILLIN delphia, from the adjoining county of Montgomery, the finest strawberries ever seen in the Philadelphia markets, and he and his father have done this for over fifty years. His cousin, Oscar Felton, is famous as a fruit grower, and originated the Felton strawberry. Page 93.

Here is a gentleman who has contributed largely to the value and interest of this book. He was born in New Hampshire on a fruit farm, and has been deeply interested in horticulture all his life. He began to grow strawberries as a special crop in 1880, and has continued ever since, experimenting largely and exhibiting fruit at fairs in Massachusetts and Connecticut, which attracted much attention. He is ardently devoted to his work and his successes have been marked. He is ever ready to impart his knowledge freely to others, and I hear him spoken of as a worthy gentleman, doing a grand, good work, and honored accordingly by his neighbors and all who know him. He lives at Springfield, Mass. Page 14.

E. J. HULL

This enterprising gentleman was born in Olyphant, Pa., in 1863, and has lived there since. He commenced growing berries and shipping plants in 1887. Since that time he has experimented largely in berry growing, having tested over three hundred varieties in the past five years. His farm is so situated that he has river bottom sandy land and also upland clay for his experiments. The cause of horticulture has need of many such progressive young men whose honorable record it affords me pleasure to make note of.

Here is one of the younger fry, having been born in 1863, at Seaford, Delaware, where he now conducts, with much skill, a nursery and fruit farm. He was superintendent of the Bureau of Pomology at the Chicago World's Fair, in 1893, and has contributed some very practical suggestions to this book. With youth, energy, a quick intelligence, and a strong taste for horticulture, he will be heard from further in the good work he is engaged in. Page 48.

I am much pleased with this gentleman's contributions to this book—they are sincere, honest, intelligent, and of a very practical character. He it is who originated the celebrated Timbrell strawberry. He was born in N. J. in 1847. His health failing while in mechanical pursuits he turned his attention to berry culture, especially to seedling strawberries. His home is now in Orange County, N. Y. Page 40.

Born in 1834 in New York City, and mingling with the world as assistant in a publisher's office, and afterwards in the jewelry business in New York and St. Louis for forty years. Mr. HAWKINS then became intimately associated with Mr. Charles Downing, and he was well acquainted with the late Rev. E. P. Roe. He is the originator of the Banquet strawberry and has many other seedlings on trial. Page 95.

This gentleman was born April, 1846, and is, therefore, forty-eight years old. Previous to 1882, he was a travelling salesman, but, his health failing, he engaged in D. BRANDT farming at Bremen, Ohio, making the strawberry a specialty, and during the past twelve years fruiting and testing about 350 varieties, devoting much time to seedlings. He is the originator of the Fountain strawberry.

D. BRANDT.

This name is well known in New England, where its owner has been prominent in horticultural circles for years. He it was who introduced the Beverly strawberry, naming the variety after his own town. He is sixty-BENJ. M. SMITH one years of age, and half of his life has been occupied in strawberry culture. Mr. Smith is an interesting man, and his berry experience given in this book adds much to the value of the work.

This worthy representative of the Eastern Shore was born in Maryland in 1867, and has continued near his birthplace ever since. When he was eighteen he borrowed fifteen dollars with which he bought 3,000 strawberry plants. This was the foundation of a W F. ALLEN, JR. business which has grown to large proportions, as he now cultivates three hundred acres from which the gross receipts last year were over \$18,000.00. Mr. Allen is a large grower of the Lucretia dewberry of which he has forty acres in cultivation. In planning his farm and office work, Mr. Allen has the active and intelligent assistance of his estimable wife.

W. F. ALLEN, JR.

This gentleman is well known as an apiarian, editor of "Gleanings in Bee Culture," small fruit grower, and writer and publisher of several interesting and valuable books. Among A. I. ROOT them is an excellent book on Strawberry Culture, by T. B. Terry, and one on Tile Drainage, by W. I. Chamberlain. Besides being a practical man, he is overflowing with enterprise and zeal in whatever good work he engages in. He was born fifty-four years ago near Medina, Ohio, where he now lives. Page 15.

This is one of the sons of J. M. Smith, and inherits his father's business ability, HORACE J. SMITH earnestness, honesty, geniality, and other manly qualities. He furnished me some practical notes in berry culture for this book, which I am sorry did not reach me earlier.

This gentleman was born at Yellow Springs, O., in 1860. He is a self-taught printer, and has some experience as editor, but took up fruit growing at Vineland, N. J., afterwards moving EDW. W. CONE to Menomonee, Wis., eight years ago, making fancy fruit a specialty, devoting considerable attention to seedling strawberries. He contributes freely and wisely to these pages. Page 41.

This individual is the discoverer of the Greenville strawberry, an honorable E. M. BUECHLY distinction that any one may well take satisfaction in. He was born in Ohio, in 1857, near the town of Greenville, where he now dwells.

This is one of the veterans. He began life in Wayne County, N. Y., in 1835, and strawberry growing twelve years later, and has been at it ever since, and expects A. M. PURDY to continue in the business until he quits work here below. Mr Purdy has been editor and nurseryman as well as fruit grower. He has now (1894) 112 acres of land near Palmyra, N. Y., devoted to fruit growing and trucking. He contributes to this work. Page 87.

E. M. BUECHLY

The subject of this sketch was born at Newburgh, N. Y., in 1856; soon after his parents removed to Cornwall, and when old enough he secured a position as foreman with the noted author T. J. DWYER and horticulturist, E. P. Roe. In 1884 he started the "Orange County Nurseries" on a capital of \$200, which now does an immense business, and with its worthy proprietor, enjoys the confidence of the public. Page 90.

This excellent gentleman resides at Irvington, Ind., and is interested in the culture of small fruits. He has been president of the Indiana Hort. Society for eleven SYLVESTER JOHNSON years, and is treasurer of the State Board of Agriculture, worthily filling both positions. He gives his experience in the pages of this book.

This is Hale, who has so much vim, SYLVESTER JOHNSON backed by so much good sense, honesty, and amiability, that his fame is as wide as the continent and as permanent as the hills. He is, perhaps, best known as a successful Connecticut and Georgia peach grower, but the Hale Bros.' J. H. HALE nursery of berry plants, at South Glastonbury, Conn., ranks second to none. I acknowledge my indebtedness to Mr. Hale for the most generous and intelligent help in securing specimens for illustrating this book, and for his admirable and copious notes on berry growing. Page 13.

This child of New England was born but twenty-eight years ago, a native of Connecticut, and has been actively engaged in the strawberry business twenty years—so he began early. He is a vigorous down-east hustler. He is secretary of the Conn. Pomological Society. He has been a member of the State Legislature, where he made a fine record, and is none the worse for that experience. Berry notes from his pen will be found in this book.

GEO. S. BUTLER

Here is another youngster who yet is quite a veteran in experience with berries, and has won marked success as a small fruit A. G. SHARP farmer. From less than 100 acres of hilly, New England farm land he has sold in one year \$3,087.76 of produce, of which nearly all came from berries. His experience notes will be found in this book. Page 41.

CHARLES M. HOVEY

This venerable personage died at Cambridge, Mass., in September, 1887. He was a pioneer in horticulture and a leader all his life, compatriot with A. J. Downing, Charles Downing, Dr. John A. Warder and CHARLES M. HOVEY Marshall P. Wilder. He is given place in this work, especially, because he originated the famous Hovey seedling strawberry, which, at the time, and for many years after, was deemed a great acquisition to the berry world.

I was very desirous of securing the portrait of this distinguished Canadian gentleman for my book, and did so with much coaxing. Mr. Little was born in Ireland in 1815, emigrated to Ontario, Canada, in 1843, so he may be called one of the veterans. JOHN LITTLE He possesses an ardent love for plants and trees, and has devoted many years to the production of seedling strawberries, several of which have proven valuable, among others Saunders, Crawford and Woolverton. I know of no person noted in any department of horticulture who enjoys greater esteem than this modest Christian gentleman, who is now in his eighty-first year.

I have here an indefatigable small fruit grower who has made the strawberry a specialty, and has had remarkable success in growing fine fruit for market. His EDWARD T. INGRAM name has lately come into prominence as the originator of the new "Brandywine," which promises to be a very valuable late market variety. Mr. Ingram is a Chester County, Pa., farmer, which in itself is no mean recommendation.

EDWARD T. INGRAM

"The growing of small fruits has been to me a source of income and has paid my debts, and also built for us a nice house;" so writes this estimable gentleman, who lives at North EUGENE WILLETT Collins, N. Y., not far from Buffalo. The first work he ever remembers to have done was picking strawberries for an uncle at a cent a quart, and he has been interested in berry growing ever since. He is in the forty-first year of his age. He is a successful and interesting man. Page 23.

One of the substantial fruit and fruit-plant growers of Michigan, a native, though, of the Berkshire Hills of New England, where he was born in 1849. His O. A. E. BALDWIN father dying, he returned to the old place, and in 1865 removed to Michigan, where he has engaged in berry growing largely, and lately in supplying plants, in which he has a very large trade. His home is Bridgman, Mich.

O. A. E. BALDWIN

This gentleman's name has become widely and pleasantly familiar from his monthly berry bulletins, which appear in the agricultural press of the country. He went to Wisconsin in 1856; is now president of the State Hort. Society; and M. A. THAYER "Thayer Fruit Farms" are said to be producers of more berries and berry plants than any other concern or individual in the northwest. Over 100 acres are devoted to berries alone. Located at Sparta, a city which Mr. Thayer once presided over as mayor. Page 83.

It would not do to omit this gentleman from any galaxy of portraits of small fruit men, for none are more conspicuous than he. It was in 1878 that he took the first steps in the establishment of the celebrated J. T. LOVETT Monmouth Nurseries, at Little Silver, N. J., and now the business done there is simply immense. He makes small fruits a specialty, and his "Guide" is one of the most attractive publications of the kind sent out to the public.

J. T. LOVETT

This gentleman is an Ohio man born in 1863 on the farm now used by him for a nursery near the town of Bridgeport. He **E. W. REID** has already won distinguished success in the nursery business. He is the introducer of the Timbrell strawberry, and the author of many valuable contributions to the rural press, and furnishes some excellent notes for this book. Page 35.

M. CRAWFORD

This is one of the best known strawberry propagators and culturists in the country, living at Cuyahoga Falls, O. He is of Scotch-Irish parentage, born July 5. **M. CRAWFORD** 1839, and has been growing strawberries thirty-seven years. Few have done more to introduce new and desirable varieties of berries than Mr. Crawford, and he enjoys the confidence of a vast multitude of patrons

This live Ohio gentleman, who contributes so intelligently to the interest of this book, was born near Waterville, O., in 1855, near where he now farms. He is ardently devoted to horticulture, is secretary of the Ohio State **W. W. FARNSWORTH** Hort. Society and has large orchards, consisting of 2,800 pear trees, 1,500 peach, 300 cherry, 300 apple, 1,500 plums, besides 24 acres of berries. He has abundant faith in the business and expects to go right ahead on this line. Page 40

This young gentleman is getting a good start, considering his name now is widely known as a berry man, while yet he is only twenty-eight years of age. He exhibited sixty-seven varieties of strawberries at the World's **L. J. FARMER** Fair, and received the highest award for largest and finest display. He was born at Pulaski, N. Y., and still lives there, and carries on the nursery business. He is the author of a little work on the strawberry, which does great credit to him, being replete with practical information on the subject.

L. J. FARMER.

This is a Pennsylvanian transferred to Kansas soil, where he is prominent in horticultural circles and greatly interested in **DR. J. STAYMAN** berries. This modest, earnest, true gentleman resides at Leavenworth, and though well up into the seventies keeps up his interest in affairs, especially those relating to horticulture. Page 46.

This gentleman is a New Yorker by birth, born in 1828, removing to Wisconsin in 1835; spent three years in California, from 1849, and then located at Janesville, Wis., where he engaged **GEO. J. KELLOGG** in the nursery business, which is still carried on, two sons helping him. This excellent firm make strawberries and roses specialties, and conduct a large and prosperous business. Admirable advice is contributed to this book from Mr. Kellogg's ready pen. Page 49.

C. S. PRATT

Charles Sumner Pratt began in 1870 with limited means to cultivate and sell strawberry plants and berries. His first plantation in North Reading, Mass., contained one-fourth of an acre on which he raised the first year of fruiting one thousand quarts. In nine years he had enlarged to fifteen acres. At this stage June frosts for two years in succession destroyed his crops and brought great financial loss. Having the usual Yankee pluck and push, he started again, this time at Reading, with better soil and facilities for obtaining help and marketing his plants and berries. The new Sample strawberry is his special pride, considering it to be superior to any other variety he has tested.

CHAPTER XXV..

A LIST OF DON'TS.

Don't give up.—TIM

IN berry culture, as in many other things, it is nearly as important to know what not to do as what to do, and how to do it; therefore I have brought together a large number of Don'ts, which I think will be appreciated all around,

A M. PURDY Don't discard old reliable sorts for untried new ones. Don't build too many air castles N. Y.

G S BUTLER Don't set out more than you can care for and fertilize. Conn.

Don't wait until the plants are in bloom before setting them in the spring. Don't let layer plants, set in the spring, fruit that season. Don't expect the pistillate varieties to bear alone. Don't hope for as good results from one variety as from three or more. Don't expect a berry to be early, productive, large, firm, handsome, of splendid color and of the best flavor. N. Y.

Don't set plants until ground is fine and firm. Don't plant a large acreage until you have had an apprenticeship on a smaller scale. Don't be afraid to fill the baskets chuck full. Don't cultivate deep. Don't let plants stand too thick in the rows. O.

Don't be too sure you have the best varieties for your soil and climate. Don't let your beds get weedy during haying and harvesting. Don't let the rows grow entirely together, keep a path for pickers. N. Y.

BENJ. M. SMITH Don't grow many sorts of strawberries. Mass.

Don't set out more than you can take care of well. Don't be afraid to try the new kinds; a few of each cost but little, and you may find one that is just suited to your locality and pay you big. N. H.

A. P. SAMPSON Don't have many kinds at a time. Mass.

Don't let dry winds blow on the roots when setting. Don't
H. S. TIMBRELL hoe too deep close to the plants. Don't put
all the big berries on the top of the basket. Don't put in any
poor berries. Don't use any old, dirty baskets. N. Y.

Don't be afraid to do your share of missionary work in the
W. C. WILSON cause. Buy some of the new varieties. Don't
imagine you know all there is to learn in strawberry culture. Ill.

Don't plant too heavy of any sort until you have tested it in a
small way first. Don't expect to get the best prices for your ber-
ries if you put all the small ones in the bottom of the basket.
CHARLES WRIGHT Don't think the country is overstocked with
strawberries or that yours will glut the market. By all means
don't delay planting a strawberry patch next spring, for family,
if not for market. Del.

WM. D. BARNS Don't set on sod land. Don't cultivate or hoe
deeply. Don't cover the crown of the plant. N. Y.

Don't delay planting until hot weather. Don't set common
plants from old patches even as a gift. Don't spend large
W. F. ALLEN, JR. amounts for new varieties, but buy a few
from some reliable nursery and try them for yourself. Don't
watch for the grass and weeds to start before beginning to culti-
vate. Md.

Don't think because one has cleared \$500 on an acre of straw-
A. G. SHARP berries this year that you can do the same next
year. Mass.

BENJ. BUCKMAN Don't expect to learn it all in one lifetime.
Ill.

Don't let too many runners grow. Don't depend on any one
A. W. SLAYMAKER variety, and don't fail to try a few of the
promising new ones, so as to know which suits your soil and
conditions. Don't try to sell little, knotty or imperfect berries.
Del.

Don't let the weeds grow ; hoe if not weedy. Don't ask the
GEO. A. DAVIS pickers to pick larger quarts than you give
your customers. N. Y.

ANDREW WILLSON Don't let too many plants grow. Don't remove the mulch in the spring—loosen it. O.

. Don't plant too deep. Don't allow the crown to be covered in working. Don't allow the plants to get on a ridge. Don't let E. W. REID runners set until July. Don't plant too many acres. A less amount properly cared for will pay a better profit. Don't use land that is not well drained. O.

Don't allow weeds to smother the plants. Don't trust wholly GEO. F. BEEDE to nature in placing runners. Don't destroy last pickings when picking first berries. Keep the plants upright and in good shape. N. H.

Don't leave the runners to be tossed about in the wind. Press each one lightly into the soil and fasten with a couple of EDW. W. CONE stakes, a stone or a clod of earth. The first runners that start make the best plants for next year's fruiting. Don't neglect to plant a generous test plot each year. Wis.

H. E. MCKAY Don't think you know it all. Don't call your merchant a thief when he cannot get big prices. Miss.

Don't let the pickers handle two berries at a time with one R. D. MCGEEHAN hand. Don't ridge the ground up in rows when cultivating; keep the ground level as possible. Ia.

URIAH HAIR & SONS The don'ts are all summed up in the following: Don't neglect to be thorough. N. Y.

DR. J. STAYMAN Don't put off your work until to-morrow if it can be done to-day. Kan.

Z. T. RUSSELL Don't use boxes the second time, but always have them bright and new. Mo.

WM. HOOVER Don't let the berry patch go without cultivating more than one week. Col.

E. M. BUECHLY Don't hire too cheap a class of pickers, as it pays to pick with care. O.

Don't rest satisfied until you can grow more and better straw-J H. HALE berries to the rod than any other fellow in the neighborhood, and then—don't fail to tell your neighbors how it is done, so they can go and do likewise. Conn.

FAY

FAY

NORTH STAR.

VICTORIA

GEO. J. KELLOGG Don't plant by a line. If you use one, walk it down, and plant in the tracks. A corn marker makes good rows. Wis.

J. C. EVANS Don't allow your pickers to talk while picking. Mo.

JOHN LITTLE Don't sell old plants under new names. Can.

Don't let the chickens scratch the manure off the plants.
ROBT. H. GILLIN Don't think you can raise a crop of weeds and strawberries. Don't let your berries get too ripe when you ship them to market. Don't rake the manure off in the spring. Pa.

Don't get the strawberry fever unless you get enough to last twelve months in a year. Don't expect much from a loose, sandy
E. T. INGRAM soil without a harder subsoil. Don't try to learn it all by your own experience. Don't expect all varieties to do as well for you as for some one else. Don't condemn a variety unless you know you have the one you ordered. Pa.

Don't let your berries get too ripe on the vines, or a few over-ripe ones will spoil the rest. Don't let berries stand in the sun
HORACE J. SMITH after being picked. Don't let the pickers tread or roll on the vines, nor play base ball. Don't leave a bed too long, but set some new vines every year. Don't wait till picking time before making up cases and boxes for the season. Wis.

Don't plant on undrained land, on foul land, on too light
T. G. TICE land, on too much land, on too poor land. Don't use too little fertilizer, too little labor, too little brains. Don't neglect underdraining. N. Y.

CHAPTER XXVI.

AFTERMATH.

Not a bit of use in expecting to get a good crop of berries from feeble plants. Make the plants as big and strong as you can, with broad leaves.—TIM.

SHAKESPEARE states that strawberries were grown in gardens in the time of Richard III, but were a rarity. They were among the street cries of London over 400 years ago.

The great Linnæus is reported to have cured himself of the gout by partaking freely of strawberries—a delightfully æsthetic cure, and a most flattering testimonial to the efficacy of the dainty scarlet fruit.

Nicholas Longworth, of Ohio, was the first to discover the cause of barrenness, which stood in the way of successful strawberry culture sixty years ago. The sexual difference in plants was not understood before his time, and failure to produce fruit was the customary thing. Only a little over forty years ago the discovery was made that it was best to keep the sexes in separate rows. Who made the discovery?

Do not overlook the importance of study before going deeply into berry culture; and pay frequent visits to neighbors who have had experience in this line. See what they do, hear what they say, learn all you can from them.

Manure liberally—little and often—say at intervals of a month through the first summer. Sprinkle along the rows nitrate of soda, bone meal and muriate of potash or chicken manure and ashes, or any good commercial fertilizer, and do not be afraid of 1,000 pounds per acre for the year, in addition to any other manure that may have been applied at the first preparation of the ground, or as a winter mulch.

Fruiting strawberries in hills is generally not as successful as in matted rows. There are several reasons for this: when grown in hills, in ground that is not level, the water washes the loose soil from around the hills, leaving the plants high up, and liable to suffer from drought. The fruit should be well shaded from the hot sun and this is not so well done in hill culture.

Some varieties will stand more neglect than others.

Some varieties are better adapted to hill culture, others do best in matted rows.

Some varieties should have more room than others.

Some will stand rainy weather at picking time better than others.

Vary the culture to suit the variety.

No use trying to grow foreign varieties. Our American sun is too hot for them.

Plant growers should specify in all cases what kind of soils each variety requires ; also what sections each is best adapted to. Plant buyers should insist on this. They should also, when buying pistillates, find out what are the best pollenizers for them. Better yet, discard pistillates.

One plant set in April is worth five set in May, ten in June, and twenty-five in August.

The nearer home fruit can be marketed the greater the profit.

Some strawberries only pick in the morning, beginning at five and quitting at nine. A very good plan, if you have enough pickers. I tried Kevitt's plan of covering berries with waxed paper. Not satisfactory. A. I. Root, of Medina, Ohio, claims that Jadoo fibre is useful in preparing strawberry plants for shipping in August. It is so light the fibre may go with the plants by mail.

Hill culture of strawberries is apt to be a failure, for the reason that the sun scalds the berries and dries them up in a dry time more than in matted rows. Berries should ripen in the shade. This shows the importance of large foliage.

Lowlands for berries are most liable to spring frosts.

CHAPTER XXVII.

THE RASPBERRY.

HAVING devoted a large portion of the book to the strawberry, I now come to the other small fruits; fruits of great economic importance, for, with the strawberry, they form an unbroken succession of highly palatable and wholesome food during the entire summer, and are quick sellers in the markets.

Referring to my garden diaries of past years I find that the strawberry season, in my individual case, extends from May 26 to July 3, the raspberry season from June 27 to July 21, the dewberry season from July 4 to July 20, the blackberry season from July 16 to August 22, and that I cut grapes for market sometimes as early as August 20. This shows how one fruit overlaps the season of its successor.

These dates are not extreme, even for my own neighborhood, for somebody with especially favored location is sure to have berries sooner or later than I can produce them. One neighbor, for instance, has strawberries a week after mine are done bearing, on account of his situation on a northward-sloping hillside. The quoted dates are merely suggestive.

The raspberry occupies an important place in the succession of small fruits, and there would be a serious break without it. Its culture is easy. It is

a sure cropper under good treatment, excellent as a table fruit after strawberries are gone, and sells well in the markets. It is sold in smaller boxes than those used for strawberries, as it is a softer fruit. Having no core it is likely to suffer injury from its own weight if carried in boxes holding more than a pint. Small boxes are made especially for raspberries.

In setting out a raspberry bed it is proper to select a deep, loamy soil, and to enrich it generously with good manure. The rows should be not less than five feet apart, and the roots two to three feet apart in the rows. In a large plantation I should make the rows six feet apart, for ease in culture and to get more air; still five feet will answer very well. Some growers set raspberries so they can be cultivated both ways. Potatoes or corn can be planted the wide way the first two years or at least one year. The black varieties multiply by rooting at the tips of the shoots, and, if not kept in or near the parental rows, the tips will soon take possession of the entire soil of the alleys.

Cultivation and plowing among raspberries and blackberries up to August and early in spring is what gives fruit in largest quantities and of best quality.

Some growers use stakes or wire trellises, or a single or double wire stretched along the rows to support the canes, but a far better plan is to trim

the canes in such a manner that they will need no support. This can be done by pinching off the young canes during the growing season at a height of about two to three feet above the ground, encouraging strength of cane as well as a branching habit. It is

altogether too expensive to use wires or supports of any kind when growing raspberries for market. It is better to stimulate sturdy growth by the use of fertilizers, by good culture and by heading back the young shoots.

The diseases which affect raspberries and blackberries are far better prevented than cured, and the best

A GREGG BOUQUET

of all preventives is cleanliness. In the case of these small fruits cleanliness consists in the removal of all old wood and all rubbish from the rows. Such stuff should be burned. Fire will effectually destroy the spores or germs of diseases.

New plantations of raspberries should be set out in the earliest spring, as the shoots begin

to grow with the first warm, sunshiny weather.

To save hand labor these times, when efficient help is so scarce, after setting blackberries and raspberries (providing tops are cut back near to roots), run over rows right after setting with a potato coverer, and in about two or three weeks drag down the ridges thus made *thoroughly*, and the plants will get way ahead of weeds and grass.

Annually, the ground should be fertilized with well-rotted stable manure, applied along the rows, supplemented with a generous application of ground bone and wood ashes or ground bone and muriate of potash. The manure will not do any harm, no matter how liberally it may be applied. The ground bone may safely reach 600 pounds to the acre, and the muriate of potash 200 pounds to the acre, in addition to the stable manure. To fail in the matter of fertilizing raspberries is to bid for small-sized fruit. Keep the middle of the row well cultivated ; not too deeply.

I have tried the plan of removing all the old canes at the end of the bearing season, and also the plan of taking out the old wood in the early spring. It is, perhaps, a matter of convenience as to which plan is the better. Both are feasible. It is good practice to discourage the growth of suckers in the summer months. Suckers are the shoots which come up from the roots. Only a few of the earlier and stronger ones should be left to mature for the next year's bearing canes. All others should be cut off with a hoe.

Never trim in the fall; but there is no real objection to taking out old canes in the fall. This is not trimming, but cleaning. Trimming is shortening the bearing canes, and should be done in spring, after it is known whether there has been any winter killing, which is usually wind killing. Canes partially winter killed, and trimmed down to within a foot of the ground in spring, may yet produce a good crop of fruit.

Raspberries are multiplied by suckers, by the rooting of the tips in case of blackcaps, or by root cuttings. It is easy to make root cuttings, as it is only necessary to cut the roots into short pieces, with

a bud on each, and scatter them along in a shallow furrow, exactly as potatoes are planted. It is imperative that raspberry patches be moved every four or five years, for best yields.

There are three types of raspberries—red, black and purple. The yellow forms belong with the reds, and have been derived from them. The reds have a wider range of soil and climate than the blacks. The blackcaps are now largely grown for canning and evaporating.

RED VARIETIES.

TURNER.—Sometimes called Southern Thornless. Hardy; desirable for home garden; rather soft for market. A week or ten days earlier than Cuthbert. Best on light soils. Suckers so freely that these young shoots must be removed to preserve strength of parent plant.

HANSELL.—Much like Turner. Early. Not of best quality, but sells well before arrival of better berries.

CUTHBERT.—A standard main-crop variety, suited to table or market. Under good culture in rich, loamy soil, it is a large, firm and finely flavored berry. Shown on colored Plate X.]

MARLBORO

MILLER OR MILLER'S RED.—This berry within recent years has come into high favor among small fruit growers in Delaware, New Jersey, Pennsylvania and elsewhere. It is pushing Cuthbert for first place in some sections. Shown on page 116.

LOUDON.—Another comparatively new variety that is doing well. The fruit is shaped somewhat like Cuthbert; color showy red; quality good; late. Shown on colored Plate X.

MARLBORO.—A fine berry, a little earlier than Cuthbert. Soft.

THOMPSON'S EARLY PROLIFIC.—A good early berry.

ROYAL CHURCH.—A good berry, but falling to pieces readily. See colored Plate X.

PHILADELPHIA.—Old and good, but replaced by Cuthbert.

BRANDYWINE.—Old and still grown, but lacking in size.

GOLDEN QUEEN.—This berry, though yellow, may be mentioned here, as it much resembles Cuthbert, except in color.

WORTHY.—A new variety, a seedling of Turner crossed with Philadelphia. Much commended in New England.

Charles Wright mentions MARION'S FAVORITE, KENYON and WINANT as varieties of promise. W. D. BARNES speaks a good word for WARD. COLUMBIAN has also been mentioned favorably. There are, no doubt, many more promising new raspberries with which I am not acquainted.

WORTHY, A VERY BUSHY VARIETY

PURPLE VARIETIES.

There are several purple varieties catalogued by seedsmen and nurserymen, but I shall mention only one. The purple varieties are not generally popular.

SHAFFER.—The only purple variety widely grown. An excellent fruit for either table or market. The canes are strong and large, and demand more room than ordinary sorts.

BLACK VARIETIES OR BLACKCAPS.

GREGG.—The best known and most popular market sort.

KANSAS.—A new variety of great size and excellence.

PALMER.—Similar in some respects to Kansas; early and good.

EUREKA.—Another large new variety.

LOVETT.—A satisfactory sort in many places.

OLDER.—A variety of high quality.

Gregg, Kansas and Older are shown on colored Plate XI; Palmer and Lovett on colored Plate XII.

New plants of the black raspberry are started in September by covering the tips with moist soil, two or three inches deep, and allowing them to remain until spring.

I have unavoidably omitted the names of many blackcaps; some good ones, no doubt. My own choice of two would be Gregg and Kansas.

CHAPTER XXVIII.

THE BLACKBERRY.

There is no bush fruit which is capable of yielding greater profit.—PROF. L. H. BAILEY.

WHILE anybody may grow blackberries, nobody should do so who does not intend to take care of them, for a neglected blackberry patch is as much of a wilderness as a piece of wild thicket land. Besides, disease hostile to good fruit lurks in decaying canes and dead leaves. The patch must be pruned, cleaned and cultivated, and kept in good order.

The blackberry has a true place and a high place in the list of small fruits, for if picked only when fully ripe it is a grand table berry, and if grown properly the yield per acre will reach two hundred and fifty to three hundred bushels, which means anywhere from \$200 to \$300.

There should be an unbroken succession of the several kinds of marketable table berries from the first of June until the middle of August, beginning with the strawberry and ending with the blackberry. These dates refer to the latitude of Philadelphia, but the same period of ten weeks or more may be covered in almost any latitude in the United States with these three berries, the strawberry, raspberry and blackberry.

Blackberries are adaptable to many soils, but do best in a deep, mellow loam, abundantly supplied with humus. A good plan is to plow down a very liberal coat of stable manure, and to cultivate a year

or two before setting out the blackberry roots. The fertilizers should include bone and potash in good and lasting forms, as bone, wood ashes, etc. There is not much danger that the fertilizers will be used in excessive amount. The soil, if naturally wet, should be made lighter by thorough underdrainage.

Young plants, obtained either from suckers or from root cuttings, should be set a few inches deep in rows eight feet apart, with roots two feet apart in the rows; or the roots may be set eight feet apart each way, to allow for cultivation in both directions.

The method of trimming, as well as the manner of training, will depend upon the system of planting. If the roots are set in rows the canes may be allowed to grow from three feet to six feet in length, but if set in hills, singly, they must be pinched back when not too tall, or they will obstruct the passage of the horse and cultivator.

A WELL-GROWN SNYDER BLACKBERRY

The ideal plan, perhaps, is to plant blackberries in single rows, and pinch off the tips of the young shoots when not over three feet in height. This causes the canes to branch and to be strong and self-supporting, requiring neither wires nor stakes nor the expense of tying with string.

I have used heavy stakes driven lengthwise with the row, about three feet apart, with satisfaction. No attempt is made to fasten all the canes to the stakes, but only the ends of those which would otherwise obstruct the alleys and interfere with the passage of the horse and cultivator.

Some blackberry growers stretch a wire lengthwise with the row, about three feet from the ground, to which the canes are tied. Two wires may be used, one above the other, the long cane being tied and treated like a grape vine. Or, the two wires may be placed side by side, say three feet above ground, and the canes required to stand between the wires.

ELDORADO BLACKBERRY
REDUCED ONE-HALF

Large operations demand the simplest and most effective methods, and I suppose each grower must decide for himself which is cheapest and most advisable.

This must be remembered: the blackberry patch should last for a score of years, and more trouble and expense are therefore warranted than

in the case of a transient crop like strawberries. The end in view in blackberry culture is to keep the ground under good tillage, to keep the rows clear of deadwood and trash, and to facilitate the gathering of the crop. The work of heading back the growing canes, which must be done several times

during the season, is more easily performed if the rows are kept narrow and compact.

It is essential to harden the young wood by ceasing culture early in the summer. The cultivator should run very frequently, at least once a week, during spring and early summer, until picking time. During that period, which covers three weeks or more, the ground becomes somewhat hard, and must be broken up by the cultivator, to put it in good condition. In my latitude this last cultivation will occur about August 20 to 25, after which no more encouragement should be given the canes in the direction of growth. The entire autumn is thus given for maturing the wood made by the young canes, and I seldom suffer from winter killing.

Hardy varieties are preferable to those which are tender, but where the necessity for winter protection exists it is easy to remove the earth from one side of a bush or bunch of canes, force the canes over into a reclining position, and bury their tips or the whole canes with soil. Where this is done the canes must be liberated in early spring, as soon as danger of cold winds and severe freezing is over.

To partly anticipate the effects of drought a portion of the blackberry blossoms may be removed. Hale recommends this plan with certain species which bloom too freely. It is not always necessary in deep well-prepared soils.

Spring trimming is but sparingly necessary if the old shoots have all been carefully removed after the end of the picking season, and if the young shoots have been regularly headed back during the period of

their growth. But do not forget the cultivator in spring and summer.

As to growing what are called hoed crops in young plantations of raspberry and blackberry, the question is one for the individual operator. It will perhaps do no harm to put in a row of something in the middle of the eight-foot space between the lines of blackberries, but this cropping can be done only the first year.

I have no doubt whatever about the blackberry being profitable if properly managed; no doubt about its ability to yield \$200 per acre near good markets, under high culture.

VARIETIES.

Prof. L. H. Bailey groups the garden blackberries under five heads, as follows:

Long-cluster (*Rubus villosus*)—Taylor, Early Cluster, Ancient Briton.

Short-cluster (*Rubus villosus*, var. *salivus*)—New Rochelle or Lawton, Kittatinny, Snyder, Agawam, Erie, Minnewaski, Mersereau.

Leafy-cluster (*Rubus villosus*, var. *frondosus*)—Early Harvest, Brunton's Early.

Loose-cluster (*Rubus villosus* crossed with *Rubus canadensis*, or blackberry crossed with dewberry)—Wilson Early, Wilson Junior, Sterling Thornless, Rathbun, and probably Thompson's Early Mammoth.

Sand blackberry (*Rubus cuneifolius*)—Tree Blackberry, Topsy. (No cultivated form especially valuable.)

Remembering that *Rubus villosus* is the common high-bush or wild blackberry, and that *Rubus canadensis* is the common low-bush blackberry or dewberry, we get a good idea of the origin of our highly-valued garden sorts. Blackberry culture is yet in its infancy. Bailey says that it is not yet fifty years since the first named blackberry, the Dorchester, was introduced to public notice. The New Rochelle or Lawton was first exhibited in 1857.

SNYDER.—Hale calls this "the one great blackberry for market in the far North." This tells of its hardiness. It is not the largest but is one of the best flavored and most profitable.

ERIE.—This is perhaps the largest and handsomest of the blackberries, and is hardy in Pennsylvania. It is an excellent market berry, but does not bear equal to Snyder.

MINNEWASKI.—Hardy, medium growth, rather spreading habit. Large berries of high quality.

ELDORADO.—Hardy; berries of medium size, without much core and of high table quality. Should be in every family garden.

OHMER.—Hardy, free-branching, with medium large jet-black berries.

AGAWAM.—Fair sized fruit of high quality. A variety of widely recognized merit, especially for home use.

KITTATINNY.—Old and favorably known, but now considered rather liable to rust.

ANCIENT BRITON.—A sturdy variety of English origin in high favor in Wisconsin (Bailey) and other northern latitudes. Quality, first-rate.

EARLY HARVEST.—Among the earliest and best of the blackberries; grown for market purposes in widely separated parts of the country.

LINCOLN.—A very late variety. In some sections an excellent berry.

LAWTON.—An old standard sort, with large berry, but less common now than formerly.

EARLY CLUSTER.—A prolific and excellent variety; a week earlier than Snyder.

TAYLOR.—Hardy, productive, two weeks later than Snyder.

WILSON'S EARLY and WILSON JUNIOR are not quite hardy in certain northern locations, but stand the winters well in Pennsylvania. Easily laid down, if climate demands it.

I may also mention Mersereau and Brunton's Early, but do not personally know much about them. It is evident, however, that much good horticultural intellect is now directed to the development and improvement of the blackberry.

THE DEWBERRY.

There is probably a great future for the dewberry, which is in reality a low-bush blackberry. Prof. George C. Butz, horticulturist at the Pennsylvania station, writes that many small-fruit growers are planting dewberries for market. I have grown it successfully by tying the vines or bushes to stakes. The flavor of the dewberry is so excellent that there should be money in its culture everywhere. The Lucretia seems everywhere to be held in highest esteem, though others are catalogued.

W. F. Allen, Jr., of Salisbury, Md., cultivates forty acres of this fruit, and sent 45,000 quarts to market during the summer of 1898. He began picking June 20 and ceased July 12, covering a period of over three weeks, and reaching the market well in advance of the main crop of blackberries; and he profited accordingly.

SHOWING MANNER OF TRAINING THE LUCRETIA

Mr. Allen's main reliance is the Lucretia, though he speaks highly of Austin's Improved, which is of almost equal size and a week earlier. The latter is a berry of Texas origin.

Mr. Allen feeds his land well, and puts it in good mechanical condition. He sets the young plants (rooted tips) three feet apart in rows six feet apart. This requires about 2,500 plants to the acre.

The vines are not tied up the first year, but are simply kept well cultivated and allowed to run. Early the following spring stout stakes are driven along the rows in such a manner that two plants may be tied to each stake; that is, there are just half as many stakes as plants, the stake standing midway between

CHERRY

WHITE GRAPE

COLUMBUS

HOUGHTON

CHAUTAUQUA

SMITH'S IMPROVED

DOWNING

two plants. The stakes are about three feet high, after being driven into their places, and the vines are stretched straight and tied only to the top of the stake. Each pair of vines occupies an A-shaped position. This is the bearing wood of the year. The new growth of the season is allowed to scramble upon the ground in its own natural way.

When the crop is off, soon after the middle of July, the old wood is removed, and the strength of the vine thrown into the new growth. The patch is cultivated and cleared of weeds, and made ready for a repetition of operations the following season.

I have measured dewberries that were nearly one and one-half inches long, and it is needless to say that they boxed up handsomely and looked well in the crates.

The Lucretia dewberry is as good in quality as the best high-bush blackberries.

The trouble heretofore has been in the method of staking, but I think the method described is both feasible and economical.

DEWBERRY PICKERS

CHAPTER XXIX.

THE CURRANT.

Give plenty of manure and culture.—TIM.

THE currant is a general favorite, and every garden should have, at least, a few bushes.

Market gardeners find profit in growing this fruit for sale, as the gross receipts sometimes exceed \$400 per acre, and the expense of care and cultivation is not necessarily great.

Currants thrive under a wide range of conditions, but do best when planted in deep, moist, cool soil, and when partially shaded. Clay soil, with good drainage, well enriched, suits the currant almost perfectly. It is a good plan to mulch around the bushes with straw, or with green clover cut in full blossom, through the heats of summer. Some growers shade their currant bushes by alternate rows of grape vines and some by means of fruit trees. Shade is more necessary south of the Ohio and Potomac Rivers than in more northern latitudes.

Where possible, it is well to plant five feet each way, using 1,742 plants to the acre. Do not stint the manure. Currants require extra heavy manuring in order to get berries that will command the best price. Not only should the soil be in excellent tilth at the time of planting, but it should be top-dressed yearly (every autumn or early winter), with pig or cow manure. There are no fruits that will respond more quickly to good treatment than currants and gooseberries. They should be cultivated often, so as to keep down all grass and weeds. The pruning may

be done as soon as the leaves fall. One-third of the growth of the year should be removed, and the canes or branches thinned, if over-crowded. As the bush attains size two-thirds of the new growth is not too much to be removed yearly.

The currant does not come true from seed, and new plants are propagated by layering and by cuttings. A cool, moist soil is necessary for starting cuttings, and shade is essential also. The cuttings are made in the early part of September, about seven inches long, from new growth. The cuttings are set in rows three feet apart and five inches apart in the rows. The soil should be firmly packed around the cuttings, which should be buried, slightly leaning, with about an inch out of the ground. They will soon throw out roots, and will be ready to start into vigorous growth in the spring. If moved in the spring they should be taken out of the ground early, as they are quick to begin to make shoots.

Gooseberries and currants, which are closely allied botanically, are low trees rather than bushes, and gooseberries often naturally assume a tree-like habit of growth.

Propagation by layering is effected by bending down vigorous young branches and partially burying them in the earth, leaving the tops out. Roots are quickly thrown out, and in the fall the new plant may be severed from the parent stem and treated as an independent bush.

The stem of the currant is subject to the attacks of two kinds of borers. The remedy for both is to cut out and burn all affected branches. Their work is sometimes shown by the premature death of the

foliage, and sometimes by the shriveled appearance of the bark after the leaves have fallen in autumn. Eight or ten borers have been found in a single stem.

The insects attacking the leaves of the currant are the native and imported currant worms, and the currant span worm. There are numerous others that commit depredations of minor importance, but these three are all that are likely to be troublesome. The first two can be kept in subjection by the use of powdered hellebore, in the proportion of one ounce of hellebore to a pailful of water, sprinkled or sprayed on the bushes (especially on the lower and central leaves) at the first appearance of the insects; or hellebore and flour, in equal bulk, dusted on when the bushes are wet, will be found effective. For the span worm, if hellebore be used, the liquid should be made three times the usual strength.

The ordinary green worm, which so commonly attacks both currants and gooseberries in the Eastern States, almost always begins operations quite near the ground in May and June. A sharp watch must be kept for skeletonized leaves, which betray the work of the worm. The hellebore remedy already described is both quick and effective. It is cheap.

Aphides, or plant lice, sometimes attack the leaves. These are destroyed by spraying with tobacco tea, or by dipping the twigs into a pail containing the same. Spraying with the Bordeaux mixture will prevent damage by the fungous diseases which cause the leaves to drop prematurely in the fall. It is advisable to use this mixture freely on all plantations of currants where the foliage drops early. The use of the ammoniacal

copper carbonate is advised, rather than Bordeaux mixture, in case it is necessary to spray for fungous diseases during the fruiting season, as it does not spot the fruit.

The average yield of currants has been put down at 2,000 quarts per acre, with yields reported as high as 7,500 quarts per acre. Net profits will depend on market price and expenses, and both of these items are variable. A recent New Jersey bulletin intimates that somewhere about \$150 per acre net profit may be expected. Of course it all depends upon circumstances, but I am sure that an energetic man near a good market can do well with currants, provided he does not undertake too large a patch. Many of our horticultural operations would be more successful with acreage divided by two.

RED VARIETIES.

RED DUTCH.—This is commonly cultivated and best known, bright red in color and small in size. It will hang on the bush a long time after getting ripe without being seriously injured. The fruit seldom brings the highest price on account of its rather small size, but if severely pruned and highly manured it is greatly improved in this respect.

VICTORIA.—One of the latest varieties in time of ripening. Very satisfactory in every way, and especially valuable for marketing. Fruit red and of large size, and remarkably free from attacks of borers. Shown on colored Plate XIV.

CHERRY AND VERSAILLES.—These are much alike, being red in color and large in size. The bunches of

Versailles are longer than those of Cherry. Cherry is shown on colored Plate XV.

FAY'S PROLIFIC.—This widely popular currant is a cross between Cherry and Victoria. It is of large size, dark red color, fine flavor, and very prolific, the bunches being very large and handsome. The plant, however, is somewhat tender. A bunch and a single berry are shown on colored Plate XIII.

NORTH STAR.—One of the newer varieties, recommended for its robust habit and hardiness in cold latitudes. The berry is small. Shown on colored Plate XIII.

WILDER.—This is a comparatively new currant, said to be a seedling of Versailles; of excellent quality and very productive, with a long fruiting season. The fruit is red, of large size, and borne in long bunches. Hale thinks it will thrive on much lighter soil than any other of the extra big currants. The flavor is mildest of the currants.

RED CROSS.—This new red currant is burdened with superlative adjectives—largest, most vigorous, sweetest, finest in quality; also very prolific, with a long season of ripening. Hale gives it a prominent place among the favorites.

PRINCE ALBERT.—Valued for lateness and great productiveness, and widely grown, but of second rate quality. The growth is upright and strong, the leaves thick and distinct from other varieties.

WHITE VARIETIES.

WHITE GRAPE.—This is the best of the white varieties, and is sweet and desirable for table use. It is prolific and satisfactory in the home garden, and makes a very attractive appearance on the stall in market, especially if boxed up and displayed in alternate boxes with red sorts. As a rule, however, white currants do not sell as freely as red varieties. See colored Plate XV.

WHITE IMPERIAL.—A comparatively new variety, said to be sweeter than White Grape ; sweet enough to eat without sugar.

WHITE DUTCH.—An old and reliable white variety.

BLACK VARIETIES.

The black currant is seldom eaten from the bush, but for pies, jellies and preserves it is very much esteemed in certain portions of the United States. See colored Plate XII.

BLACK NAPLES.—Large ; esteemed for jellies.

LEE'S PROLIFIC.—Hale calls this by far the best of all the black currants. It is said to be a strong grower, and productive of long clusters of large berries of superior quality.

CRANDALL.—This is the fruit of one of the varieties of the Missouri or yellow-flowering currant. Opinions differ as to its merits as a small fruit. I cannot yet pronounce it as being of a desirable quality. It will probably disappear.

CHAPTER XXX.

THE GOOSEBERRY.

A Salready stated, the gooseberry is closely allied botanically to the currant, and in many respects demands similar culture. Both are to a certain extent cool weather growers, and both send forth green shoots in early spring. Their insect enemies are much the same, but the gooseberry is more liable to disastrous attacks of mildew than the currant.

It is said that we do not yet know the real value of the gooseberry; that it is so far inferior in the United States to the gooseberry of England as to be a different and poorer fruit. Our remedy, of course, is to breed up to the European standard. It is asserted that our hot summer sun is an insurmountable obstacle in the way of gooseberry perfection, but I have full faith that Yankee ingenuity will overcome this difficulty.

The fact is that the gooseberry has a true place in our domestic economy. It has tart qualities that are of the highest culinary value. It need not be either sour or bitter, but only pleasantly acid, and it thus makes one of the most agreeable of sauces or pie fillers.

Besides, the gooseberry can be raised without much trouble, picked in a quick and wholesale manner, and marketed at distant points without danger of loss. I have recently seen the culture of the gooseberry practiced on a large scale by enterprising men who talk of tonnage rather than of number of crates in a crop, and who have proved beyond doubt that gooseberry culture may be made profitable.

Tendency toward mildew in any plant is a sign of weakness, and while it is well to seek for a cure it is vastly better to seek for a prevention. In the case of the gooseberry the prevention is to be sought in better culture and in the choice of mildew-proof varieties. Some kinds of gooseberries are better adapted than others to withstand heat, and these are the ones which are likely to be most healthy in our climate; and, being most healthy, they will be most nearly mildew-proof.

PEARL

One foreign variety, the Industry, seems likely to adapt itself to American conditions, if well treated, but I think our true plan is to develop the best traits of native American sorts, and to thus seek a perfect gooseberry. Considerable progress in this direction has already been made.

The preparation of the soil for gooseberries is practically the same as for currants, deep mellow loam being preferable. The roots are shallow feeders, yet a deep soil is the best known antidote for drought. Gooseberries, especially, are injured by drought, if the bushes are in shallow soil.

Liberal applications of barnyard manure should be given the gooseberry patch both before the young

bushes are set out and annually thereafter. A bone and potash fertilizer should also be used, at the rate of 600 to 1000 pounds per acre ; the bone to be in twice the quantity of the potash, if home mixed.

Planting distances should not be less than five by five feet, if horse culture both ways is intended ; or six by four feet if the patch is to be cultivated only one way.

Gooseberry bushes are multiplied by cuttings and by layers, the same as with currants. Mound layering, practiced by nurserymen, consists in heading back the bushes very severely in early spring, which results in a multitude of young shoots. In July, when these shoots have somewhat hardened, a low mound of earth is made directly upon the old crown, in and among the young shoots. The earth is packed firmly about the bases of the shoots, which strike root, and may be removed and treated as independent plants in the autumn. Cuttings may be set in the ground in the fall or carried through the winter in a dormant state in boxes of sand. If set in the ground they should have only one bud above the surface, and in cold weather should be covered with soil or mulch to prevent the frost from heaving them up and injuring them.

The tree form is entirely feasible in gooseberry culture, and is practiced in some gardens, but I think the bush form with both gooseberries and currants is generally preferable, even though sometimes involving more difficulty with grass and demanding more hand weeding. It is easier to get young wood in case of the bush than in case of the tree form.

Mulching should be practiced in all cases, except under the highest culture. The constant stirring of the ground keeps the surface covered with a sort of dust mulch, which serves to prevent the escape of moisture from the lower soil ; but if this constant culture cannot be given thoroughly and regularly, it is well to spread a mulch of straw or litter around the gooseberry and currant bushes, especially the gooseberry bushes.

A favorite method of growing gooseberries and currants on a large scale is in plantations of fruit trees, especially while the trees are young. If planted in vineyards it is recommended that the grape rows be at least ten feet apart. This will allow for three feet in the clear after both grapes and gooseberries have made some lateral growth.

A recent U. S. Yearbook speaks of the gooseberry as the small fruit "best suited to planting for market by the general farmer, as it interferes less with ordinary farm operations than any other." The fruit is long in marketable condition and can be picked with little outside labor. "By protecting the hands and wrists with leather gloves, the green berries may be stripped from the bushes into pails with little injury to either fruit or bush. The fruit is then quickly cleaned of leaves and rubbish by running through a common fanning mill, which completes its preparation for market."

Spraying for currant worms has already been described. See currants. The same worm attacks the gooseberry, and hellebore is the remedy.

Mildew is best prevented and checked by spraying with potassium sulphide, one-half ounce to a gallon

of water. The sulphide is most quickly dissolved in hot water. It is sometimes called liver of sulphur. The first application should be made in early spring, before the leaves open.

One of the worst gooseberry diseases is leaf spot, a parasitic fungus. Where this trouble exists there should be an application of Bordeaux mixture before the fruit begins to grow and several applications after the fruit has been picked. The bearing season is omitted on account of spotting the berries.

Good underdrainage, good culture, proper pruning, etc., go far toward preventing both mildew and leaf spot. It is also advised that gooseberry bushes be kept away from tight fences or buildings, or places where the free circulation of the air is hindered; though I am inclined to think that poor underdrainage is the most common cause of these troubles.

American gooseberry yields are variable, and figures are hard to obtain. We have as yet but a comparatively small number of extensive growers. Perhaps 2,000 quarts of gooseberries per acre is a fair average, but 4,000 quarts per acre is a not uncommon crop. The net profit per acre may be estimated at \$150, as an average, with more than double that sum in special instances. Prices vary from three to ten cents per quart.

VARIETIES.

We show on colored Plate XX five varieties true to life—Chautauqua, Columbus, Houghton, Downing and Smith's Improved. These are all native sorts, and are recommended.

A recent U. S. Yearbook says: "The gooseberries most widely grown are Houghton, Pale Red and Downing, all of American origin and parentage, though in some localities Indus-

try, an English variety, little subject to mildew, is profitably grown."

CHAUTAUQUA.—This is one of the newer gooseberries, of a green or greenish-white color when ripe. It is large, beautiful and of good quality, and the bush is vigorous and productive.

COLUMBUS.—Of the largest size, late in ripening and very fruitful and free from mildew. Its color is green or greenish yellow. An American seedling, of English type.

HOUGHTON.—This is a handsome and prolific American variety, with fruit of a dark red color. It ranges in quality of fruit from good to best, but the berries are not large. It is productive even under unfavorable circumstances.

PALE RED.—This is quite similar to Houghton, but the fruit is smaller.

DOWNING.—An old standard, and one of the best of the American class. Its fruit is large for a native. The skin is thin and the pulp of high quality, being soft, juicy and sweet. The skin has a faint white bloom. The bushes are quite free from mildew.

SMITH'S IMPROVED.—Less thorny than Downing. Berries yellowish-green, of excellent quality. Hale calls it a delicious berry for eating out of hand, and fine for cooking purposes.

PEARL.—A descendant of Downing, which it much resembles, both in foliage and fruit. E. T. Ingram, of Chester County, Pa., pronounces it a very superior variety with him, in comparison with a number of other sorts.

RED JACKET.—A variety of Canadian origin; probably a hybrid from Houghton and some English gooseberry. Said to be a better shipper, but a poorer cropper than Pearl.

INDUSTRY.—Our best known European variety. The fruit is large, oblong in shape, nearly smooth, dark red, sub-acid or nearly sweet in flavor, and a good market berry. It is not nearly so prolific as the American sorts, but occasionally overbears. The bush is somewhat liable to mildew.

WHITESMITH.—A pale yellow berry of English origin; sweet and very good, but liable to mildew.

CROWN BOB.—An English gooseberry; large, smooth, dark red, sweet; much like Industry, but not so robust, and more susceptible to mildew.

Columbus, Houghton, Chautauqua, Smith's Improved and Downing are shown on colored Plate XVI.

CHAPTER XXXI.

OTHER BERRIES, INCLUDING SOME NOVELTIES.

BUFFALO BERRY, CRUNELLS, MAYBERRY, GOUMI, JUNE BERRY,
LOGANBERRY, MULBERRY, MUSKBERRY, PRIMUS HYBRID
BERRY, STRAWBERRY-RASPBERRY, WINEBERRY.

WITH novelties the practical farmer or gardener should have but little to do. Most of them are worthless for business purposes. Still, I think it is worth while to keep an eye upon them. In the above list the Loganberry, for instance, promises to become a recognized and standard small fruit.

BUFFALO BERRY.—This is *Shepherdia argentea* of the botanists. It is a pretty, ornamental shrub, prolific, and highly prized for its fruit in the drier portions of the Northwest. The fruit is small, acid, scarlet in color, with small seeds.

CRUNELLS.—Novelty. Claimed to be a cross between the gooseberry and the currant. It has no thorns, and resembles the Missouri currant to some degree in foliage and growth.

MAYBERRY.—Novelty. Said to be a promising candidate for public favor; a member of the raspberry group.

THE GOUMI.—Widely advertised under the name *Elæagnus longipes* (pronounced lon-gi-pees). The word *Flæagnus* is the botanic genus, and the word *longipes* means long footed or long stemmed, referring to the fruit. Goumi is the Japanese name for it.

I am inclined to look with favor on this new fruit, but cannot advise anyone to plant it, except in an experimental way or for ornamental purposes. It may take a standard market position after a time, but for some years to come it will remain a novelty.

Prof. Bailey, of Cornell, says it is there "a graceful and handsome bush of five or six feet high, bearing a profusion of silver-white leaves and most abundant crops of cinnabar-red and gold-flecked berries. Whether considered for ornament or for fruit, it is one of the best of the many excellent shrubs which have come to us from Japan." It is perfectly hardy.

JUNE BERRY.—The Juneberries are descendants of our native shadbush, *Amalanchier*. They are catalogued by some nurserymen, but still belong in the group of novelties, and have not demonstrated their right to a place among our standard small fruits.

LOGANBERRY.—This berry has, I think, come to stay. It appears to be worthy of the attention of market men, though the testimony on this point is yet meagre. Prof. George C. Butz, horticulturist at the Pennsylvania Station, says the Loganberry is certain to find a place in cultivation.

This new fruit was originated in California by Judge J. H. Logan. Its first bearing was in May, 1883. Its ancestors were Anghinbaugh, a pistillate dewberry, fertilized by "an old variety of red raspberry * * * resembling the Red Antwerp."

The Loganberry is commonly described as being a cross between a blackberry and a raspberry.

Its habit of growth is somewhat like the dewberry, and its method of multiplication resembles the blackcap raspberry, as the canes root at the tips. To what extent it will prove hardy in the Northern and Northwestern States remains to be demonstrated by experience.

The fruit is of a highly desirable size and character, partaking of the nature of both parents. It has been called a red blackberry, but has a distinct raspberry flavor.

It is necessary to caution buyers to be extremely careful of Loganberry stock offered for sale by agents, as it is believed that a good deal of worthless stuff has already been sold. It is better to buy only of well-known dealers whose reputations guarantee purity of stock.

MULBERRY.—Offered in the catalogues, but nowhere very largely grown for market purposes. The Downing mulberry has real merit.

MUSBERRY.—Novelty. A member of the raspberry group. I do not know anything against this berry, but some of its class are too persistent when they once get possession of a bit of soil.

PRIMUS HYBRID BERRY.—Another raspberry, or a hybrid between blackberry and raspberry. A novelty.

STRAWBERRY-RASPBERRY.—The Rhode Island Station, after a trial of two years, calls this "a veritable weed, entirely destitute of desirable qualities for market purposes." Still, it is a handsome ornament, if nothing more.

WINEBERRY.—The Japanese wineberry has been widely distributed over the country, and has some friends, but does not appear to find public favor for market purposes.

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