

The  
**DAHLIA**  
Manual

A TREATISE ON  
DAHLIA CULTURE

ILLUSTRATED



BY W. W. WILMORE  
DENVER, COLO.

Revised Edition

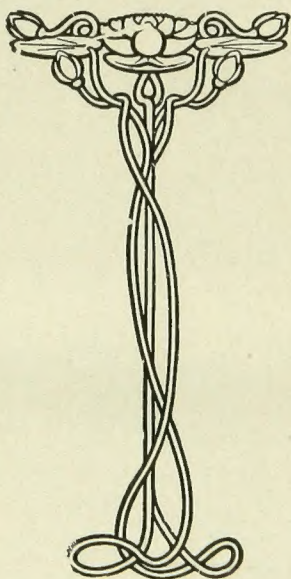
1916



# *The* Dahlia Manual

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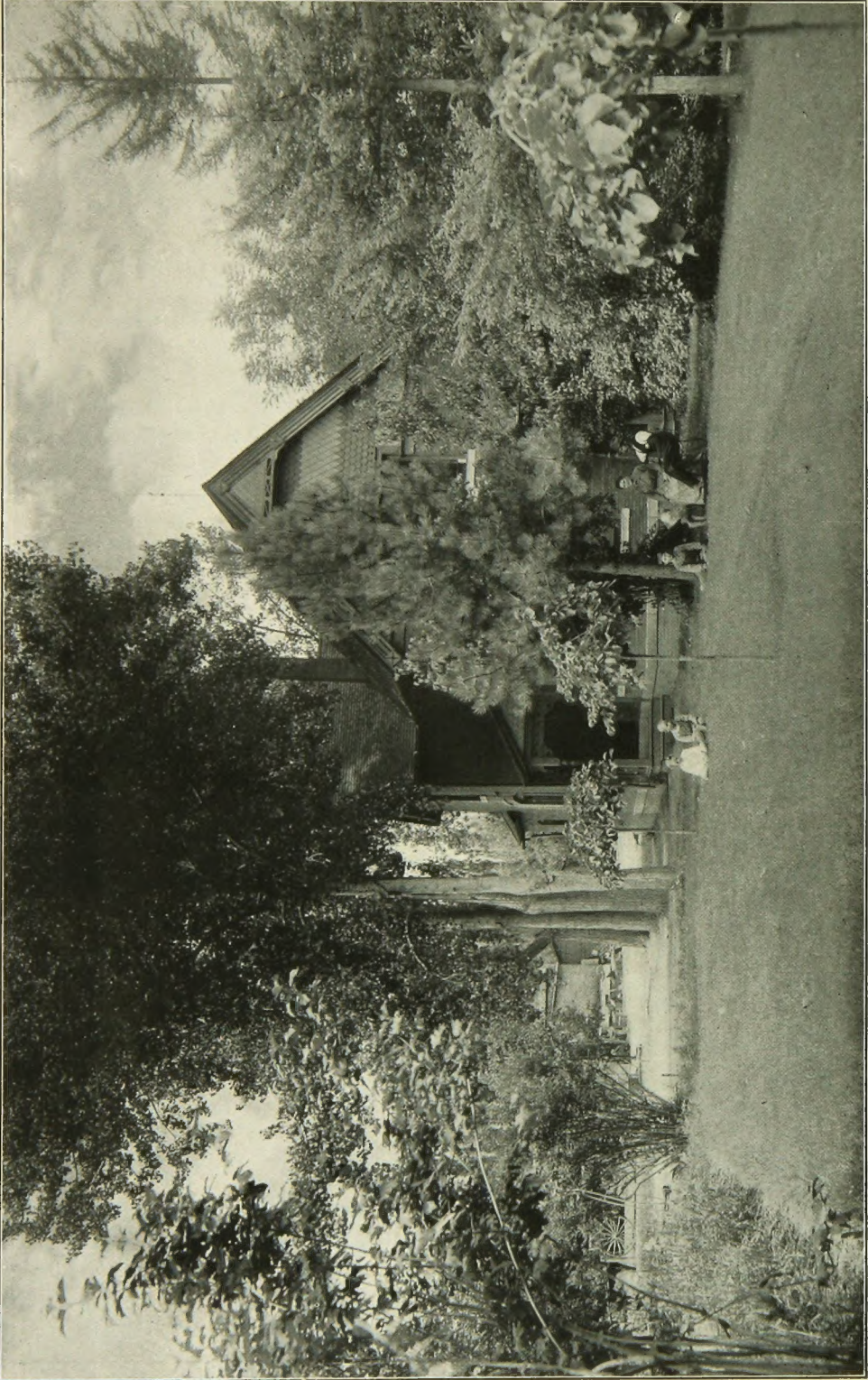
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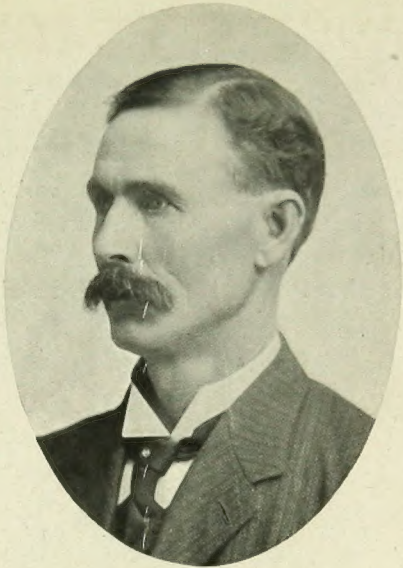
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DAHLMOOR—RESIDENCE OF W. W. WILMORE



THE AUTHOR

## PREFACE



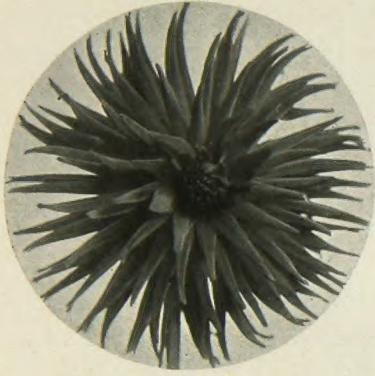
**M**ANY years ago, or to speak more exact, in the year 1881, the author began his life study with the Dahlia as a subject. He entertained but little thought however, at that time, that he would ever be known

among the commercial growers of the world, and still less thought that he would ever become the author of a modest little book. ¶As a boy, he was captivated by the wiles of the Dahlia while looking at some fine blooms in a neighboring yard—a simple act, yet a life work grew out of it. ¶For a number of years his work with the Dahlia was confined to growing for pleasure only. His chief delight, then as now, was in originating new varieties from seed. Gradually this work led to commercial growing. ¶In the following pages the aim will be to present such information as is commonly needed in successful Dahlia culture. This work is in no sense an advertising medium, neither will it attempt to cover all the field in minute detail. Conditions are almost as varied as localities, and any attempt to furnish rules and instructions that will apply under all these various conditions is beyond human reach. It will therefore be obvious to the reader that specific information is to be operative only so far as climatic and other conditions may render them of practical value.

W. W. WILMORE.

# CLASSIFICATION

DAHLIAS ARE DIVIDED INTO EIGHT GENERAL CLASSES



CACTUS

## CACTUS.

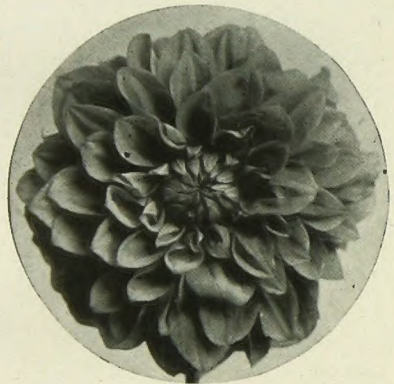
These have long, narrow petals; some varieties quite regular in form, others with curved or twisted petals.

They may be solid in color, or shaded and variegated.

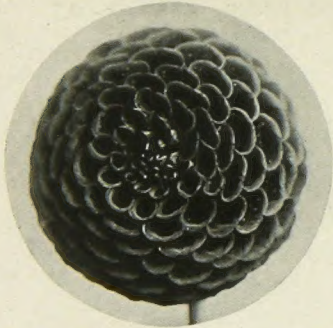
## DECORATIVE.

These have broad, flat petals. The flower is also flattened in form.

This class also has a wide range of color and variegation.



DECORATIVE



POMPON

## POMPON.

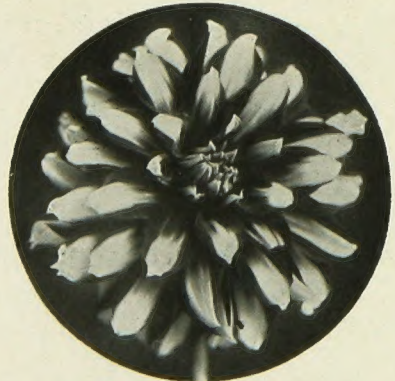
Small flowers, rounded and full.

This class takes in all miniature varieties of the Show and Fancy classes.

## FANCY.

This name is generally applied to large, rounded, full flowers, with two or more colors, which may appear in the form of a lighter tip on the petal, or streaked or dotted petals.

It is proper however, to refer to any variegated flower as a Fancy, regardless of the type to which it belongs.



FANCY



PEONY

### PEONY.

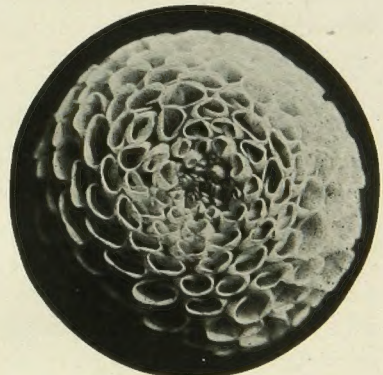
Semi-double, showing an open center and may be regular or irregular in formation. Usually of very large size, carrying all colors known to the other types.

### SHOW.

Large, rounded flowers, showing only solid or self colors, but may frequently have shadings of color.

To distinguish between a Show and Fancy variety, apply this rule:

If the tip of the petal is lighter than the ground color, it is variegated. If the tip is darker than the ground color, it is a Show variety.



SHOW



SINGLE

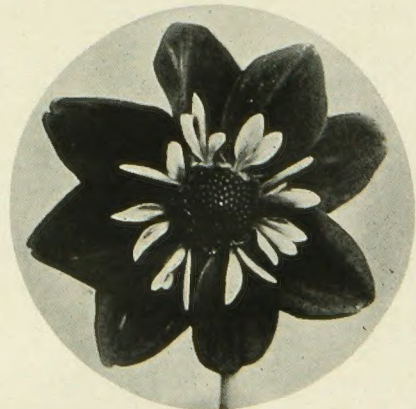
### SINGLE.

This class is too well known to require description. The perfect type has but eight petals.

### THE COLLARETTE.

This is a single form, with a frill around the disk, and is found in many colors.

**Note:** Several other distinctive classes are used by professional growers, but their distinctions are of a technical rather than a useful nature.



THE COLLARETTE

## HISTORICAL.

The Dahlia is a native of Central America and Southern Mexico, where it grows wild upon the meadows and table lands to an altitude of 10,000 feet.

The name Dahlia is derived from Dr. Dahl, a Swedish botanist, but for a time was known under the name of Georgina, after Professor George, of St. Petersburg. It also has the early Spanish name of Acocfli.

The earliest known history of the Dahlia is not yet very old. About the year 1657, Francisco Hernandez, a Spanish Physician, wrote a book on plants, and among the plants described, he mentions *Dahlia variabilis*, a species from which most, if not all, of our present varieties have originated. At that time, it is probable that it was only known as one of the great multitude of botanical plants, without much, if any, thought of its future usefulness, for we find nothing further in print for 130 years. It is quite probable however, that some effort was made to improve and domesticate the plant towards the close of the eighteenth Century, for in 1787, Nicholas Joseph Thirerry de Menonville, a Frenchman, published an account of the Dahlias he had seen growing in the gardens of Mexico. Two years later, 1789, seeds were sent from the Botanic Gardens of Mexico, to the Royal Gardens of Madrid, Spain, where it was given its present name. This lot of seedlings was lost two years later as were several other lots sent to various places. But their stay, though brief, awakened a deep interest in the plant and its possibilities, and further attempts at its cultivation were made in several European countries, and it soon became quite popular. The work bestowed upon it, however, seems to be more in the nature of a fad, rather than intelligent study. Difficulty seems to have been encountered also in knowing how to keep the roots over to the next season.

It should be borne in mind that up to this time, all the varieties were single, the variegated and striped varieties leading in popular favor.

The history of the first double form is told as follows:

Mr. Donkelaar, of Louvian, began a series of experiments with northern-grown seed in 1812. His first crop of seedlings were still quite single, but seed saved from these, gave him some semi-double flowers in 1813, and seed saved from these again, gave fully double flowers in 1814, the third generation of the northern-grown seed. These varieties continued to produce double flowers, and the Dahlia now became immensely popular.

The question naturally arises here: How should northern grown seed produce double flowers? A theory gives this answer: Nature always alert to perpetuate itself, throws out extra petals to protect the tender seed from the chill of the northern atmosphere. Be this true or not, certain it is that double varieties show a decided tendency in warm climates to become semi-double, and single varieties in the North are hard to keep in true form.

The first Cactus Dahlia originated in 1872, but was not placed on the market until 1880. It seems to have been a chance seedling, but may be a separate species. The original specimen was a bright scarlet of fine form, but very short stem. It was nevertheless, a very welcome addition. It was introduced under the name of Juarezi, after President Juarez of Mexico, and is still listed in some of the catalogues. From this chance plant there has descended a mighty troop that has held the center of the Dahlia



stage for the past thirty years, and the type is still showing marked improvement each year. Where it will end no one can say. The type embraces all of the colors of the other types, in size from the small Pompon to the diameter of nine inches, some with petals as narrow as a blade of grass, giving the flowers more the appearance of a chrysanthemum than a Dahlia. At first, the type was deficient in stems, they being rather short and stiff or thin and weakly, but in recent years much improvement has been made and there are a goodly number now with fine stems, twelve to eighteen inches long, which hold the flower quite erect. And while the stem is under discussion, it might be in place to say that some of the weaker stem varieties, while useless as a cut flower, are yet very valuable for garden plants. A drooping stem permits the flower to swing free of the plant, and when combined with the dark green foliage, presents a picture of wonderful grace, not seen in the more erect growing plants.

In quite recent years, a new form has become immensely popular, the Peony flowered type. They first became popular in Holland, and in a few years became popular throughout the world. They vary somewhat in form and embrace all the colors known in other types. As a class they have better stems and keeping qualities than the Cactus type. At the present time (1916) this type gives promise of surpassing all other varieties in popular favor. This type and the preceding one are here treated at some length because of their popularity.

#### SPORTS.

The Dahlia has always been notorious for its sportive habits, and many and curious are the freaks to be seen. This is true not only of variegated varieties but sometimes appearing among varieties supposed to be quite staid and fixed in their colors.

Some of the Fancy varieties are very popular because of this wide variance in color, which keeps the grower guessing what is coming next; but while sports are common as stated above, yet all attempts to fix a sport into a new variety, have been fruitless, for sooner or later, they return to the parent color.

New seedlings should not be placed on the market hastily. Several years is usually required to ascertain the true nature of a new Dahlia. For instance, a new seedling may show gay red and white markings and may give promise of a fine Fancy variety, but the next year and all succeeding years, it may show white so rarely that it would not be proper to class it as a variegated variety. Then again, there are physical weaknesses which may develop in the plant. So it is not wise to place a new variety on the market short of three years trial, and then only the very best should be saved, as there are by far too many varieties on the market now.

#### COLORS.

The Dahlia is rich in color, especially reds, scarlets, yellows, bronze and purple. Clear pink, white and lavender are often met but are not so common as the five first mentioned colors. Of combinations of color, there seem to be an endless supply, and one would think that somewhere in the manifold combinations of colors and tints, we would find the blue, yet so far as is known, no blue has ever been developed.

## SOIL AND LOCATION.

The Dahlia loves an open sunny situation and for convenience and ease of cultivation, a rich, mellow soil is preferable. The Dahlia however, possesses a happy, easy-going disposition and readily adapts itself to almost any soil or situation, except dense shade, and wet, sour soil. So with these exceptions, it may be said that the soil at hand will do, if reasonable judgment be used in the preparation and cultivation which is to follow. They thrive in practically all locations where other flowers grow, from an altitude of a few feet above sea level to an altitude of 10,000 feet in warm climates, and seem to be at home in all soils, from heavy clay to almost clean sand.

The grower should remember that cultivation is first in importance, and location second; for without proper and thorough cultivation, failure is inevitable.

The writer recalls the complaint of a customer, of an order that was unsatisfactory. It developed that the customer had dug holes for the tubers in a heavy sod with the end of a parasol, and could not understand why they did so poorly.

Having selected the location for planting, it should be thoroughly prepared by digging—the deeper the better, and if this work can be done in the fall, it will be in better condition for spring planting.

## FERTILIZERS.

If the soil is poor, a little well rotted manure should be worked in at the time of digging or plowing.

On the question of fertilizer, good judgment must be exercised, or the ends most desired may be defeated. Many Dahlias are ruined by over-fertilizing. Heavy fertilizing produces a rapid, sappy growth of foliage and gives the plant no time to grow flowers, or if they are produced at all, they are small and inferior blooms, both in form and color. The dense, heavy growth of foliage becomes a harbor and breeding place for insect pests that feed upon the young, sappy growth and buds. As stated above, judgment must be used, and fertilizer also, if the soil is poor, or if Dahlias have been grown for several years in the same location.

As to kind of fertilizer and the amount to be used, judgment must govern again. If the soil is capable of producing a rank growth of weeds, little, if any, fertilizer will be needed. For a heavy or medium soil, use a rather coarse manure from the horse stable, in quantity from one to two good forks full to nine square feet. For a very sandy soil, horse manure in which an equal portion of clay has been worked, makes a good dressing using a little more than the quantity suggested above. Sandy soils are hard to keep enriched unless underlaid with clay, as the rains leach the strength badly. Light, loamy soils are best treated with wood ashes or a light dressing of coarse bone meal (not bone dust). If bone be used, one good handful is sufficient to nine square feet; ashes, about one quart to nine square feet.

All the foregoing fertilizers should be spread over the surface of the soil and worked in at the time of digging or planting. Never use fresh manure.

Soils that are low and inclined to be wet can be helped greatly by a liberal dressing of air slaked lime. On such soils, the hills or rows where the tubers are to be placed should be raised several inches above the ground level. Dahlias do not thrive where their roots are constantly in wet soil.

An excellent plan applied to all soils, is to spread a mulching of barn yard manure on the surface or around the plants, after the last hoeing or cultivating. This will prevent the soil from baking and permit the small fiber roots to come near the surface.

The above general rules may be varied as experience may suggest.

### PLANTING.

Having prepared the soil, await the proper time for planting. This should not be done when the soil is wet. In planting tubers, lay the tuber in a horizontal position, as indicated in figure 1. Cover to a depth of 4 or 5 inches, pressing the soil firmly over the tubers. This permits the new growth to at once begin the formation of new roots, which are to become the tubers for the next year. Thus a new stalk and new tubers will be formed. These new roots will take firm hold of the soil and keep the plant in proper position, a condition not possible when planted as indicated in figure 2, where it will be

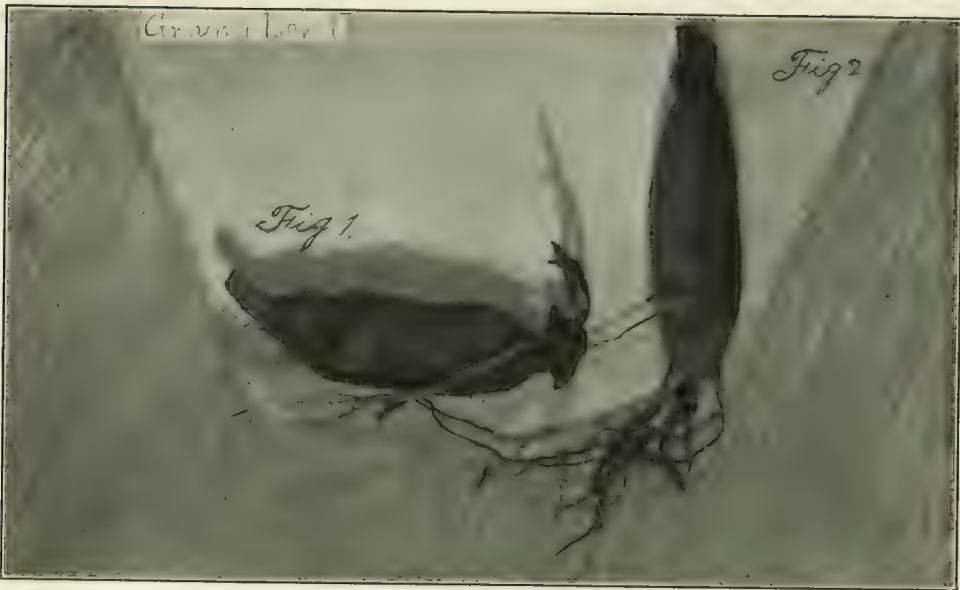


FIG. 1. TUBER PLANTED IN PROPER POSITION.

NO. 2. TUBER PLANTED IN IMPROPER POSITION.

seen the germ or sprouting end of the tuber is at or near the surface of the ground, which will not permit of new root action there. Nature, however, will provide roots and they will start from the lower end of the tuber. (See illustration). The result will be a new stalk, drawing its strength through an old tuber, which nature will begin to form as near as possible into the fibery growth of a stalk. This condition will seriously handicap the plant for its best work, and the tuber formed, will of course, be blind and of no value.

If green plants (those grown from cuttings), are to be set, the process is simple. Set the plants about four inches deep, pressing the soil gently around the roots, or ball of earth, if the plant is turned from a pot. If the soil is somewhat dry, use one quart of water to each plant, then cover the wet surface with a little dry soil. Green plants should be shaded for a day or two, if the weather is clear.

## DISTANCE TO PLANT.

The proper distance for setting, is the same for both tubers and plants and should be not less than 3x4 feet for blooming purposes, if planted in a bed, or 2½ feet, if in a single row. The aim in distance should be to leave space sufficient to get around each plant for cutting blooms and trimming off the old, faded flowers. Where too much space is given, it stimulates a growth of heavy side branches, which often break off with their own weight, rendering the plant unsightly.

As stated above, these distances are for blooming purposes. In commercial nurseries where they are grown for tubers, they may grown much closer. Excellent crops of tubers may be grown by planting 1 by 3 feet.

Tall growing varieties may be dwarfed to a considerable extent by pinching the top from a plant when six inches high. Dwarf varieties, anything under three feet high, should not be pinched back. It will make the plant too spreading in its growth. Tall growing varieties should be tied to a lath or stake, but this support should not project more than four feet above the ground, or it will be unsightly.

The same general rule will govern for both tubers and green plants, as to distance and cultivation.

## TIME TO PLANT.

This, of course, must be governed by the season and location. Tubers may be planted much earlier than green plants. Both should be planted as early as safe. In planting tubers it is not necessary to wait until frost is past as there will be a delay of about twenty days between the time of planting and the appearance of the plant above the ground, so if frost in a given locality comes as late as May 15th the tuber may be safely planted May 1st. There is a long season, however, in which both the tubers and plants may be set. Tubers planted as late as June 20th, will give good results. Earlier planting however, is desirable, as it gives a longer season of bloom, and the tubers become better matured.

Green plants must not be set until all danger of frost is past.

A good rule for planting tubers would be to plant when lilacs and other early shrubs begin to show green buds.

## WATERING.

This question in Dahlia culture is of primary importance. The Dahlia is quick to resent extremes of either wet or dry, so the happy medium must be sought. If permitted to get too dry, there is danger, not only of stunting the growth, but of getting the plants infested with the red spider. This insect is very injurious and extremely hard to get rid of. Bad as the results may be from neglect in watering, it is no worse, if as bad, as the common error of over-watering. Many people drench their Dahlias daily with water, whether they need it or not, and then write to know why their plants grow so tall, and have so few blooms.

Next to over-fertilizing, over-watering is the most prolific source of failure. Water forces a weak, sappy growth, that is deficient in woody fibre, so necessary to a healthy, blooming plant. The reader should understand that this applies to plants in the earlier stages of their growth, and before the blooming period begins. A plant that has been

properly grown and comes to the blooming period and is well set with buds and bloom, will require twice the amount of water that it did previously. In fact, there is little danger from this source when a plant is full of bloom. Water is best applied in the evening or early morning.

If the grower is in doubt, as to the progress the plants are making, it would be advisable to call upon some successful grower and make comparisons.

#### TIME OF BLOOMING.

As a rule, Dahlias should show buds when eighteen to twenty inches high. (Green plants a little earlier), and be in bloom at thirty inches high.

The time usually required to produce bloom from the date of planting is from sixty-five to seventy-five days, but this time will vary considerably, according to altitude and weather conditions. The figures given hold good at an altitude of one mile above sea level.

#### CULTURE.

As soon as the sprouts appear above the surface, start the hoe and cultivator. There must be no neglect of this important factor in Dahlia Culture, for Dahlias, like people, show their early training.

For private gardens and parks, the hoe and rake are all that are necessary, but for commercial growers, the horse cultivator with small teeth, is the proper tool to use. The cultivation need not be deep, but should be thorough and the soil kept loose and mellow. The fact should always be kept in mind that the hoe and cultivator are the very best stimulants that can be applied to the growing Dahlia.

This work should be kept up until the first blooms appear, at which time, if the tools have been properly handled, there should be a slight hillock around each plant, or a slight ridge along the row, so that water will not lay around the plants. All tuberous rooted plants thrive best where the soil is mellow and yielding about their roots.

#### PROPAGATION.

There are three methods of propagation in general use. Divisions of the roots, rooted cuttings and by seed.

#### BY DIVISION.

If propagated in this way, the work should be done in the early spring, several weeks before planting time, and unless the person doing the work is skilled in the art, it would be better to place the clumps that are to be divided in some damp material such as moss or soil and keep them in a warm place for a week or ten days, that the eyes may appear to better advantage. It will then be much easier to make the divisions. A sharp knife and a pair of pruning shears are the proper tools to use in the work.

First remove all decayed tubers and those that are broken at the neck and throw them away. Then split through the stalk with the shears and work with shears and knife until the whole is reduced as far as possible to single tubers, being careful however, that each piece has an eye. Persons familiar with the work often divide to the extent of dividing an eye in the center, when there is but one eye to two tubers. Such heroic work however, had better be left to the expert. After dividing the tubers, they should be again packed in some damp material and placed in a warm place for a few days to heal the wounds made by dividing. After this, they should be kept cool and damp until planted.

A common error among amateurs is to reset the whole clump, or to only divide in halves. This is not a good practice, to say nothing of the waste of valuable stock. Clumps must be divided if good results are to be obtained. A cluster of stems or stalks will never do the fine work produced by one large, strong stem.

Even if a mass is wanted, it would be better to divide small, and then if desired, plant close, say a foot apart. This will give better results than a cluster, each leaning away from the center. The size of the tuber is not so important as some imagine. Quite small tubers will do excellent work. Tubers the size of one's finger make ideal planting stock.

### BY CUTTINGS.

For rapid increase, the cutting process is the proper method. This method is confined almost exclusively to commercial growers, and many millions are annually grown in this way; some to be sold as green plants, others to be grown through the season in small pots and ripened into what is known commercially as pot roots. The European trade deals almost exclusively in these two products. In this country, where space is not so valuable, these rooted cuttings are transferred to the open field and treated the same way as plantations of tubers. In this way, the stock attains a much larger growth than it would if confined in pots, and in general appearance, resembles the stock grown from tubers, only of course, it is not so large and not so well supplied with eyes.

A number of good things may be said in favor of the cutting process, chief among which is, that new and valuable varieties may be had years in advance of what would be required to work up a stock by the slower method of propagation by divisions. Then again, a great quantity of stock can be grown in a small space. Still there are a number of serious objections to this method. But it is not the object of this work to cast reflections on any legitimate branch of the industry. The pot roots on the other hand, while generally very small, are nevertheless, excellent planting stock, convenient and light for either mail or express, and may be reasonably true to name, and free from mixture, as many of them bloom the previous year and thus afford an opportunity of picking out the mixtures.

There appears to be some confusion in the public mind regarding the meaning of the term pot plant and pot root. The green plant being often referred to as a pot root. This is not proper. A pot root is a dormant tuber of the previous season's growth. A pot plant is a rooted cutting of the present season's growth, and is handled commercially in a growing condition.

The work of propagation should begin early in February. The stock to be propagated from should be the strongest and best of the previous season's growth. Place the undivided clumps upon the green house bench or any convenient place where there will be a temperature of 65 or 70 degrees and good air and sunlight. Cover the roots almost to the crown with light soil or leafmold, manure if needed, can be given later in liquid form. In a week or ten days, the eyes will have started growth, and when the first shoots are one inch in length, cut them off and throw them away as they never make good plants, if indeed they ever root. In removing these shoots, cut about one quarter of an inch from the base. This will cause the eye to broaden and a cluster of eyes to form, from which an increasing number of shoots will spring. When the next growth has made

two pair of leaves, cut the shoots with a sharp knife just below the lower pair. Remove the two lower leaves and the cutting is ready for the propagation bench which should have a bottom temperature of 65 to 70 degrees. There should be a convenience for shading the new cuttings from the direct sun's rays and a good supply of fresh air without strong drafts.

As to the material in which to root these cuttings, there are different opinions. Some say, clear, sharp sand, some loam mixed with sand; some leafmold; others again advise putting the cuttings direct into small pots for rooting. Sand however, is probably the better material. All agree that there should be no manure in the rooting material.

Cuttings should begin to root in from fifteen to twenty days, and should be potted off just as soon as the roots appear, moving from time to time to larger pots, or, if rooted late in the season, they may be transferred direct to the open garden or nursery. Throughout the entire process of propagation from cuttings, the greatest care must be used in labeling, or the stock will get mixed and cause a deal of trouble.

### BY SEED.

This is the easiest method, but not the most satisfactory, as a large percentage of the seedlings are decidedly inferior to the parent plant. But occasionally, there is something developed that is superior and really good, and when we recall the fact that all the fine varieties which we now have, were once seedlings, it should stimulate our hopes, even though we are disappointed with the results. The wide range of color is another interesting feature of seedling culture. In one hundred seedlings there will be little chance of finding two alike except in the single varieties. Here, red, yellow and purple are common colors.

To grow good seedlings, the work should begin the previous year, in gathering a supply of seed from the best plants possible. Not all Dahlias produce seed. Densely double varieties rarely have seed, but a fully double variety will often show a small, yellow center, as it fades, and from these some seed can be gathered. Single and semi-double varieties produce an abundance of seed.

Start the seed in shallow boxes in March and transplant as often as necessary to provide growing space for the plants. They will come into bloom almost as soon as the tubers or plants from cuttings.

If a new seedling remains constant for two or three years, it is reasonably certain to count on its character being fixed. Inferior seedlings should not be given further trial.

Where space is limited, only the best of named varieties should be planted; but where there is ample space, the seedlings will prove very interesting, and amply repay all labor bestowed.

### INSECT PESTS.

There are a number of insects which feed upon the Dahlia, most of which are known as sucking insects, that is to say, they feed by means of a beak which they thrust into the bud or growing branch and suck the sap. Such insects are difficult to handle as their method of feeding renders them immune to the poisons usually applied. The most troublesome of these insects which prays upon the Dahlia, is the tarnished plant bug (*Lygus Pratensis*). This insect in adult form, is slightly smaller than the common house fly. Its wings are closely folded over glossy shields. A distinctive feature of this insect is a per-

fect triangle between the shoulders. The beak, which is nearly one half the length of the body, is carried folded on the breast. This insect feeds upon the buds when they are quite small and also the young shoots. These wounds are fatal to the bud and sometimes to the shoot also. It is a very shy insect and moves to the back side of a bud or branch when approached. The young of this insect is green in color and more rounded in its form. This insect is the cause of many plants failing to bloom, and is by far, the worst enemy of the Dahlia.

Another troublesome insect is the red spider. This is a very small insect which lives and operates chiefly on the under side of the leaf, sucking the sap and causing the leaf to turn yellow and die. It multiplies very rapidly, so should be attended to as soon as its presence is known. It has no special liking for the Dahlia above other plants, but is a common enemy of a great number of plants, shrubs and vines. It has a special liking for the sweet pea, as the brown foliage of that popular flower often bears evidence. Where Dahlias are infected with this insect, it is nearly always with those plants which were started into growth in a green house. Dry tubers planted in the open ground are not apt to be attacked by red spider.

The name red spider is appropriate as descriptive of this insect, only in its mature stage. In its early life and growing period it is semi-transparent and quite light in color, changing to bright red at maturity. This insect cannot stand cold water, therefore if the hose be used freely in the evening, throwing the water with force against the under side of the leaves, a few applications will usually hold them in check.

Where this is not practical, cut off the infested leaves or plants, and burn them. These insects are troublesome only at times, some years scarcely making their presence known.

The red spider should not be confused with the red aphid. It is much smaller.

Remedial measures are best found in clean cultivation and a healthy, vigorous growth of the plants. These two insects are treated at some length, as past experience has demonstrated that they have caused much of the trouble among growers. In some localities a borer that works in the stem has proven quite troublesome.

#### WINTER STORAGE.

As soon as convenient after frost has killed the foliage, cut the stalks off at the surface of the ground, then dig the roots carefully. A spading fork is the handiest tool for this work. The roots of the different varieties vary greatly in form. Some are compact and therefore easy to dig and handle; others have long, spreading roots with thin, weakly necks. Such varieties are not easily handled and more or less loss is inevitable for they break at the neck of their own weight. The soil is best removed from the roots by lifting them slightly and with the hammer or other instrument, rap on the end of the stalk. This will jar the soil free of the roots. (The digging should not be attempted while the ground is wet). They are then ready to label and pack away. In labeling, it is better to use a painted label, or the writing may be illegible in the spring. Paper labeling should never be practiced. Paper makes a convenient material for mice nests and thus the name may be lost.

As to receptacles for these roots; use whatever is most convenient. Barrels are very convenient, but boxes will serve the same purpose. In packing, turn the clumps of roots upside down, so that any water or juice that has accumulated in the stalk may run out. Each barrel or box should be left with sufficient room on top for a covering of leaves or



moss. This is not always necessary but it is a good precaution against mold or an atmosphere that is too dry. Sand makes a good packing material but is too heavy to be used in large packages. Commercial growers have cellars of special construction for this purpose and where packing material is not necessary, but even here, a paper should be spread over the top of the roots.

Where cellar room is not available or is rendered unfit by reason of a furnace, an outdoor pit makes a good place for storage. The pit must be located where no water will get into it and ample covering to exclude the frost must be provided.

#### VARIETIES TO PLANT.

This will always be an open question. To recommend a list of specific varieties might pave the way for serious disappointment. It is a well-known fact that while the Dahlia does well in practically all countries and often under very trying conditions, yet there are many varieties suitable to one locality that are failures in another. This is also true of other lists of flowers, fruits and vegetables. This tendency to vary in different localities is not a very serious matter, as the percentage would be very small. Another reason why a specific list would not be advisable, is that new varieties are constantly crowding out the older ones.

Some suggestions, however, in a general way, may not be out of place. Procure the best varieties possible. They require no more space or care than the poor ones. Buy only of reliable dealers. Do not plant too many varieties. Aim at quality rather than quantity and at all times remember that an old variety is not necessarily inferior. As a rule, the purchaser, unless familiar with varieties will do well to leave the selection to some reliable grower or dealer. Simply stating the colors and types wanted, and if wanted for cutting purposes, this fact should also be stated, as the length of the stem is a very important matter in selecting varieties. If the grower or dealer is honest, he will see to it that the confidence is not misplaced.

Another excellent plan is for the prospective purchaser to visit the grounds of some up-to-date grower or park where Dahlias are properly named, and there make a list of names of varieties that are pleasing.

As previously stated, in these pages, the Cactus and Peony types are leading in popular favor and from the standpoint of artistic beauty, the popular taste is well placed. Yet it is plainly evident that the old types, especially the decorative forms, will still hold a large share of popular favor, as they possess a real worth not found in many of the newer introductions, chiefly because of their excellent qualities for cutting purposes. Some of the Cactus varieties are also excellent for this purpose, but as a class they are deficient in keeping qualities after being cut, except in late autumn, when cooler days and nights retard their development. Then practically all varieties are good.

Single varieties are still very popular with many and were it not for the weakness they have of dropping their petals so quickly, they would be a very important factor in the cut flower trade. This weakness may be overcome to a very great extent, if they are cut before the flowers are fully open.

#### FACTS AND FANCIES.

Dahlias do not mix by being planted together. If they show variations in color, it is due to influences present when the tiny seed which produced the variety was in the process of formation. These hereditary taints (or virtues), often lay dormant for years,

and then suddenly make their presence known by throwing out some color or variation quite new to the variety. This erratic tendency of the Dahlia even among the varieties fairly constant in color is undoubtedly influenced greatly by soil and climatic conditions. Some seasons the variegations are strongly in evidence, yet the same variety under similar treatment the next year, may run largely to solid color. In fact, this change may take place in a short period of a few weeks. One characteristic feature of variegated varieties that is noticeable is that the lighter shades in the variegation are not so stable as the darker shades; for instance, the red with a white tipped petal, will gradually show less of the white, until the white is practically eliminated, except for an occasional flower.

The size and vigor of blooms may be greatly increased by removing the side branches and leaving but one bud to a leading branch. This is a common practice for producing exhibition blooms, but it is neither necessary nor desirable for other purposes. A vigorous plant will produce a wealth of fine blooms without this forcing process. Five to twenty-five blooms at a time is not an unusual number for a healthy plant when it comes to maturity.

For best results, remove all dead and faded flowers. They are unsightly and tax the strength of the plant.

#### TIME TO CUT BLOOMS.

Dahlia blooms should never be cut in the heat of the day. They are then in a half wilted condition—a state which it is hard to revive them from. This work should be done in the evening or early morning, preferably in the evening, as they will then have the cool night in which to harden. It is not a good practice to cut away the Dahlia foliage. It is needed for blooming purposes and does not make a desirable green, as it wilts too quickly and also causes the attached bloom to wilt soon after being cut. If foliage is desired to mix with the flowers, it would be better to use some other green that is more lasting.

#### REFORMS.

A reform measure among commercial growers is a long time over due. There are by far too many varieties grown and catalogued.

Of the many thousands of named varieties now before the public, all but one hundred and fifty to two hundred should be discarded, retaining only those of superior merit. The duplication of colors and form over and over again adds nothing to the general quality. The private garden is the ultimate consumer of most of the varieties produced, and as these gardens or parks contain as a rule, but a dozen or two dozen varieties, they should have a condensed list of only the best varieties to select from. There will always be a demand for new varieties of merit and the old and inferior must eventually give place to the superior and new introductions.

#### FLORISTS' VARIETIES.

For the cut flower trade, this list should be very short and suitable to the purpose. A few varieties are preferable to many, and these should be clear, bright, self-colored flowers, though not necessarily deep colors; but should be selected to conform to the popular color tastes of the day. A dozen good varieties would meet the requirements of the cut flower trade. Red, scarlet, yellow, two shades of pink, several good autumn shades and a few white, one large and one small for design work. The latter need not have a long stem, but the others should have stems from twelve to eighteen inches in length or longer. The Dahlia is profitable as a cut flower and sells well in all large markets.



