

FORWORD

Fossil remains show plant life has existed for millions of years. Species of many grasses, herbs and trees have been mentioned as long as history has been recorded. From a comparative point of view the dahlia is a relatively recent development in the plant kingdom. This article traces the origin of the dahlia and its development from that beginning until the present as related in historical documents.

INTRODUCTION

Because of the relatively recent appearance of the dahlia. It is almost certain the first dahlias developed gradually from some closely related plant genus rather than through "independent creation"^(a) The botanical process by which such development occurs is generally known "descent through modifications" or "divergent variation."^(a)

That is, it did not just suddenly appear but like many organisms developed over a period of many generations from some more ancient ancestor. For purposes of this undertaking we only need to go back to its immediate ancestor. Even then the birth and development of the dahlia is somewhat equivocal.

In such processes there will be one genus or species intermediate between the ancestral stock and that newly developed. In homonids this intermediate genus or species has not been discovered and remains known as "the missing link." In the case of dahlias it appears to be a little better understood. *Dahlia zimapanii* is considered the most primitive of all dahlia species,⁽¹⁸⁾ and shares numerous common characteristics with that immediate ancestor.

Bailey, in discussing *D. zimapanii* suggests "these showy plants should be closely related to a common weed, the Beggar's Tick, of the genus *Bidens*" and "other species of dahlias have leaves whose forms pass gradually into those of *Bidens*."⁽¹⁸⁾ (Author's Note _ It should also be noted that the achenes of many present day varieties of dahlias have the same "boot jack" appearance as those of Beggar's Tick. Other close allies are *Cosmos* and *Coreopsis*.⁽¹⁸⁾ Sherff⁽⁹⁰⁾, suggested dahlia belonged with *Coreopsis*. (Sorensen,⁽⁹³⁾ used *Coreopsidinae helianthae* as a parenthetical identification of the Genus.

Some Systematists retain *D. zimapanii* in *Dahlia*, others refer it to *Bidens*. Bailey describes it under *Cosmos diversifolius*.⁽¹⁸⁾ The Gardeners Chronicle of 1910 called the primitive dahlia, *Bidens dahliaoides*.⁽⁵³⁾ *Bidens dahliaoides* was collected by Pringle in 1889 and 1890 in the state of Mexico, and described by Sereno Watson in 1891.⁽¹⁰²⁾ That description contains many statements identifying similarities of *Bidens* and *Dahlia*.

The first dahlias introduced into Europe where they have undergone considerable development were grown by Abbe Antonia Jose Cavanilles at Madrid Spain. These he named *Dahlia pinnata*, *Dahlia rosea* and *Dahlia coccinea*, and within a few years distributed seeds and roots throughout Europe.

Development of the many forms recognized by the dahlia growing public

today occurred in Great Britian and the European continent although two of the forms were developed indepentedly in the United States. All have been disseminated to all parts of the non-arctic world.

GENERAL CONSIDERATIONS

In just over 200 years since the establishment of the dahlia in Europe, there has been at least 85 species of the genus reported. Whether any of these resulted from simultaneous examples of hereditary variation or developed subsequently from *D. zimapanii* can only be conjectured.

There have been countless attempts to classify those 85 species. The first documented treatment was made by Willdenow of Germany in 1804.⁽¹⁰⁴⁾ He includes only the three Cavanilles species under the Genus name of *Georgina*. *D. pinnata*, Cav. and *D. rosea* Cav. were combined under the name of *Georgina variabilis*; *D. coccinea* Cav. he called *Georgina coccinea*.

In the same year, Thouin of France pictured and described three plants which he called *D. pinnata*, *D. rosea*, and *D. purpurea*. For some unaccountable reason he did not list the scarlet single *D. coccinea*. Perhaps it was not yet a common species in that country.⁽⁹⁷⁾

In 1808 Salisbury listed and described 4 species using *D. sambucifolia*, in lieu of *D. pinnata* Cav. and *D. bidentifolia* in lieu of *D. coccinea*, Cav.

In a second treatment in 1809 Willdenow,⁽¹⁰⁵⁾ combined *D. pinnata* and *D. rosea* under the name *Georgina varibiabilis*^(b) and listed *lilicina*, *pallida* and *purpurea* as varieties. *D. coccinea* was held to be a separate species and listed under the name *Georgina coccinea*.^(b) In 1810 he published an article wherein he used *Dahlia* as the Genus name.⁽¹⁰⁵⁾ Apparently adopting the Cavanilles designation.

In 1810 Aiton⁽¹⁾ used *D. superflua* in lieu of *D. pinnata*, Cav. and *D. rosea* Cav., and *D. frustanea* in lieu of *D. coccinea* Cav. In the same year De Candolle⁽²³⁾ agreed with Aiton's treatment and listed five varieties of *superflua* as red, purple, lilac, pale and yellowish. (This is the first known use of both color groups united in one species.)

In 1817 only the two species, *D. superflua* and *D. frustanea* were recognized by the Botanical Magazine.⁽⁴⁾

In 1818 Sabine⁽⁸³⁾, also adopted the Aiton treatment.

By 1829 no less than 22 different species had been reported within Europe. The following table lists both reported name and date reported.

1791	<i>D. pinnata</i>	1804	<i>D. lilicina</i>	1808	<i>D. cervantesii</i>
1791	<i>D. roses</i>	1804	<i>D. pourpre</i>	1808	<i>D. crocata</i>
1791	<i>D. coccinea</i>	1805	<i>D. hidalgo</i>	1808	<i>D. sambucifolia</i>
1800	<i>D. pallida</i>	1805	<i>D. flavescens</i>	1810	<i>D. frustanea</i>
1802	<i>D. pupurea</i>	1807	<i>D. nana</i>	1810	<i>D. rubra</i>
1804	<i>D. crocea</i>	1807	<i>D. pinnata nana</i>	1813	<i>D. superflua</i>

1804 *G. variabilis* 1808 *D. bidentifolia* 1815 *D. punicea*
 1804 *G. coccinea*

The first three are of course the original dahlias grown by Cavanilles. Of these *D. pinnata* and *D. rosea* were soon recognized as different varieties of a single species. Since none of the others except *D. coccinea* have ever been reported from the wild they are most certainly varieties of one of the original (Cavanilles) dahlias, (with the possible exception of *D. crocea* and *D. superflua* both of which will be discussed at length later. *D. pallida*, *D. nana*, *D. purpurea*, *D. sambucifolia*, *G. variabilis*, *D. rubra*, *D. lilicina*, *D. pourpre*, *D. lilicina*, *D. pinnata nana*, *D. crotata*, *D. flavescens* and *D. punicea* have since been identified as varieties of *D. pinnata*; *D. cervantesii*, *D. hidalgo* and *Georgina coccinea* as being identical to *D. coccinea*; *D. bidentifolia* and *D. frustanea* as being identical to *D. crocea* a separate species and an apparent early reporting, albeit then unrecognized, of *D. coronata*⁽¹⁶⁾; *D. superflua* has been variously classified by different taxonomists as both a species in its self and as a variety of *D. pinnata*. The Botanical Register of 1815⁽³⁾ and the Botanical Magazine of 1817⁽⁴⁾, both list *D. superflua* as a distinct species. De Candolle in 1810,⁽²³⁾ Aiton in 1813⁽¹⁾ and Sabine in 1818⁽⁸³⁾ all used *D. superflua* for *D. pinnata/rosea* and listed several colors of cream, yellow, red, lilac and purple as different varieties.

D. crocea was for many years considered a variety of *D. coccinea*. Recent studies have revealed it is more likely to have resulted from seed sent from Mexico by Humboldt in 1804 and 1805⁽⁵²⁾ and is in fact an early reporting of *D. coronata* which was not officially recorded until 1907.

Most systematists of the day published their own classifications, few of which were in agreement. In 1829 in an effort to alleviate the massive confusion that then existed. M. Desfontaines of France proposed that all dahlias under cultivation in Europe at that time be combined under the single species name of *D. variabilis*. Other taxonomists apparently agreeing and wishing to honor Desfontaines, the name *D. variabilis*, Desf. was adopted as the catch-all name for all dahlia species then extant in Europe.

In 1836 De Candolle⁽²³⁾ listed 3 species; *D. variabilis*, Desf., *D. cervantessii* and *D. coccinea* (He included. *D. pinnata* and *D. rosea* under *D. variabilis*, Desf.

This seemed to satisfy the need for continual classification for the next 43 years.

In 1879 Hemsley⁽⁴⁶⁾ listed *D. variabilis* Desf., *D. coccinea* and added 6 species; *D. excelsea*, *D. gracilia*, *D. imperialis*, *D. maximilliana*, *D. merkii*, and *D. scapigera*. These latter had all been introduced into Europe during the period 1829 to 1879.

These are the major accounts of systematizing dahlia species prior to and including 1879. During the 127 year period from 1804 to 1931 all treatments were apparently concerned only with plants under cultivation in Europe. In more recent years most treatments have been concerned with species to be found in the wilds of Mexico and Central America.

Bailey in 1914 suggested "Probably 10 or 12 species in the higher parts of Mexico." Sherff (1955)⁽⁹⁰⁾ and Sorensen (1967)⁽⁹³⁾ are the most recent and most comprehensive of such treatments. Sherff suggested 3 sections, 18 species (which included 8 previously unreported varieties and morphological variants. Sorensen suggested 4 sections, 27 species (including 8 previously unreported as such and 4 subspecies. Because this article is concerned primarily with the development of the Garden Dahlia from the early European species, and none of these later species could have figured in that development as such^(d) will be used only as they relate to the earlier species and have been categorized accordingly.

The latest treatment, included herein, is more in line with that of Bailey and suggests all species can be accounted for under 13 primary species names, 2 secondary species, plus 6 additional reportings for which insufficient data is available for more accurate classification. The remainder are considered different names for one or other of these basic species, or varieties thereof including morphological and/or color variants.

It is common practice to change species names when warranted. Plant taxonomists are continually re-evaluating established genera and species and frequently decide, on the basis of available evidence, that what had been considered to be a single genera or species should be divided into two or more, or that several genera or several species should be combined into one.⁽⁴¹⁾ This is what happened to early dahlias, especially with the adoption of the name *D. variabilis* Desf. in 1829.

The name as then applied included only the existing types and for the next 40 to 50 years was limited to the Show, Fancy, Aster-flowered, Rose flowered, Pompon, Double Show and Fancy and a few others, whose names have been dropped from usage. Wildon⁽⁶⁵⁾ includes the Collarette and Peony-flowered types for his listing in this group, but the advent of these two forms as we know them today has been authentically established as around the beginning of the 20th century. Growth characteristics and plant morphology indicate that the Peony-flowered and probably the collarette, single-flowered and orchid-flowered developed from an entirely different ancestral line or lines.

How did the name *variabilis* become associated with the dahlia?

It has appeared in literature for almost 200 years. When first suggested only a very few dahlias were known. Willdenow used the name in about 1804 believing the Cavanilles name had been applied to the Genus Dalea.⁽¹⁰⁴⁾ Several reports say the Genus Thunberg. (The author has found no historical documentation of this.) He called them Georgina after Dr. Georgi, of St. Petersburg, a noted Russian Botanist and explorer. He also seems to have discovered that the early species were almost completely self-incompatible, making out-crossing necessary to produce seed, resulting in considerable variation between varieties, earning the name "*variabilis*."

One of the more popular concepts of dahlia history, and the basis for many different interpretations, is that the original discoveries were single flowered types from which through hybridization and selective breeding the double forms have emerged.

The first three drawings other than those in hieroglyphics and cave paintings of the ancient Aztecs, were made between 1570 and 1577 during a scientific exploration to Mexico by Spanish Botanists. Two of these showed definite characteristics of doubling.⁽⁴⁷⁾

In the course of the evolution of the single type, the gardeners retained the most regular and symmetrical forms. Single dahlias with always and only eight rays were preserved.⁽¹⁸⁾

This is not to deny the existence of single flowered varieties in the early dahlias. Many of the species dahlias had and of course still have single flowered blooms. *Dahlia coccinea*, one of the first three dahlias to bloom in Europe was a single. But for the first 30 years these were practically ignored in favor of the "double" types.⁽⁹²⁾

In those early dahlias the word doubles was apparently used to simply designate flowers with more than one row of petals. The greatest effort in the early days of the dahlia in Europe was directed toward developing improved types of "double" dahlias.

Another popular concept is that the decorative types were one of the earliest types to develop. There is substantial basis for this. Perhaps the first report concerned a drawing made in 1805 by Henry C. Andrews,⁽²⁾ for his "Botanists Repository." Riley⁽⁸¹⁾ identified it as the first "Informal Decorative". It had irregular petals somewhat like those of the modern Informal Decorative, but had an open center with the first couple of rows of petals twisted and curved toward the disc. (A classic example of the Peony) types reported later, but without the dark center and foliage. In the original drawing it was identified only as "*D. pinnata nana*. Dwarf winged-leaved dahlia". Similar in 1817 a drawing of a dahlia which Riley later called "First Formal Decorative." appeared in a drawing.⁽⁴⁾ Again, the original report identifies this dahlia as "*Dahlia superflua*", fertile-rayed dahlia, Double purple flowered. In 1824 Fintelman⁽³⁵⁾ of Germany published a volume on dahlias in which four flowers were depicted as *Georgina variabilis*. These were said to be "identical in appearance to our modern Decorative types, although smaller."⁽³⁵⁾ Florists Cabinet of 1833 published a color picture of a dahlia called LEVICK'S COMMANDER-IN-CHIEF. This too was later described as "appears to be a Formal Decorative quite modern in appearance."⁽⁶⁹⁾ Actually, most authorities consider the decorative types as we know them today did not evolve until after introduction of *D. juarezi* into Europe in 1872. No report published prior to that time has been found using the term "decorative".

The naming of the plant itself has been a subject of some confusion. Several sources^(12,46, etal), state the name was given by Dr. Carolus Linneus in honor of Dr. Andreas Dahl. Dr. Linneus died in 1778, more than eleven years before the plant was introduced into Europe! As we will see later nearly all authentic reports (if such a thing exists) agree that the dahlia was first introduced into Europe in 1789. Most reports do agree that the plant was in fact named for Dr. Dahl (who was a student of Dr. Linneus and author of "Observationes Botanica" but obviously not by Dr. Linneus.

The most probable of all reports concerning the first use of the term "dahlia" and the one seemingly enjoying the greatest popularity is that

Abbe Antonio Jose Cavanilles, Director of the Royal Gardens of Madrid. first applied the term when naming three plants grown from what he referred to as "Plant parts^(e)" he had received from Vincente Cervantes in 1789(24). (Cervantes had been sent to Mexico in 1787 by King Charles III to help establish the Royal Botanic Garden of Mexico. Upon establishment he was named Director of that garden.

The species name of the common garden dahlia is one of considerable dispute and confusion. Most growers and authors use the name "garden dahlia" when speaking of the flower, and if questioned often call it *Dahlia vatriabilis*. Lawrence⁽⁵⁸⁾ seems to be the first to make that Distinction.

It appears he was simply using the species name adopted in 1829 as a catch-all name for all dahlias existing at that time. That name is correctly *Dahlia variabilis*, Desf. Using *Dahlia variabilis* as a species name for the modern dahlia without the author's designation (Desf. has resulted in considerable difficulty and mis-understanding for students of the dahlia. Not only had it been used for 100 years as the species name for what was quite obviously only one of the parents of a large number of the modern dahlias, but is also in violation of the International Code of Botanical Nomenclature which has changed but little since its adoption in 1753, and has resulted in considerable confusion among students of the dahlia regarding its name and ancestry. The modern garden dahlias are certain to consist of four, five, probably six and possibly as many as seven distinct species in their ancestral lines.

Excluding the offspring of *D. coccinea*, *D variabilis*. Desf. includes only some of the semi-double types and the Show and Fancy types. The pompon which later developed within this species as well as the double Show and Fancy were added later.

In 1830 William Smith suggested that all dahlia species could be divided into two groups for color, red-tinged and purple-tinged⁽⁹²⁾.

In investigating this idea Lawrence⁽⁵⁸⁾ determined that with the exception of *D. variabilis*., all dahlia species may be assigned to one of two groups for flower-colour: Group I (ivory-magenta) or Group II (yellow-orange-scarlet).

Wildon⁽⁶⁵⁾. after citing and quoting an interpretation by Payne⁽⁷³⁾ of an article in which a two part report from Rome in 1649 and 1651 is discussed, states: "The following names appear in these early descriptions, *Dahlia crocata*, *Dahlia coccinea*, *Dahlia superflua*, *Dahlia rosea*,** *Dahlia purpurea*, *Dahlia lilicina*, *Dahlia frustanea*, and *Dahlia variabilis*.⁽¹¹⁾ (None of those terms could have existed prior to about 1791 when the name "dahlia" was first used. Dr. Dahl would not yet be born for nearly 100 years after publication of the Rome article. It appears the genus name was assumed by Payne based on that in common usage at the time of his writing (1916) For some reason the doyen of dahlias extant at the time, *D. pinnata*, was not even listed. This is difficult to understand since the author used the name in other writings about the same time. Thus the species name is mootly incorrect since standard procedure dictates that when more than one species is combined under a single species name they be listed under that with priority in time.

D. imperialis, although grown in much of southern United States and probably in other countries with a mild climate, is not considered a garden dahlia in the context of this report. However some discussion is apparently warranted. There is indication that the pale lavender tree dahlia quite often called *D. imperialis*, is in fact a different species. *D. imperialis*, was first grown in Europe at the Botanic Garden in Zurich in 1863 where it was typed⁽⁷¹⁾. The original type description published in 1870 says the plant is 6-18 feet in height with white blooms, more or less tinged with blood-red, especially at the base.⁽⁹⁾ This would place it in color group II. The reference to *D. imperialis* most often heard is to pale lavender blooms. The one at the South Coast Botanical Garden at Palos Verde, California is this color and generally about 25 feet in height. The color description would place it in color Group I. *D. excelsa*, found in the valley of Mexico in 1834 is described as 15-30 feet in height but otherwise of similar description, except the color is described as pale rose-purple. When other features of the type descriptions are compared, it seems a strong case can be made for *D. excelsa* being the species generally believed and mentioned as *D. imperialis*.

In the pro-genesis of the dahlia, Safford^(86,87) attributes the initial cross in the family tree of *D. pinnata*, to be between an obscure and ancestral stock "unknown and presumably now extinct, and a hybrid species. Several historians^(42,76,86,ETAL) have considered the modern garden dahlia to be a hybrid between two parents who themselves were hybrids. Lawrence⁽⁵⁸⁾ reported "the position of *D. variabilis* with regard to the color groups as unique in that it unites both series within itself. He concluded "the fact that *D. variabilis* alone combines the colors of both groups, suggested that it might be a hybrid between them, a view that was strengthened by the fact that it has twice as many chromosomes, not an infrequent occurrence in fertile species hybrids. Summarizing the results of his experiments he stated, "the evidence strongly suggests that the tetraploid dahlia species have descended from a diploid ancestral stock unknown and presumably extinct."

(The reader should remember that Lawrence used the name *D. variabilis* as the modern dahlia not the original name, *D. variabilis*, Desf.

If we analyze the list of species by time we find that with only six exceptions every dahlia found in Europe prior to 1872 was of the ivory-magenta group. The exceptions were *D. coccinea*, *D. crocea*, *D. cervantesi*, *D. bidentifolia*, *D. frustanea*, and *D. imperialis*. Of these *D. imperialis* is a tree dahlia and has no known connection with the Garden dahlia. In 1872 one additional Group II dahlia *D. jaurezii*, was reported, followed in 1873 by *D. gracilis*. Not until 1907 did *D. coronata*, the next and last to date appear. Although considered by many either a form of or closely related to *D. coccinea*^(18,59,70,etal). Sprague⁽⁹⁴⁾ recommended it be retained as a separate species. This contention is supported by tests made by Lawrence and reported in 1931⁽⁵⁹⁾. After 7 years of breeding experiments he reported he had been unable to obtain crosses of the modern dahlia and *D. coccinea*. He did however succeed in crossing *D. coronata* and *D. variabilis* in 1928. The resulting dahlias had 48 chromosomes. The following year he again made the same cross. These dahlias he reported as having from 56 to 64 chromosomes. Unfortunately nothing is said about the future of those crosses. Since they were made as experiments it is probable they were allowed to die out.

DISTRIBUTION

In 1798 Lady Butte (Correctly the Marchioness of Butte _ wife of the English Ambassador to Spain at the time). obtained seeds from Cavanilles which she sent to Kew Gardens.⁽⁷⁵⁾ There they were grown as tropical plants in a closed plant-house and consequently lost.⁽⁵⁰⁾ John Frazer of Sloane Square is next credited with bringing seeds from Paris to Chelsea in 1802.⁽⁴⁹⁾ In 1803 E.J.A. Woodford, Vauxhall brought a plant of *D. rosea*, from Paris and flowered it in his garden in the autumn of that year⁽⁸⁸⁾. In 1804 Lady Holland sent seed from Spain to her home at Holland House in Kensington, England.⁽⁸⁸⁾ These were grown by her gardener, (M. Buonaiuti) who in 1806 distributed seeds quite liberally to other enthusiasts.⁽⁸⁸⁾ There are reports extant that state these plants were also lost and a new stock not obtained until 1815.⁽⁶⁵⁾ Sabine,⁽⁸³⁾ reported "dahlias were not commonly known or grown in England until after 1814, when varieties developed on the continent attracted attention of English gardeners." The first of these two statements was probably confused by earlier group of plants. The second is an obvious error as Aiton, an English Botanist had issued his classification by 1810 and published it in Hortus Kewensis in 1813⁽¹⁰⁾." In view of the nature of the first reported which includes a personal communication from Mr. Buonaiuti, it seems the earlier date is to be preferred over any other.

Dahlia pinnata was received in Italy from Madrid in 1798, in Turin in 1801 and in Theine in 1802.⁽⁸⁵⁾

Cavanilles sent roots of "these three" dahlias (meaning of course *D. Pinnata*, *D. rosea* and *D. coccinea*.) to de Candolle at Montpellier,⁽⁴²⁾ to Andre Thouin Director of the Jardin des Plantes at Paris⁽⁹⁷⁾ in 1802 and to Aiton at Kew Gardens at about the same time.⁽¹⁹⁾ Thouin described the resulting flowers and discussed their culture two years later.⁽⁹⁷⁾ *Dahlia rosea* was sent from Dresden to Berlin in 1800⁽⁸⁴⁾ and *Dahlia purpurea* was received in England from Spain in 1802.⁽⁸⁴⁾ F. Otto, Director of the Botanical Garden at Berlin, writing in 1833, claimed to have seen the dahlia for the first time in 1800 growing in Dresden under the name *D. lilicina* by J.H. Seidel, head gardener at the Orangerie. However he seems to have been reporting from memory.⁽⁷³⁾ Friedrich Alexander von Humboldt sent seeds from Mexico to Willdenow in 1804 which flowered later the same year, and to Otto and Aiton in 1805.⁽⁵²⁾ Willdenow had also received plants from Madrid in 1805.⁽⁵²⁾ Distribution of the Humboldt seeds was the second major milestone in the development of the dahlia in Europe. Only a few years later (1810) both Aiton and De Candolle established *D. superflua*. Aiton used the name only *D. pinnata* and *D. rosea*, as did several other taxonomists. De Candolle reported five varieties of red, purple, lilac, pale and yellowish.⁽²³⁾ If this account is accepted and there appears no reason Why it shouldn't be, an interspecific cross had taken place in which a species of each color group had united in a new species. This received considerable support from other taxonomists of the period, so may be viewed with considerable certainty.

The ancestry of *D. superflua* will be explored later under the section title DEVELOPMENT.

The exact date of introduction into the United States is not known. Mr. Thomas Bridgeman,⁽²²⁾ in 1840 supplied a catalog of "all the choicest varieties available." He stated that a list and description of about one

hundred, choice seedlings of 1838 and 1839, which had been purchased in England and grown in the garden of Mr. G. C. Thornburn of Astoria, N.Y. had been furnished to him by that gentleman and would be offered for sale in 1840. To this list he added about two hundred fifty varieties, "most of which he had under cultivation in his own garden.^(h)" The author has found little information regarding introduction into other major dahlia growing areas. ie. South Africa, Australia, Canada, New Zealand, Japan, India, Indonesia etc.

A complete chronology must then cover the period beginning with the explorations by the Spanish undertaken in 1570 and extending through any significant development up to the present.(1996)

HISTORY

Early History (Pre-1789)

The first encounter by other than the peoples of Mexico⁽¹⁾ seems to be well established as made by a Spanish citizen, Francisco Hernandez. In 1570 he was sent on an expedition to Mexico by King Phillip II of Spain (who later sent the Spanish Armada against England) to study the natural products of that country. (Afterwards, perhaps as a reward, he was appointed Physician to the King).

There is no direct reference to the exact location or location where the dahlia was first discovered in the wild by Hernandez. We may, as others have in the past gain an insight into the most probable discovery site from Safford's translation⁽⁸⁷⁾ of Hernandez report.⁽⁴⁷⁾

"This plant, which the Quauhnhuascenses call ACOCOTLI and the Tepozthlanenses call CHICHIPATLI,^(j) is soft tissue, its leaves similar to the leaves of Mountain Nard, but cut, some being fine cut, bearing at the ends of the stalks,^(p) which are nine inch, slender and rounded, stellate flowers, pale to reddening, with double roots of the size of acorns, ending in ever so many fibers, on the outside black, within white. This seems to belong to the order Ligusticum. It is found in the mountains of the Quauhnhuacenses.^(k) In taste the root is smelly, bitter, sharp; it is hot and dry in the third degree, one ounce eaten relieves stomach ache, helps windiness of the stomach, provokes urine, brings out sweat, drives out chill, strengthens a weak stomach against chill, resists the cholic, opens obstructions, reduces tumors."

In 1897, John W. Harshberger⁽⁴⁴⁾ traveling in this area reported, "On the the slopes of the southern range of the Sierra de Ajusco the dahlias were growing in the greatest profusion of the pedigal (lava beds) in the latter part of August. The Mexico, Cuernavaca and Pacific Railroad carries you up from Contreras, at the foot of the Sierra de Ajusco, through woods that are wild dahlia gardens _ masses and masses of flaming blooms _ toward the top, where the valley of Mexico lies, a most pleasing panorama". History records that *D. excelsa*, *D. pinnata*, *D. coccinea*, and *D. merkii* when found in the wild were located in these hills and the valley of Mexico Both Sherff⁽⁹⁰⁾ and Sorensen⁽⁹³⁾ reported finding additional wild species in this location.

After his 7 year stay in Mexico, Hernandez ⁽⁴⁷⁾ reported that "during his study he had discovered plants which he identified only by the Aztec names

of "ACOCOTLI and COCOXOCHITL,⁽¹⁾ that "were double and many colors _ red and yellow, blackish and white, and in some cases with double or multiple whorls of ray flowers either forming circles or clusters in compact bundles"^(m) These reports titled "Nova Plantarum, Animalium et Mineralium Mexicanorum Historia although apparently prepared at or about the time of the study, were deposited in the Escorial monastery and residence 27 miles North west of Madrid, built in the 16th century by King Phillip II⁽¹⁾ where they languished for 40 or so years.

Francisco Dominguez, a Hidalgo gentleman, who accompanied Hernandez on at least some part of his 7 year study made a series of drawings to supplement the report. Three of those drawingg show plants with flowers, two of which resemble the modern bedder dahlia, and one resembling the species dahlia *D. merki*.⁽⁴⁷⁾ All show a rather high degree of doubleness. In 1615 these manuscripts were fortunately translated into Latin by Francisco Ximenes in Mexico. The original manuscripts were Destroyed by fire sometime in the mid 1600s.⁽¹⁹⁾ The translations were later purchased by Francesco Cesi, President of the Academia Lincei at Rome where they were reportedly "brought up to date" and published by Vitalis Mascardi⁽⁷²⁾ in two volumes in 1649 and 1651, under the auspicious title, *Rerum Medicarum Novae Hispaniae Thesaurus Seu Nova Plantarium, Animalium et Mineralium Mexicanorum Historia.*" One can tell from this title and that of Hernandez that the expedition was equally interested in animals and minerals, as well as plants.

European Phase (1789-1872)

In 1787, Nicholas Joseph Thierry de Menonville, while on a mission to Mexico for the French Government, reported seeing the plant growing in a garden in Oaxaca.^(12,43,57,88) In 1789 Vicente Cervantess Founder and Director of the Botanical Garden at Mexico City sent some "plant parts" to Abbe Antonio Jose Cavanilles, Director of the Royal Gardens of Madrid. He flowered one in October of that year, another the followig year and reported his success in 1791. He said "The plants that flowered last year gave no single flower, but were adorned with rays set in four or five rows"⁽²⁴⁾ (Apparently the third was flowered at a later date. He reportedly described it in 1796).⁽⁶⁴⁾

As mentioned earlier three forms appeared in these first plantings. The first two he named *Dahlia pinnata*, (for its feather like foliage) and *Dahlia rosea* (for its rosy-purple color and a third, the one flowered last, *Dahlia coccinea* (because of its color resemblance to the scarlet dye obtained from the Cocchineal, an insect quite commonly used in times past as a sourc of such dye. This is the first authentic report of the use of the term "dahlia". Hernandez (or more probably Dominguez) made only one reference to color in these original findings.

The one he identified as COCOXOCHITL he described as "violaceus mangus (very loosely translated [very [greatly] violet).⁽⁴⁷⁾ Although most original species of dahlia were found in or near the Valley of Mexico several wer found in other sites. *Dahlia maxonii* etal in Guatemala;⁽⁸⁷⁾ "*Dahlia lemonii* etal in Colombia and Ecuador.(48,84) Sorensen reported finding dahlias the western tier of states.

Modern History (1872- Present)

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In 1872 J.T. Van der Berg of Utrecht, Holland received a shipment of Seeds, plants etc. from a friend (R.C. Affourit) in Mexico. The entire shipment was badly rotted and appeared to be ruined. Van der Berg said he examined the shipment carefully and saved every thing that seemed to have any promise at all. He found one small piece of root that seemed alive. It was carefully planted and tended and did grow into a plant which he identified as a dahlia. He made cuttings from the plant during the winter of 1872-1873.⁽⁹⁸⁾

This was an entirely different type flower of a rich red color and a high degree of doubling.⁽¹⁰¹⁾ Affourit called it *Dahlia juarezii* for, or in memory of Benito Pablo Juarez, the President of Mexico, who had died earlier in the year 1872. In 1874 he catalogued it, and offered it for sale, as "New imported variety from Mexico, very large rich crimson flowers splendid fiery orange scarlet, equal to the beautiful color of the red poppy. Its form is very outstanding and different in every respect of all known dahlia flowers, at a distance one should believe to see the flowers of the *Cereus speciosissimus* but than with fine pipe-formy, rolled up flower leaves."⁽⁹⁸⁾

Comparison to this *Cereus*, a genus of the cactus, resulted in the name cactus for this new dahlia _ the name remains with us today.

Even here is another area of confusion. An anonymous report out of Belgium in 1882 attributes the name to the resemblance of the form to the *Echeveria*, a succulent cousin of cacti.⁽¹¹⁾ Riley,⁽⁸¹⁾ and Die Dahlien⁽³³⁾ include a picture of the original *Dahlia yuarezie* (*juarezii*). In the writers experience, any similarity to either the *cereus* or *echeveria* is difficult to visualize.

It is unfortunate that so little is known about this dahlia which has perhaps had a greater influence on the popularity of the modern dahlia than any other with the possible exception of *D. pinnata* and, *Dahlia crocea*.

In France it was called "Les Etoiles de Diable" "(Stars of the Devil."⁽³³⁾ for whatever reason the name "cactus" caught on for this new form in which the margin of the petals rolled backward instead of the there-to-fore tendency to roll forward, and has revolutionized the dahlia world. For many years after its appearance in Europe no other plant of a similar nature was reported from the wild. No wild form was known which could be considered the progenitor of the "Cactus Dahlia" and it was thought to be a distinct mutation of one of the known species.⁽⁶⁵⁾ In 1914 Wilhelm Miller and J. K. Alexander writing for Bailey's Cyclopedia considered it to be "a second form of great importance" and recommended it be kept distinct.⁽¹⁸⁾ In 1916 Wilson Popenoe found a new species of dahlia growing in the wilds of Guatemala,⁽⁷⁷⁾ which was given the name *D. popenovii*, after its discoverer. Safford,⁽⁸⁷⁾ says "It is very evident now that *D. juarezii* came as a hybrid in some way from this species and some other. However, *D. juarezii* has generally been considered a variety of *D. popenovii*. by most authorities. There is no report known to the author that *D. juarezii* has ever been found in Mexico or indeed again reported even from Guatemala. Evidently *D. juarezii* had at one time existed in Mexico and subsequently disappeared. If we think about it we have to agree with Darwin who states "Pure species have of course their

organs of reproduction in a perfect condition."⁽³⁰⁾ How else could they reproduce and still retain their specific identity as a pure species? It is also well known that our modern dahlia sometimes bear only imperfect stamens, stigmas or are even totally infertile. (In the Garden Chronicle of 1879 an anonymous editorial in discussing *D. popenovii* var. *juarezii* states, "From this are descended all the cactus varieties. Crosses of these with *D. variabilis* have resulted in the Semi-cactus and modern decorative classes."⁽¹⁰⁾ The inference of that statement seems to be that *D. juarezii* is the sole parent of the Cactus forms. In so far as known no one has questioned that statement up to now.

D. popenovii, var. *juarezii* is of the Group II for color. If all cactus descended from that species alone all cactus would be of that same color group. The Tentative Classified List(1969), contains hundreds of Group I colored cactus dahlias. Most dahlia growers are familiar with such old favorites as LIGHT MUSIC, TWINKLE TOES, LOUISE MCKELVEY etal. It is thus certain that the development of the cactus forms relies on the *D. popenovii*, var. *juarezii*, and *D. variabilis*., Desf. Crosses just like the semi-cactus and decoratives.

We must then accept *D. popenovii*, var. *juarezii* as one of the parents of all cactus, semi-cactus and decorative dahlias, Since these forms include ample examples of both color groups it is almost certain that an interspecific cross between *D. popenovii*, var. *juarezii* and some dahlia of the group I color is responsible for many of the modern dahlia forms.

Historical references concerning early dahlias, *D. pinnata*, *D. rosea* and perhaps some other related and compatible species were included under the catch-all name *D. variabilis*, Desf. as well as under the earlier name of *D. superflua*. Strong evidence suggests this group I cactus, semi-cactus and decorative types is *D. pinnata* which would have been a component of *D. superflua* as a cross with some unknown species,⁽ⁿ⁾ and subsequently included under *D. variabilis*, Desf. as either a component of *D. superflua* or through its retaining its individual specificity, or both.

Crossing of *D. pinnata*, and an early Group II dahlia.⁽ⁿ⁾ brought the early forms (Show, Fancy, Poms, etc., as well as both color groups. The influence of *D. juarezii* brought the later forms (decoratives, semi-cactus etc. and through morphological variation contributed to the modern single forms (singles, collarettes, orchid-flowered) and perhaps others.

SPECIES SUMMARY

Since 1789 when Cavanilles first flowered the dahlia in Europe, there has been a continuing effort by many growers, botanists, taxonomists, systematists etc. to determine and understand the development of the dahlia to its present condition. Over the years since then, at least 85 species have been reported. Approximately 25 of these were first reported from the wild, the remainder first reported as having shown up in gardens in Europe and considered hybrids from crossing between previously reported species or developed from the Humboldt seeds, or even perhaps from some other seeds that had found their way into Europe and not recorded in historical documents. Several of these were soon discovered to be identical with earlier reported species, but the greatest number are simply

varieties of some previously established species.

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Two exceptions are *D. merkii*, and *D. macdougalii*. *D. merkii* was found by Lehmann in 1840 near San Luis Potosi in the Valley of Mexico.⁽⁴⁶⁾ It alone has 36 chromosomes and has not to date been known to cross with any other species. *D. macdougalii*, the lone epiphytic dahlia was discovered by Sherff in rain forests near Santo Tomas, in Oaxaca, Mexico in 1950.⁽⁸⁹⁾

Sherff published a treatment in 1955⁽⁹⁰⁾ listing 18 species. The most thorough treatment of recent times was published by Paul Sorensen in 1967.⁽⁹³⁾ It covered only the species found in the wilds of Central America during two trips of exploration covering parts of the years 1965 and 1966. This treatment divides the genus into 4 sections, 27 species and 4 subspecies. Ten of the species suggested were considered identical to species previously reported. Any effort to reconcile the other species with the dozens of previously reported discoveries was not indicated.

Comparison of the type descriptions of the Sorensen Dahlias and those previously reported species, reveal numerous similarities. Development of the primitive forms into the refined forms of the modern dahlia and indicates a natural tendency to morphological variation allowing a reasonable chance that at least some of these recent discoveries are simply variations of earlier reported species. If so, they should bear the name of the species with priority of time. Furthermore there is reasonable possibility that they are really different varieties of a common parentage. Most taxonomic decisions are based on morphology or cytology or both, of the plants concerned. Morphological variation is highly pronounced in the dahlia. Lawrence who hybridized hundreds of families of dahlias in the 1920's reported "I have not yet seen any two plants in the families I have raised which were not to be distinguished one from the other."⁽⁵⁹⁾

Constant reclassification of the 85 reported species has resulted in the present considerably smaller number of distinct species. The current species name used for different groups, with the exception of *D. variabilis* Desf. is that with priority in time. It seems no two classifications agree. Each systematist has provided more or less logical reasons for their system. Because of continual reclassification, the following list of species is considered to be the consensus of most experts and the most probable that can be assembled at the present time.

Species name Identical Species	Year of Record Wild/Europe	Color/Remarks
<i>D. barkerae</i>	1840/1840	Delicate lilac to Lavender
<i>D. coccinea</i>	1787/1791	Scar. Thru' Or. to Yellow
<i>acutiflora</i>	/1914	Variety of <i>D. coccinea</i>
<i>cervantesii</i>	/1808	Variety of <i>D. coccinea</i>
<i>chisholmi</i>	1904/1904	Deep Brick Red
<i>hidalgo</i>	/1805	
<i>mexicana</i>	/1914	
<i>D. crocea</i>	/1804	When first reported this was considered a variety of <i>D. coccinea</i> . Late developments

reveal it was more likely a
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		separate species and an early discovered but unrecognized <i>D. coronata</i>
<i>frustanea</i>	/1810	Considered an alternate name for <i>D. coccinea</i> in 1810. Now considered the same as <i>D. crocea</i>
<i>bidentifolia</i>	/1808	Identical to <i>D. frustanea</i>
<i>coronata</i>	1907/1907	
<i>coccinea odorata Bruanti</i>	/1909	
<i>D. dissecta</i>	1891/1891	Mauve to Deep Purple
<i>linearis</i>	/1910	Mauve to Deep Purple
<i>D. excelsa</i>	1830/1830	Pale Rose Purple
<i>arborea</i>	1836/1836	Blush or Pale Purple
<i>maximiliana</i>	1879/1879	Purple/Lilac
		Safford says may be identical to <i>D. maxonii</i> Roezl says <i>D. maxonii</i> and <i>D. imperialis</i> are Distinct species (Bentham says may be identical with <i>D. excelsa</i>)
<i>anemoneflora</i>	/1914	Considered a variety of <i>D. arborea</i>
<i>maxonii</i>	1905/1905	White (Single and Double (Bentham says identical to <i>D. excelsa</i> White believed Ivory the Group I flavone
<i>lehmannii</i>	1895/1895	Pale Lilac with Y. disc
<i>D. gracilis</i>	1873/1873	Or. Scarlet with Y. disc
<i>superba</i>	/1878	Considered a var. of <i>D. gracilis</i>
<i>supra</i>	/1878	Considered a var. of <i>D. gracilis</i>
<i>lutea</i>	/1878	Considered a var. of <i>D. gracilis</i>
<i>ignea</i>	/1878	Considered a var. of <i>D. gracilis</i>
<i>fulgens</i>	/1878	Possibly a Var. of <i>D. gracilis</i>
<i>D. imperialis</i>	1863/1863	White tinged blood red more pronounced at base
<i>descaineana</i>	1863/1863	Believed by Roezl in 1863 to be a form of <i>D. Imperialis</i>
<i>D. macdougallii</i>	1950/	The only epiphyte among the dahlia species
<i>D. merkii</i>	1840/1840	Lilac to Pr. Lilac to White Will not cross with any other Dahlia
<i>glabrata</i>	1840/1840	Considered a var. of <i>D. merkii</i>
<i>minor</i>	/1843	Considered a var. of <i>D. merkii</i>
<i>D. pinnata</i>	1789/1789	Purple with Yellow disc
<i>candelabra</i>	/1914	
<i>crocata</i>	/1808	Variety of <i>D. pinnata</i>
<i>flavescens</i>	/1809	
<i>Georgina variabilis</i>	/1804	Willdenow's name for <i>D.</i> <i>pinnata/rosea</i>
<i>laciniata aurea</i>	/1890	White

laciniata purpurea /1870 Purple

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<i>lilicina</i>	/1804	A var. of <i>D. pinnata</i>
<i>maculata</i>	/1833	Considered a var. of <i>D. pinnata</i>
<i>nana</i>	/1807	Considered a var. of <i>D. pinnata</i>
<i>pallida</i>	/1800	Rose_lilac
<i>pourpre</i>	/1804	Purple
<i>pubescens</i>	1890/1890	Purple with deeper lines
<i>purpusii</i>	/1914	Purple
<i>punicea</i>	/1815	
<i>purpurea</i>	/1802	Purple
<i>pusilla</i>	/1914	
<i>rosea</i>	1787/1791	Rose-Lilac
<i>rubra</i>	/1810	
<i>rudis</i>	1904/	Rose-purple/Yellow disc
<i>sambucifolia</i>	/1808	
<i>sphondyliifolia</i>	/1914	Rose-lilac
<i>superflua</i>	/1813	Purple
<i>variabilis</i>	/1913	
<i>variabilis</i> Desf.	/1829	Synonym for <i>D. pinnata</i>
<i>D. popenovii</i>	1916/1916	Red parent of <i>juarezii</i>
<i>juarezii</i>	1872/1872	A double form of <i>D. popenovii</i>
<i>D. scapigera</i>	1837/1837	Probably a parent of <i>D. barkerae</i>
<i>D. tenuis</i>	1894/1894	Yellow

Miscellaneous Species

<i>viridaflora</i>	/1845	No colored rays just green bracts
<i>zimapanii</i>	/1914	Bailey say _ retained by some in Dahlia and by others referred to Bidens. He described under <i>Cosmos diverdifolius</i>

Additional Miscellaneous species without enough information to classify

<i>plattlepsis)</i>	/1929	Lilac
<i>prunosa</i>	/1894	Lavender
<i>royleana</i>	/1914	
<i>astrantiafolia</i>	/1810	Listed in Hortus Kewensis of 1810
<i>dumalica</i>	/1810	Listed in Hortus Kewensis of 1810

By these groupings, there are thirteen primary species, two with historical significance which might be considered secondary species and six for which sufficient details to allow classification are not available. They are retained here as separate species in lieu of sufficient data for further classification.

The following species were reported by Sherff and/or Sorensen in 1955 and 1967 respectively. They are all group I for color. If they are in fact new, they could have resulted from interspecific crosses between two species of the group I color or in accordance with the Darwinian concept of numerous continuous generations of variations. Based on comparison of type descriptions which to a large extent show distinct similarities to older established species, it appears they are more likely synonymous with v

shown in the following table.

<i>hintonii</i>	1947/	Purple to blackist purple with purple disc. Probably a variety of <i>barkeræ</i>
<i>moorei</i>	1951/	Probably a variety of <i>barkeræ</i>
<i>mollis</i>	1967/	variant of <i>hintonii</i>
<i>australis</i>	1947	Two taxa by this name. This one likely a likely a morphological variant of <i>coccinea</i>
<i>australis</i>	1947/	The second taxa to bear this name. This one likely a variant the diploid <i>scapigera</i>
<i>gentryi</i>	1947/	Probably a variety of <i>D. coccinea</i>
<i>tenuicaulis</i>	1965/	Color variant of <i>D. arborea</i>
<i>apiculata</i>	1967/	Variant of <i>D. scapigeroides</i>
<i>atropurpurea</i>	1967/	Dark Purple variety of <i>D. pinnata</i>
<i>mollis</i>	1965/	Pprobably a variety of <i>D. pinnata</i>
<i>foeniculifolia</i>	1951/	Lilac with Yellow disc. Likely a variant of <i>D. dissecta</i>
<i>pteropoda</i>	1947/	Likely a morophological variant of <i>D. pinnata</i>
<i>rupicola</i>	1966/	Probably a morophological variant of <i>D. dissecta</i>
<i>cardophylla</i> (Sherff)	/1936	Variety of <i>D. pinnata</i>
<i>scapigeroides</i>	1947/	morophological variant of <i>D. scapigera</i>
<i>sherffii</i>	1967/	Variant of <i>D. scapigera</i>

DEVELOPMENT

During the years 1805 to 1810 several people claimed to have produced a double dahlia. Henry C. Andrews⁽²⁾ in 1805 made a drawing which has been referred to as the first Informal Decorative dahlia. Like other doubles of the time this shows twisting and turning of the florets with a large disc at the center. The drawing was made from a plant in the collection of Lady Holland grown from seeds he had sent from Madrid in May 1804.⁹²⁸⁾ It must be stated that this dahlia in no way resembles the dahlias of that classification today. It was subsequently identified as *D. pinnata* ss *nana*, and described as dwarf winged-leaved dahlia.⁽⁸¹⁾ In addition to the winged-leaves the foliage was quite dark _ both features being highly characteristic of *Dahlia pinnata*, as well as the later Peony-flowered dahlias.

Sabine⁽⁸⁴⁾ says Buonaiuti obtained double flowers of two seedlings in 1805 and F. Otto received the first double dahlia from Stuttgart, but produced one of his own in 1809. Otto (Allgemeine Gartenzeitung II.) 1833⁽³⁾ reported the first double dahlia was obtained by Hartwig of Karlsruhe in 1808, and that Donckelaar obtained double forms about the same time. These are rather confusing statements as we know the earliest pictured dahlias were of double form. Could they have been referring to "fully doubled forms?

The credit for developing the first "fully double appears to belong to the Belgians. Donckelaar, Director of the Botanic Garden at Louvain,

selected plants for doubleness and sowed a large number of seed each
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year and within a few years secured three fully double forms.⁽¹⁰⁶⁾ One of these was nearly "blue" in color.^(o) Sabine reported nearly the same thing about a French grower in the following words, "Count Lelieur, Superintendent of Parks at Ville-sur-Arce (Aube) began growing dahlias in 1808, at St. Cloud, obtaining stock from Malmaison." He mentioned three doubles appearing but does not state the date.⁽⁸⁴⁾ An anonymous report in 1901,⁽¹⁴⁾ and Russell⁽⁸²⁾ say this was likely 1817. Whether both reports are of the same growing experience with an error in identification of the grower remains a matter of conjecture. The time factor and other general information would indicate a strong probability that such is the case. In either event the word "double" as used in early literature about the dahlia remains somewhat ambiguous.

Hammersmith Nurseries in England produced a purple double dahlia called *D. purpurea superba* in 1816.⁽⁷³⁾ By 1819 C. Arentz of Leyden, Holland had produced 72 different varieties and by 1821 the first double white dahlia. This was introduced to commerce in 1821 by A.C. Eeden and Son of Haarlem Holland under the name WAVERLEY.⁽³⁶⁾

By 1820 Donckelaar had produced more than 50 double varieties. In 1826 a German writer,⁽⁷⁸⁾ reported there were over 100 varieties being grown in Germany.

By 1826 double varieties were being grown almost exclusively, and there was very little interest in the single forms. Up to this time all the so-called double dahlias had been purple or tinged with purple and it was doubted if a variety untinged with purple was obtainable.⁽⁹²⁾ In the same document it was reported that "the new scarlets are perfectly pure." In this same year the first Anemone-flowered dahlia was reported by Mr. Drummond of Cork, Ireland and was pictured in a drawing by Mr. E.D. Smith published in 1829,⁽⁹¹⁾ and Riley.⁽⁸¹⁾ This was a curiously shaped dahlia with two whorls of flat recurving rays issuing from and completely covering the disc. It was an extremely dark Red variety named BELLA DONNA. In order to gain control of this "new" dahlia Mr. J. Lee Hammersmith Nurseries of England purchased the complete stock of Mr. Drummond.⁽⁹¹⁾ It is curious that there exists a second claim to the "first anemone-flowered dahlia involving Mr. Drummond. A German publication in 1933⁽³⁷⁾ reported "the first anemone-flowered dahlia was named "PAINTED LADY", and introduced by Mr. Drummond. Although these were referred to as "the first anemone-flowered dahlia it was not until 1896 that Garden Chronicle for that year described a new dahlia in which the disc florets were actually quilled as we know the anemone-flowered dahlia today. These original anemone-flowered dahlias were described in 1914 by Bailey as the variety ANEMONEFLORA of the species *arborea(excelsea)*. They were quite small and had little resemblance to either the larger varieties as developed later or to the type existing today. The early name anemone-flowered soon gave way to the name "Gloria" and later to "Clematis-flowered," then dropped from usage. The larger varieties did not appear until after introduction of *D. juarezii*. They were again called Anemone-flowered which name has carried over to the modern types of today.

By 1828, plants of new varieties sold at prices from \$2.50 to \$25.00 in England.⁽⁶⁵⁾

In 1829, The Florist's Guide and Cultivator's Directory shows a picture

of a Dark Crimson Globe-flowered dahlia. This was the first dahlia of the
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Show Type and was grown at the J. Lee Hammersmith Nursery In England and reported as *Georgina variabilis*, var. SPHAEROCEPHALA. Prior to this, dahlias were generally referred to as single, double or by several names which were subsequently discontinued. Harrison describes this flower in 1831 as Pink and listed under the name SPRINGFIELD RIVAL.⁽⁴³⁾ The same publication also listed a second class of this type dahlia which was of several different color combinations, including variegated, bi-color or tinted with a modifying color of a pure ground (blends) which became known as the Fancy Dahlia. Dean⁽³¹⁾ credited its development to Count Lelieur of Paris.

The most important development in 1829 was the combining all species then extant in Europe under one all encompassing species name. As mentioned earlier, there has been 22 species reported by that year. These had been classified in various ways by several taxonomists creating considerable confusion regarding the actual species then extant because of the differing opinions. It would be desirable to understand the make-up of *D. variabilis*, *Desf.* We can be sure that *D. pinnata*, and *D. rosea* were included. If we accept *D. superflua* as an interspecific cross between one of the Cavanilles species and some species introduced by the distribution of the Humboldt seed it too must be included as well as any other crosses that may have occurred between any other species from the Humboldt seeds and some other Cavanilles species or from the Humboldt seeds alone.

It is now time to explore the development of *D. superflua*. The number of accepted species in Europe up to this time was quite limited. Only eleven species of the group I color had been reported, *D. pinnata*, *D. rosea*, *D. crocata*, *D. flavesens*, *Georgina variabilis*, *D. lilicina*, *D. nana*, *D. pallida*, *D. pourpre*, *D. rubra*, and *D. sambuciflora* prior to the establishment of *D. superflua* in 1810. All were soon classified as varieties of a single species which would correctly be known as *D. pinnata* because of its priority of time. This is further confirmed by the fact that none of them have been reported from the wild.

Consequently any cross involving a group I color would of necessity include *D. pinnata*, which would then be the group I ancestor of all dahlias descending from *D. superflua*. Only two species of dahlias of the group II color *D. coccinea* and *D. crocea* had been reported.

After a 7 year study and breeding experiments, Lawrence reported in 1931 that he was unable to effect a cross between *D. variabilis* & *D. coccinea*. If *D. coccinea* had in any way been involved in the ancestry of *D. superflua* it would have certainly been compatible with that species and any subsequent derivatives. As will be shown later, *D. superflua* would have been included in *D. variabilis*, *Desf.* and finally in what Lawrence later called simply *D. variabilis*.

This would then have left *D. crocea* as the only candidate for the group II parent of *D. superflua*, which we found was the likely group II parent of *D. variabilis*, *Desf.* Finally in what Lawrence later called simply *D. variabilis*.

How can this be reconciled with history?

Although Lawrence was unable to cross *D. pinnata* and *D. coccinea* he was quite successful in crossing *D. pinnata* and *D. coronata*. However *D. coronata* was not discovered and introduced into Europe until 1907.

When *coronata* was introduced into Europe it was first classified as a form of *D. coccinea* under the name *D. coccinea odorata Bruanti*,⁽¹⁵⁾ and referred to as "the fragrant dahlia". In 1929 Sprague stated, "it is desirable for the present to retain the name *D. coronata* although it is undoubtedly closely related to *D. coccinea*."⁽⁹⁴⁾

The date of discovery(1907) precludes any possibility that *D. coronata* per se could be a parent of *D. superflua*. Yet there is an early record of a scented dahlia having been produced by Mr. Godra at Neu Verbass, Austria in 1845.⁽⁶⁵⁾ It is therefore quite likely *D. coronata* had been in European gardens prior to 1845,⁽⁶⁵⁾ under some other name.

D. crocea, another closely related dahlia had apparently developed from the Humboldt seeds and was therefore present in Europe about 1804 or 1805. When *D. coronata* was introduced into Europe, it was for a long time considered a species of *D. coccinea* just as *D. crocea* had been since first reported. Comparing type descriptions of *D. crocea* and *D. coronata* reveals they are quite similar although such descriptions were made more than 100 years apart and by different botanists.

Consequently it appears quite likely that *D. crocea* was really an early introduction of *D. coronata*, the Group II parent of *D. superflua* and an interspecific cross between *D. pinnata* and *D. crocea* all of which fulfills the prognostications of Safford and Lawrence.

In 1831 another new type dahlia appeared in England.⁽⁴³⁾ It was a bi-color (Crimson with White tips) named LEVICK'S INCOMPARABLE. In 1832 a bi-color of single form (called simplex) where the maroon scarlet florets were edged white appeared. It was named THE PARAGON⁽³⁴⁾

The first "perfect" Show dahlia SPRINGFIELD RIVAL was originated by George Jones of Surrey, England and made its appearance in 1832.⁽⁴²⁾ The word "perfect" seems to infer a fully double condition rather than a development of perfect stamens or stigmas by morphological variation.

By 1834 it was estimated that over 20,000 seedlings of dahlias were grown annually in England alone⁽⁶⁴⁾

Dean mentions that two color illustrations of Fancy dahlias appeared in the Floricultural Cabinet of 1835.⁽³¹⁾ An anonymous report in the Garden and Practical Florist of 1844 also reported on the Fancy Dahlias.⁽⁷⁾

From 1820 to 1860 culture of the dahlia increased rapidly in Europe. By 1840 the Show and Fancy types reached perfection and after that date the improvements were mostly in matters of secondary importance. One of these improvements was the increased degree of cupping of the petals which was promoted between 1840 and 1850. By 1850 they had achieved a much tighter cupping than the earlier ones and earned the name "Double Show and Fancy." They were then often referred to as "quilled." They were not quilled in the

proper sense but simply fully involute for most of the length of the petals. The margins overlapped but were not united as is the case for the truly , quilled types.

In 1841, Joseph Harrison reported that complete control of the stock of a new variety of merit was sold for as much as \$2,500.00.⁽⁴³⁾

An anonymous report in the Garden Chronicle of 1843 credits the first double dahlia of the cream-scarlet series to be in that year. Both Schlechtendahl and Pepin reported obtaining a double form of *D. coccinea*.⁽⁶⁾ These are both believed to be in error, Both Johann Sieckman and Christian Deegen of Kostritz, Germany published hand painted catalogs of numerous Show and Fancy dahlias of Group II colors in 1840. Sieckman reported he had "developed these over the years 1829 to 1840. Several of these are illustrated in the German Yearbook (Jahrbuch) of 1990/91. It is quite likely that the double credited to *D. coccinea* was instead a variety of the Group II dahlia *D. crocea*, the 1804 introduction of the 1907 *D. coronata*.

In 1851 Joseph (Johann) Sieckmann of Kostritz, Germany announced "I have been developing the Lilliput dahlias for 6-8 years and am proud that I have the jump on the rest of the world." Regel's Gartenflora of 1852, page 99 shows a drawing of six dahlias of the same form as the Show and Fancy types but considerably smaller in size identified as Lilliput dahlias. It also shows one of dark red and the others light blends of both color groups. The first of the series was not announced, so we can not determine the name of the original of these "miniature Show types" Six varieties, LILLIPUT NELKE, DEUTSCHER JUNGLING, DEUTSCHE LILLIPUT ROSE, ALEXANDRA NICOLAIEWNA, LILLIPUT VIOLE, and WEINER LIEBLING must share title to first of the series.^(74,81) When these diminutive dahlias were introduced into France these imaginative people comparing them to the red tassels on the caps of the French sailors of the period dubbed them "pompones". In English speaking countries this name was anglicized to pompon, the name they carry to this day.

Other dahlias originally considered lilliputs were called, ball-flowered, rose-flowered, chrysanthemum-flowered, zinnia-flowered, fircone-flowered, pearl-flowered, scale-flowered, aster-flowered, and cell-formed-flowered. All soon apparently dropped from classifications.

For about 15 years the Show and Fancy dahlias achieved great popularity, perhaps because of their uniform and refined nature. However, probably for this same reason after 1860 that popularity almost completely disappeared. An anonymous report in the Gardener's Chronicle of 1862 states that florists feared the dahlia was destined to comparative obscurity.⁽⁸⁾

The development of the garden dahlias as known today appear to have taken several different courses. Each group of forms must be examined separately.

DOUBLE FORMS

Since *D. superflua* incorporated both color groups under a single species Name, it must be given consideration in evaluating the ancestry of the double dahlias, either as a single species providing a catch-all name for one or more species of each color group, or as more probable an inter-

specific cross of two of the existing species, as suggested by Lawrence⁽⁵⁸⁾

Since Lawrence determined that *D. pinnata* and *D. coccinea* will not cross, any such cross would of necessity have resulted from a species derived from the Humboldt seeds for at least one parent.

If such a cross did occur, the parent species would almost certainly continue to interbreed with and lose their specific identities under the designation of *D. superflua*.

Since the two Cavanilles species reported prior to *D. superflua*, *D. pinnata* and *D. coccinea* gave only red, scarlet, violet and purple, how can we account for the proliferation of colors during the early 19th century and the appearance of *D. superflua* in 1810?

The appearance of cream and yellow in *D. superflua*,⁽²³⁾ (background colors of the Group II dahlias, certainly indicates a new species of this color group had been introduced to the European scene. Since history does not record introduction of any new species from the wild during this period, it is almost certain this new dahlia resulted from introduction of the Humboldt seeds in 1804 and 1805.

When *D. variabilis*, Desf. was established, it would have included *D. pinnata*(*rosea*), *D. coccinea*, *D. superflua* and any species deriving from the Humboldt seeds and still retaining their specific identity. The only Group II dahlia introduced from the wild into Europe prior to 1837 (exclusive of those resulting from the Humboldt seeds, was *D. coccinea*. Until about 1840 there seems to be no authentic report of doubling in *D. coccinea*.⁽⁴⁹⁾ A report in 1843 recorded that Schlechtendahl received *D. coccinea* from Mexico in 1837 and that doubling in seedlings thereof took place a few years later.⁽¹²⁾ About this same time Pepin succeeded in obtaining the first reported doubling in this species.⁽¹²⁾ This is a rather curious circumstance. If *D. coccinea* had not doubled in the first fifty years after the first introduction how can its doubling when re-introduced in 1837 be reconciled? There would obviously remain a question whether the 1837 introduction was in fact *D. coccinea* or some other similar and apparently closely related species.

Within the decade following the introduction of the Humboldt seeds eight species, all of the group I color were reported, *D. crocata*, *D. flavescens*, *D. lilicina*, *D. nana*, *pourpre nana*, *D. punicea*, *D. rubra* and *D. sambucifolia*. None of these have ever been reported from the wild, indicating they are in fact alternate names for, varieties of, *D. pinnata*, or a morphological or color variant of *D. pinnata*. Leaving *D. pinnata* the only Group I dahlia existing in Europe at the time *D. superflua* was reported.

Since *D. pinnata* will not cross with *coccinea*, the idea of a cross between a Group I color and *D. coccinea* can be eliminated. Yet as early as 1824 color drawings appeared in a German publication depicting four double forms, including both color groups.⁽³⁵⁾ This suggests three distinct possibilities; (1.) a cross between *D. pinnata* and a Group II dahlia having resulted from the introduction of the Humboldt seeds, (2.) a cross between *D. coccinea* and a Group I dahlia resulting from the Humboldt seeds; or (3.) a cross between two species resulting from the Humboldt seeds alone.

First, to explore the Group I cross with *D. coccinea*.

D. superflua was first reported in 1810. Prior to this date eleven species of the Group I color had been reported from Europe. *D. pinnata*, *D. rosea*, *D. D. crocata*, *D. flavescens*, *D. lillicina*, *D. nana*, *D. pallida*, *D. D. purpurea*, *D. pourpre*, *D. rubra*, and *D. sambucifolia*.

Of these *D. pinnata* and *D. rosea* were determined to be two varieties of a single species, and since the name with priority of time becomes the name of the species they would be known as *D. pinnata* which has been determined to be incompatible with *D. coccinea*. Bailey considered *D. lillicina* and *D. pallida* to be varieties of *D. rosea* and hence *D. pinnata*; also *D. nana*, and *sambucifolias* to be varieties of *D. pinnata*. he assigns *D. crotata*, *D. rubra* and *D. flavesens flavescens* to *D. variabilis*, Desf. and in turn *D. variabilis*, Desf. to *D. rosea*. *D. purpurea* and *D. pourpre* were reported prior to distribution of the Humboldt seeds.

Thus all group I dahlias reported prior to the establishment of *D. Superflua* have been generally considered as descendants of varieties of *D. pinnata*, effectively eliminating the possibility of a cross of a group I species with *D. coccinea*. Perhaps the most convincing factor supporting this conclusion is the introduction of the cream and yellow hues in *D. superflua*. Since Cream and Yellow are included only in the Group II color group and they were not reported in *D. coccinea* almost certain the immediate parent *D. superflua* required a new group II dahlia, and it could only have come from the Humboldt seeds.

Secondly to explore the possibility of crossing of two species resulting from the Humboldt seeds.

If two species from the Humboldt seeds has crossed, it seems logical they would likely have done so in the wild sooner or later. No species dahlia in the wild exhibiting both color groups has ever been reported. effectively removing such a cross from contention.

The presence of the cream and yellow hues in the early German drawings supports the suggestion that some species of the group II color resulting from the Humboldt seed was in cultivation in Germany where Willdenow had received those seeds in 1804.

The only plausible conclusion is then that there must have been a species of the Group II color represented by those seeds which will and did readily cross with the original double dahlia, *D. pinnata*. Since none of the species reported prior to this time have ever been found in the wild, the search for the Group II parent of *D. superflua* takes on a rather baffling aspect.

Many factors support the conclusion that this group II parent was in fact an early introduction of *D. coronata*.

1. Lawrence determined that *D. coronata* readily crosses with *D. pinnata*.
2. When discovered and introduced into Europe in 1907, it was first identified as *D. coccinea odorata*, Bruanti and described as "fragrant dahlia."⁽¹⁵⁾ Sprague described it as "possibly a form of *D. coccinea* Cav., but goes on to state "it is desirable for the present to retain _

the name *coronata* although it is undoubtedly closely related to *D. coccinea*. (3.) However a scented dahlia had been reported from Austria as early as 1845.⁽⁶⁵⁾

(4.) In 1837, Schlechendahl obtained a dahlia from Mexico which he called *D. coccinea* in which doubling was reported within just a few years.⁽¹⁴⁾ Doubling had not been reported in *D. coccinea* during the nearly 50 years it had been in cultivation in Europe.

All this suggests that a group II dahlia closely related to *D. coccinea*, but possessing a tendency to double and produced scented dahlias existed in the gardens of Europe at least as early as 1845, and possibly before 1810.

In exploring the identity of that early dahlia we find that the only Group II dahlias reported in Europe prior to about 1863 were *D. coccinea*, *D. bifentifolia*, *D. cervantesii*, *D. hidalgo*, *D. frustanea*, and *D. crocea*. In the early days all were soon accepted as varieties of or alternate names for *D. coccinea*.

It now seems there is a strong likelihood that *D. crocea* which had been reported shortly after the introduction of the Humboldt seeds was in fact a separate species from *D. coccinea* as suggested by Sprague.⁽⁶⁵⁾ Through comparison of type description it appears highly likely that *D. crocea* as reported in 1807 was remarkably similar to *D. coronata* discovered and introduced into Europe in 1907. Because of the different breeding characteristics between *D. coronata* and *D. coccinea* it now confirms the idea suggested by Sprague that *D. crocea* was in fact a different species from *D. coccinea* and should be retained as such.⁽⁷⁵⁾ Because of the many similarities between *D. crocea* and *D. coronata* the former may easily be considered an early reporting of the same dahlia and therefore the probable group II color parent of *D. superflua* later included in *D. variabilis*, Desf. and still later one parent of the double forms of the modern garden dahlias.

In 1831 the first true bi-colored dahlia appeared in England. This was a type of color exhibiting a synthesis unknown in any other plant. The first double bi-color was crimson with pure white tips called LEVICK'S INCOMPARABLE.⁽⁴³⁾

In 1833 a classification of dahlias issued in Germany listed several new forms of dahlias including the anemone-flowered, clematis-flowered, rose-flowered, carnation-flowered, aster-flowered, ranunculus-flowered, peony-flowered, helianthus-flowered, camellia-flowered, pyrethus-flowered, poppy-flowered, hollyhock-flowered and globe-flowered.⁽⁵⁶⁾ In 1832 the newly formed Metropolitan Dahlia Society of England ruled that many of those forms were not eligible for prizes, signalling the annihilation of sales of many of those forms and concentrating public attention on the ranunculus-flowered type from which the Show dahlia was developed.^(42, 84, 107) The first of these was SPRINGFIELD RIVAL, originated by George Jones of Springfield, Surrey, England.⁽⁴²⁾ In 1835 the blends, variegated and bicolor of the Show type was given the name of Fancy dahlias. Count Lelieur of Paris was credited with having first suggested the name Fancy for these multi-colored dahlias.⁽³¹⁾

In 1852 Sieckmann announced the first Lilliput or Bouquet dahlias. Several different forms of these were soon reported. However the only form that seems to have survived is a miniature version of the Show and Fancy

dahlias dubbed Pompone by the French and Pompon by the English speaking countries.⁽⁷⁴⁾

No new developments were reported during the next 20 years. After 1860 the popular demand for dahlias disappeared almost entirely and many florists feared the dahlia was doomed to comparative obscurity.^(14,76,79,80)

In 1872, Van de Berg of Holland received a shipment of miscellaneous seeds, roots and plants from a friend in Mexico. From these he was able to obtain a plant from a small piece of root and flowered it in 1873. This was named *D. juarezii* in memory of Benito Juarez, President of Mexico who had died earlier in 1872.⁽⁹⁸⁾ It was soon found to readily cross with *D. variabilis*, Desf. From these crosses a completely new line of ancestral relationships developed. For the next 44 years no similar species dahlia was found in the wild, so it continued to be known as *D. juarezii*. In 1916 Wilson Popenoe discovered a new dahlia which he sent to the U.S. National Herbarium. This was named *D. popenovi* after its discoverer. It was soon found that *D. juarezii* was simply a double variety of *D. popenovi*.⁽¹⁰⁾ Hence the correct name of this dahlia would be *D. popenovi*, var. *juarezii*. From simplicity and to follow current convention *D. juarezii* will be used hereafter in this article, when mentioning this dahlia. From that time onward, double dahlias of the period includes not only *D. superflua* (*D. variabilis*, Desf.) but any crosses that may have come about between it and *D. juarezi*. These would all be included in Lawrence's *D. variabilis*.

Hence it is suggested the parents of all standard double forms consists of *D. pinnata*, *D. crocea*, and *D. juarezii*.

Single forms (Single-flowered, Collarette-flowered and Orchid-flowered).

Healey⁽⁴⁵⁾ called *D. coccinea* the parent of all single dahlias. Helmsley⁽⁴⁶⁾ stated that single dahlias are either descendants of two or more species of the variable descendants of one species. Although this latter is a rather obtuse statement, it appears they may both be correct.

Not only was *D. coccinea* almost certainly a parent of the early single type but probably the solo parent. This early series of single types were called "simplex" and described as 2-3 inch blooms "with rays relatively long, slender, acuminate (with a long tapering point) notched at the end, and with such wide spaces between the tips of the rays as to give the flower a stellate (star shaped) appearance⁽⁴³⁾ on 2-3 foot bushes. Such a description is quite representative of a drawing made in the garden of a Mr. John Fraser in 1803.⁽²⁸⁾ Later color plates of these early dahlias show somewhat broader and less pointed rays indicating a developmental improvement through the process of divergent variation. However all reported singles of those early days were described as scarlet, crimson or red.

As noted in the section on double forms it was reported in 1843 that Schlechtendahl had obtained *D. coccinea* from Mexico and doubling took place in seedlings about 4 years later.⁽⁶⁾ Previous to this there seems to be no authentic record of doubling in this species.⁽⁷⁴⁾ It was then suggested that this was likely not *D. coccinea* but rather *D. crocea*. It was also suggested that *D. crocea* was in fact an early reporting of *D. coronata*.

This doubling capability would not necessarily have any significant

effect on the development of future single forms. If as reported by Bailey, "in the course of the evolution of the single type, the gardeners retained the most regular and symmetrical forms. Single dahlias with always and only rays were preserved."⁽¹⁸⁾

In 1843 the first Group I colored single dahlia was reported.⁽⁶⁾ From then on not only were singles of both "red tinged" and "purple" tinged reported but also blends with white, yellow, orange, pink and lavender. some with a distinct ring at the base of yellow or sometimes red.⁽⁶⁾ This indicated an almost certain cross between *D. crocea* and a species of the Group I color.

Although as many as 19 species of Group I color were reported from Europe prior to 1843, only 8 have ever been confirmed from the wild. These are *D. excelsa*, *D. arborea*, *D. barkerae*, *D. glabrata*, *D. merkii*, *D. scapigera* and of course the two original (Cavanilles) species; *D. pinnata* and *D. rosea*. (*imperialis* was also introduced during this period and considered by many as belonging to the Group I color. However there is good reason to believe this dahlia has somehow become mis-identified at some time in the past as discussed above (page 7.) *D. excelsa* and *D. arborea* are "tree dahlias" and bloom in mid-winter to early spring in the northern hemisphere. *D. glabrata* was described as a smooth dwarf with a purple disc and considered a variant of *D. merkii*,⁽⁵⁾ a species with 36 chromosomes although having a yellow disc, characteristic of the simplex dahlias had never been reported to successfully cross with any other species of dahlia. *D. pinnata* (*rosea*) have been generally accepted as a double species. Lawrence⁽⁵⁸⁾ was unable to cross *D. variabilis* with *D. coccinea*. Sorensen⁽⁹³⁾ found *D. scapigera* *D.* to be a diploid with only 16 chromosomes, and *D. barkerae* a tetraploid with 32 chromosomes.

At this point in time without the original types of *D. variabilis*, Desf. species available for cytological tests, we will never know the exact genealogy of the present day single types of garden dahlias for certain. However it seems the best case might be made for *D. barkerae* as the Group I parent. At the time of writing the author has a delicate lavender collartette in his garden named ELIZABETH SNOWDEN. When these flowers are compared to the colored plate of *D. barkerae* (plate 437 of Gardeners Chronicle(1879.) and the type description prepared by Knowle and Westcott In 1840, one is struck with the similarity of the two. There is good reason to question the Group II ancestry. Even accepting that *D. coccinea* was the parent of the early singles (simplex) dahlias, it appears that an additional Group II parent has also figured in the ancestry of these forms, especially of the later ones.

The series developed from these ancestral relationships are larger and more variable than the previously reported single forms. In addition to the difference in both size of bloom and bush height, the form of the rays are distinctively different; plants tend to be more erect and foliage is far more variable. During the next 50-60 years many types of the single forms were reported as would be expected from Divergent Variation under conditions of cultivation. Some of those are the Single Cactus(Lowe) of England-1891 disseminated by Dobbie & Sons,⁽¹⁸⁾ the Colossal(Holland-1907,^(38,20) the Courrone (Lo iseau France-1907,⁽²¹⁾ the Giant Single dahlia (Rivoire France-1907⁽³⁵⁾) and the Parisian types (Millet & Sons France 1901,⁽⁶⁶⁾) among others.

COLLARETTE DAHLIAS

The first Collarette PRESIDENT VIGER was raised in France by Gerard of Lyon in 1900 and first exhibited by Rivoire Pere & Fils in 1901.^(18,62) In 1903 single giant dahlias, some more than 9" inches in diameter was introduced into France from Holland.⁽²⁰⁾ In 1919 the Orchid-flowering form was introduced by Martin & Sons of France.⁽³⁶⁾ In 1912, J.K. Alexander, a dahlia specialist in East Bridgewater, Massachusetts, succeeded in developing the first collarette dahlia of American origination.⁽¹⁸⁾ Suptitz of Germany also originated a type of collarette shortly after the French.⁽³³⁾ These had more pointed petals, some revolute as in LEITSTERN, or involute as in KATCHEN VON SCHWARZATAL. These apparently failed to catch on in other countries. However the Germans can be credited with supplying the name. They called them Halskrausen (neckcollar) which derives from the 16th century ruffled collars, so often shown in portraits from that time. A similar ruffled collar was still worn as part of the robe of office of the Burgomaster of Hamburg at the time of writing(1926). He succeeded in raising three with a nice delicate aroma, SAALBURG, SCHWARZBURG and WARTBURG.⁽³³⁾

Orchid-flowered dahlias

The Orchid-flowered dahlias originated with the French. In 1919 L. Martin and Sons introduced a type of dahlia they called Stellar. One of the first varieties was named ORCHIS (a French name for the Orchid). In 1920 Wouters of Holland originated a nearly identical type of flower he called Clematis-flowered. These appear to be the last true forms to be introduced. There is little literature about these dahlias in historical documents. In 1927 Foerster and Schneider published a Classification of dahlias in Germany.⁽³⁶⁾ That document was updated in 1933 by adding Class IVa: Orchid-flowered Dahlias but did not include any cultivar names. In 1942 still another German publication,⁽⁵⁴⁾ listed six cultivars under the Classification STARFISH Orchid-flowered. One of these was ORCHIS and presumably the reason for class name. So it appears both the Stellar and the Clematis-flowered dahlia were then called Orchid-flowered.

In 1921 the Royal Horticultural Society published the first "Official Accepted Classification" of Dahlias. The Orchid-flowered dahlia was not listed. In 1924 that classification was re-published in Vol,49 of the R.H.S. Journall, but now accompanied by a picture of of a typical flower of each class. In 1925 the Classification was officially accepted by the American Dahlia Society in its Bulletin of April 1925. When the first Joint Classification Guide sponsored by the American Dahlis Society and the Central States Dahlia Society was issued in 1949 the Orchid-flowered dahlias were listed as a class with names of typical cultivars of each class. It is highly probable that the Orchid-flowered dahlias developed from the standard double forms. The rationale for this is based on the authors own experience. In 1993 he planted a number of seeds of HAMARI ACCORD. One of the seedlings deemed worth keeping was a B size Red Formal Decorative. Seeds were saved from this and in 1994 a number of seeds from it were planted. From this planting a considerable variation of form resulted, including one quite unique. This dahlia had a single row of petals completely rolled like a pedigree Orchid-flowered except the petals are almost totally quilled. Demonstrating that it is entirely possible if not even likely that the orchid-flowered varieties may develop from the standard double forms. Seedlings of this unique seedling planted in 1995

resulted in many different forms but primarily single-flowered, collarette, and orchid-flowered, all of the same color group (II) of the parent. None of the form of the parent showed up but it is a good seed producer so additional plantings are planned.

In addition to that novelty discussed in the preceding paragraph, the past few years have seen development of several other forms of the single type dahlias. One, tentatively called "orchette", is basically an orchid-flowered with modified stamens to produce the collar effect of the collarette-flowered forms, has been developed by Harold Miller of Redmond Washington, and appears to the author to show considerable potential.

Anemone-flowered

Anemone-flowered dahlias were reported from Ireland in 1826.⁽⁹²⁾ The first was grown by Mr. Drummond of Cork and brought to notice under the name BELLÁ DONNA. Pictured in *Flora and Pomona*, Plate 18 in 1829 and in Riley,⁽⁸¹⁾ shows it to have one or two outer rows of flat radiating rays with a distinctively different center area of many lacinated and involute, but not quilled petals. A flower resembling a double pyrethrum and named AEGIR was introduced in Germany in 1894,⁽³⁹⁾ and seems to be generally considered the first true anemone-flowered dahlia. It is said to resemble *D. excelsa*. The principle resemblances are the partially tubulated center and the peduncle of the flowers as mentioned in the type description. From this it apparently was considered to have developed from *D. excelsa*.⁽⁴⁶⁾ Resemblance of these early dahlias to *D. excelsa* notwithstanding, it is certainly no more than one of the parents and that is questionable. *D. excelsa* is considered a tree dahlia, 15-30 feet in height and blooms in mid-winter to spring in the Northern Hemisphere.⁽⁷³⁾ It was not introduced into Europe until later 1830,⁽⁴⁶⁾ so can not account for the flower reported from Ireland in 1826.

The Metropolitan Dahlia Society was organized in England in 1832. The same year that society ruled that no globe, anemone or hollyhock-flowered varieties was eligible for prizes. This ruling is said to have caused considerable loss to some nurserymen who were introducing varieties of these types, and according to one author "totally annihilated the sale of these varieties".⁽⁶⁵⁾

The first truly quilled dahlia was reported in 1896.⁽¹³⁾ All anemones until this time were characterized by rather weak, dwarf growth, small flowers and weak stems.⁽⁶⁵⁾

G. Wouters of Leiden, Holland introduced a new type flower named ADA FINCH and called Clematis-flowered in 1917.⁽³⁶⁾ It was White with a Yellow Center. It appears to not have caught on as an exhibition dahlia but remained in European gardens for at least several years. After the Anemone-flowered dahlias were established as a class it was reclassified with this group and continued to be reported until about 1940.

Large anemone-flowered dahlias were reportedly developed over a period of years from the decorative type SIMONNE LAURENT and introduced in 1935 by Henri Cayeux of Le Havre.⁽²⁵⁾ They had the same habit of growth as the decorative types, but the flowers were anemone type,⁽²⁵⁾ from six to ten inches in diameter and borne on stems thirty inches in length.^(p)

The color of only three of the Cayeux anemone-flowered dahlias known. Two, CLEMATIS and PROPHET were listed as Purple, the third CROIX DU SUD was listed as flame. The latter was listed in the ADS Classification Guide as recent as the early 1980's and probably grown by several long time growers as it was by the author.

Although the ADS Classification had not listed a Group I colored anemone for several years flowers of that classification had been previously listed in England. The conclusion must be that the modern anemone-flowered dahlia certainly descended from two parents, one of each color group.

Little is known about the reported immediate parent SIMONNE LAURENT. other than it was a `decorative type`. This would certainly suggest the same parentage as the Double forms discussed above. That is, *D. pinnata*, *D. crocea* and *D. juarezii*. *D. excelsa* can not be ruled out, but the author considers it a remote possibility. Perhaps cytological tests may one day or settle the point one way or another.

If *D. excelsa* is in fact a parent of the early versions of anemone-flowered Dahlias, its influence has been virtually overcome by later developments. With the possible exception of the gene producing the tubulation. In 1952 the paragon of all anemone-flowered dahlia was introduced by the Van Oostens Garden of Hillegom, Holland with the name of COMETE (called COMET in English speaking countries). This bright red flower with 2 or 3 rows of radiating petals tending to recurve surrounding an immense center disc of long almost totally quilled florets, has dominated the anemone-flowered class of dahlias throughout the world for the past fifty years.

Characteristics of COMET suggested it is highly probable that the modern anemone-flowered dahlias of that type have developed from the Cayeux dahlias as variations of the decoratives, ie *D. pinnata*, *D. crocea*/ *D. coronata*) and *D. juarezii*.

Peony-flowered

There have been several versions of the Peony type of dahlias. That is of dahlia forms which were considered to resemble the formation the herbaceous peony. The first of record were described as a double camellia-flowered type six inches in diameter as well as sunflower-flowered variety WILL'S SUNFLOWER, described as an exceptionally beautiful, dark, scarlet-red variety with large semi-double blooms.⁽⁷⁹⁾ It looked very much as though it were a larger double-flowered form of *D. coccinea* with ray florets arranged as to resemble a double sunflower and not at all like the show and fancy types so popular a few years later.⁽⁶⁵⁾ A color plate of this flower appears in the 1829 volume of the same publication.⁽⁶⁵⁾ In 1833 a dark red fully double Formal Decorative named TURBAN was reported. A colored illustration of this dahlia appeared in the 1833 issue of the same series publications.⁽⁸⁰⁾ Another colored illustration in the same volume shows the variety AURANTIACA MAGNIFICA an almost fully double bloom of a scarlet color. Each of these were in their turn referred to as Peony dahlias.

Like other novelty dahlias these apparently received little recognition by growers of the day and likely were "annihilated" by the Metropolitan Dahlia Society dicta in 1832.

In 1884 Rivoire of Lyon, France introduced the first all black foliage dahlia under the name LUCIFER^(33,40) The dark foliage had figured prominently in the modern Peony-flowered dahlias.

The next versions to which the name was applied, was reported by M.H. Hornsveld of Baarn, Holland about 1900 and said to be intermediate between decorative and single types. They too were referred to as Peony dahlias by Hornsveld and other growers of the day. Between 1900 and 1903 he exhibited them at the shows throughout Europe.⁽³⁶⁾ Within the next 10 years he introduced a total of about 20 varieties. They reportedly had blooms about eight inches in diameter and ranged from White through Cherry red but again none of the group I color.⁽⁹⁵⁾

In 1904 Semi-double forms with two rows of florets were originated by Revoire at Lyon, France. These were considerably larger than the Holland introductions with long, stiff stems, and again all of the Group II color⁽³⁸⁾

Kelway's Manual of Horticulture for 1909-1910 lists 35 Peony dahlias and pictures one by the name of H. HORNSVELD. It shows a large flower Salmon in color, with the typical brown or dark purple center disc and with 2-3 rows of petals. However they were quite flat with very little resemblance to the herbaceous peonies to which the name referred.⁽⁵⁵⁾ One of these named MRS. A.D. CROPPER was described by Kelway as "lilac-mauve; huge showy flower, very distinct in hue. This is the first known report of a group I colored Peony type dahlia. However Norton⁽⁶⁸⁾ in 1924 classified this dahlia Rosette.⁽⁹⁾

Since all these early versions have apparently dropped completely from usage, this article will be concerned with the original types only from the historical viewpoint. Although the class "Peony-flowered" had not yet been established they were probably closer to the form of the herbaceous Peony than most of the later developments, it is hoped they may again show up in some ones planting. This is however unlikely since the parental stock is probably extinct.

Around 1908, still another version called "Charm" dahlias were introduced by Cheal of England. They were soon included under the Peony-flowered name and generally referred to as miniature Peony dahlias.⁽⁶⁵⁾ Like their older relatives, no record has been found indicating a dahlia of this type being of group I color.

In 1923/1924 Emile Nagels of Belgium began cross-breeding LUCIFER with a Decorative type called LEMUR in an attempt to develop a double dahlia with dark foliage. In 1927 he released CONGO BELGE a red dahlia that met the definition of the new Peony-flowered class adopted by the Royal Horticultural Society in 1921.⁽⁹⁾ Between 1930 and 1939 he introduced an additional 19 varieties all of the Group II color and with the dark foliage of LUCIFER.⁽⁴⁰⁾

Major George⁽⁴⁰⁾ reported he had seen a promising purple seedling of this type in Mr. Nagels garden. They do not appear to ever have been introduced probably a casualty of the war, since Belgium was invaded and occupied in 1939, or possibly re-classified prior to release.

At about the same time (1927) Stephen Treseder of Cardiff, Wales

introduced a dark Red Peony type also with dark foliage and disc called BISHOP HUGHES. It is reported the namesake preferred the name be changed. Consequently it was next called THE BISHOP. As it turned out what was known as the "modern rules of nomenclature" forbade use of articles in dahlia names. Consequently it was again renamed to simply BISHOP of LLANDAFF. It is not clear whether Mr. Treseder somehow received stock from Nagels developed his own line of miniature Peony-flowered dahlias from the Kelway dahlias. It does seem likely he received his stock from Holland as BISHOP of LLANDAFF definitely had the characteristic dark foliage. Incidentally those rules of nomenclature are still in effect but have been consistently and indiscriminately ignored. The International Dahlia Register lists about 60 cultivars with "The" in the name, and still appears to accept such names, or at least did in the fifth supplement to the Register.

The version characterized by BISHOP of LLANDAFF continues the dark foliage and disc characteristic of the Hornsveld dahlias. Until 1960 this dahlia had the Peony class almost completely to itself, although other dahlias with the Peony classification now and then showed up in classifications; all apparently soon dropped out of the picture. Also THE BISHOP occasionally appeared. In 1960 another dark foliage, dark centered red peony-flowered dahlia named JAPANESE BISHOP was listed.

Since 1960 several additional cultivars have been introduced. They seem to have generally fallen by the wayside. The ADS 1976-1989 list of dahlias lists an additional seven cultivars as Peony-flowered. Two of these SUKI and FASCINATION are listed as of Group I color. The author has seen both of these and does not consider them of proper form to comply with either the historical descriptions from which the name was derived or the definition in effect in the Classification of Dahlias during that period.

BISHOP of LLANDAFF still appears in the 1995 Classification although the award tabulation shows no 1994 winnings. This may be the result of mistaken identity. The author has noticed this dahlia being exhibited under the name of JAPANESE BISHOP and vice versa in several shows in recent years, including the National Show in Kalispell in 1994.

This appears to be the last of the true Peony types. Several Peony types have been reported but have generally been reclassified, determined to be in error or simply dropped out of circulation.

Perhaps the most noted of these is a flower called JESCOT JULIE. Mr. E. Cooper of Sussex, England introduced this flower in 1975. It was classified Double Orchid (Or.-Pu. Bls) by the National Dahlia Society. It is still so listed in their Classified Directory. When it was listed in the ADS Classification in 1979 it somehow received the classification of Peony. It was subsequently re-classified when the new classification of Novelty became official in the U.S.

A list of over 53,000 dahlias compiled by the author includes 639 cultivars classified as Peony. Only 47 are listed as being of the group I color, 26 were in commerce before 1924. Norton classified these almost entirely as rosettes, rather than Peony.⁽⁶⁸⁾ Consequently it is doubtful if there are or even have been any Peony-flowered dahlia of the group I color.

The recent Classification Guide lists two varieties of the Group I color as Peonies. The author is not familiar with either, so cannot comment. It is hoped they follow the traditional qualifications. If so there has obviously been a break through in inter-specific crossing which should be explored. If the dark foliage and disc or the classic double decorative formation is not present it is suggested they be considered for reclassification as appropriate.

Mignon(s)

As with most dahlias the development of the Mignon dahlias has been primarily through the efforts of commercial growers. The primary interest of such growers is to produce commercially favorable flowers. Hence one of the goals of developers has been to produce flowers with long cut life. The basic single forms ie. the standard singles, the collarettes and the Orchid flowering types have all had many ups and downs because of the inherent poor keeping quality. "Single dahlias are likely to lose some of their rays after a day or two in a vase."⁽¹⁸⁾ Consequently they failed to receive very favorable consideration until the final quarter of the 19th century.

In 1873 Benedict Roezl introduced into Europe a deep Orange colored single form which because of its petite and graceful form was given the descriptive species name *Dahlia gracilis*. It was so well received that it was the immediate cause of a reawakened interest in the single types.⁽⁴⁶⁾ By 1880 numerous novelty forms of this dahlia had been introduced including MIGNON STARS and TOM THUMB.⁽¹⁷⁾

The first Mignon dahlias were introduced by Dominicus of Scheidam, near Rotterdam, Holland and had slightly larger flowers than the TOM THUMB types.⁽³⁶⁾ TOM THUMB dahlias were developed by T.W. Girdlestone and introduced by J. Cheal & Sons about 1880. The TOM THUMB varieties were quite dwarf (about 15 inches in height, while the early Mignons were more like their parents in the 4-5 foot range). Hence these early Mignons were practically forgotten and the TOM THUMB type promoted. Eventually the original Mignon type were abandoned and the TOM THUMB dahlias reclassified, first as "Tom Pouce" Dahlias (1891) and later to Mignon. In 1909 Wm. Hepburn of Coltness House, near Glasgow produced a modification of these Tom Thumb dahlias and called them Coltness Gem. He offered them for sale in 1918.⁽³⁶⁾

In about 1910-1920 Vervooren and Dominicus began developing smaller plants as well as blooms. One of the earliest was named ROODKAPJE (RED RIDING HOOD in English speaking countries, ROTKAPPCHEN in Germany). Perhaps the dwarfest never exceeded 5 inches in height even in the lush black, peaty soil of Holland.

In 1921 when the Royal Horticultural Society established the first "official Classification" of dahlias these were designated Mignon and described as "not exceeding 18" in height. In 1925 the American Dahlia Society adopted the classification. The designation was subsequently dropped by the RHS prior to 1961 and Mignon listed under the "singles class. The standard singles as grown and shown in the United States are little recognized in the R.H.S. 1969 Dahlia Register, its supplements or the National Dahlia Society Classified Directory.

In the early 1950's several dutch growers, primarily Van Buggenun and Topsvoort began developing smaller plants as well as blooms. The goal was 15 inch plant height and 2 inch blooms. Prior to this time the classification was based on plant size. Bloom size varies from 1-2 to 3-4 inches and until several years later were all of the group II color.

An interesting but un-confirmed story has been circulated concerning the development of additional varieties of these diminutive dahlias. About 1950 Van Buggenun and Topsvoort took up the challenge. In the later part of the 1950's Ballego received a mixture of Mignon seeds from Topsvoort. By 1959 he began introducing a series of dahlias resulting from this mixture of Topsvoort seeds which he dubbed Topmix, presumably in recognition of the source of the seeds. These included the first reported Group I Mignon (TOPMIX VIOLETTA) and is an indication that an inter-specific cross has taken place somehow and sometime but no record has been found by the author to indicate what this cross might have been.

The Mignon remained as a classification in the US until 1963 when it was treated as a sub-class to the standard singles. In 1964 it was dropped from the ADS Classification Guide. When the current Class Number system was adopted in 1977 it was again reinstated with its present definition ie. the limit of 2" for bloom size was added.

Waterlily (Nymphaea)

Although flowers of this type have been reported since 1828,⁽⁷⁹⁾ they have generally been received with little favor. There has been two considerably different forms sharing this name for many years.

The first known report concerning these was in 1828. It described the flower as a Double Camellia-flowered type with six inch diameter blooms. In Otto's Classification of 1833 it would be included under Class 6 "Dahlias with regularly formed flowers". They were not received with favor at first and were not grown generally outside of Germany until after 1880.⁽⁷²⁾ In 1896 it would be included with the Voss Classification under Class A: "Double-flowered dahlias: Group 2. (Flowers consisting of shell-shaped petals.)⁽¹⁰⁰⁾

In 1890 L.K. Peacock discovered a somewhat similar form of Formal decorative dahlia in a rural garden in New Jersey. In 1893 he introduced it as a Nymphaea dahlia.⁽⁷⁶⁾ This would be the first time that name (Latin for Waterlily) was used in connection with dahlias.

In the 1921/1924 Royal Horticultural Society's first "Officially accepted Classification of Dahlias" these were listed as "Camellia-flowered Dahlias and described as "Flowers are fully double". Petals arranged regularly, petal edges a bit involute so they look like widely open tubes.

In 1925 the RHS Classification was "officially accepted" by the American Dahlia Society as published in its Bulletin. Series VI. Nr. 32 of April 1925.

A new German classification was published in 1927 listing Camellia-flowered dahlias.⁽³⁶⁾ In 1933 this document was modified to add two new classes, Hybrid Cactus (later to be known as Semi-Cactus) throughout many

countries of the world, and a new Class VII: Decorative Dahlias, Subclass VIIId, Nymphaea-flowered Dahlias.⁽³⁷⁾ Although they gave no description, twenty one cultivars were listed under that class. All identifiable cultivars had previously been considered Camellia-flowered Dahlias. The doyen originated in 1919 by Schone of Leipsig, Germany, was called AUREOLE.

Sometime subsequent to the acceptance of the RHS Classification, both Groups, (RHS and ADS, apparently discontinued the use of Camellia-flowered Dahlias. Neither the RHS or ADS again recognize this type flower until 1964. In that year the ADS included the designation WL as a sub-type of the Formal Decoratives but with no description. In 1977 when the Class Number system of the ADS was up dated the Waterlily received recognition as a class by itself and described as "fully double flowers characterized by large, broad, and generally rather sparse ray florets which are straight or slightly incurved giving the flower a flat appearance, the depth being no more than half the diameter of the flower head" In 1984 the RHS dropped the Peony-flowered Dahlias and revised Group 4 of their system to include Waterlily-flowered dahlias, accepting the ADS description but dropping the specification for depth. In addition they were divided into sub groups: Large, Medium, Small and Miniature. To date the ADS has never recognized size limits.

In 1995 the ADS description was changed to reflect judging criteria. Neither the RHS or the ADS have ever officially recognized the classification Nymphaea although it has been and still is used in several countries.

CLASSIFICATION SUMMERY

IN 1833 W. Kirscht reported the first classification of dahlias.⁽⁵⁶⁾ This classification included approximately 3,000 varieties and recognized 14 classes into which they were assorted, including Rose-flowered, Carnation-Flowered, Ranunculus-Flowered, Anemone-Flowered, Helianthus-Flowered, Aster-Flowered, Poppy-Flowered and Star-Flowered as well as the Show and Fancy types popular at the time,

Also F. Otto of the Berlin Botanical Garden issued a classification based on both plant and flower features:

- Class 1. Anemone-flowered dahlias
2. Tall growing dahlias
3. Dahlias producing many flowers
4. Dwarf growing dahlias
5. Dahlias with irregularly formed flowers
6. Dahlias with regularly formed flowers
7. Dahlias with flowers consisting of tube-formed petals
8. Dahlias with sessile or short stemmed flowers
9. Dahlias with flowers of upright stems
10. Dahlias with flowers on drooping stems

Over the years several other classifications have been promulgated.

In 1896 Mr. A. Voss issued a classification listing only two basic groups: Single-flowered dahlias and Double-flowered dahlias. The Single-flowers

group was divided by plant size. The Double-flowered group was divided into four sub-groups by petal formation, and further sub-divided by both flower size and plant height.

In 1900 Vilmorin of France published a classification in which he divided all dahlias into groups based completely on petal form.

In 1916 Louis Cayeux of France published his classification dividing them into 9 classes based primarily on petal form.

In 1921 The Royal Horticultural Society published the first "officially accepted classification" of Dahlias based on a combination of plant size and flower form. It still follows the same basic format today except the classes have to a large extent been changed to reflect the modern forms.

This Classification was officially accepted by the ADS in 1925 as the first official classification in the US as published in the ADS Bulletin Series VI. Nr. 32 of April 1925. It too has been changed to reflect changing Typical growing characteristics and conditions.

In 1927 another German classification was published.⁽³⁶⁾ In 1933 that classification was modified to include two new classes.⁽³⁷⁾

In 1949 the American Dahlia Society and the Central States Dahlia Society published the first Joint Classification Guide.

Since that date most dahlia growing countries have published their own Classifications based on their particular requirements and conditions.

SUMMARY

- 1300-1400 Indian used plants variously identified as ACOCOTL (By the Quahnahuacenses indians), CHICHIPATL (by the Tepoztlanenses Indians) both ACOCOTLE and COCOXOCHITL (by the Aztec indians) for medicinal purposes and decoration.⁽⁴⁹⁾
- 1400 Plants of these were reported growing in gardens of Oaxaco and Mexico City.⁽⁸⁶⁾
- 1525 Spanish Hidalgos found these plants growing in Mexico.⁽⁸⁶⁾
- 1570 Francisco Hernandez sent to Mexico by King Phillip II (who later sent the Spanish Armada against the English) to study the "natural products of that country."⁽⁸⁶⁾
- 1570-1577 Hernandez studied those natural products accompanied a least part time by Francisco Dominguez.⁽⁸⁶⁾
- 1577 Manuscripts written in Spanish by Hernandez, including drawings of plants and animals of Mexico by Dominguez were deposited in the Escurial (a monastery and residence 27 miles northwest of Madrid built in the 16th century by King Phillip II) where they remained for several years.⁽⁸⁶⁾
- 1578
- 1615 The Hernandez manuscripts were translated into Latin Francisco Ximenes.^(19,36)
- 1640 Ximenes manuscript bought by Francisco Cesi President of the Academia Linei of Rome. These were brought up to date with remarks provided by Nardi, Antoni, Richi and others. In 1649/1651 The augmented works were published in two volumes by Vitalis Mascardi.⁽¹⁰⁶⁾

- 1715 Original manuscripts destroyed by fire.^(19,36)
- 1787 Thiery de Menonville reports seeing the plant growing in a garden in Oaxaca, Mexico.^(12,42,56,86)
- 1789 Vicente Cervantes, Director of the Botanical Garden at Mexico City, sent "plant parts of ACOCOTLI to Abbe Antonio Jose Cavanilles, Director of the Royal Gardens of Madrid.⁽²⁴⁾
- 1789 Cavanilles flowered one plant.⁽²⁴⁾
- 1790 Cavanilles flowered a second plant.⁽²⁴⁾
- 1791 Cavanilles describes the two plants and gives them the name "Dahlias in memory of the Swedish Botanist, student of Carolus Linneus and author of *Observationes Botanicae*, Andrea Dahl. He gives the first flowered the name *Dahlia pinnata*. after the pinnate (feathery nature of the foliage); the other *Dahlia rosea* after its rose-purple color.⁽²⁴⁾
- 1796 Cavanilles flowers a third plant from the "plant parts sent earlier by Cervantes.⁽⁸⁸⁾ This he named *Dahlia coccinea* because of the color resemblance to the scarlet dye obtained from the coccineal insect at that time.⁽²⁹⁾
- 1798 The Marchioness of Butte (wife of the English Ambassador to Spain at the time, obtained seeds from Cavanilles and sent them to Kew Gardens.⁽⁷⁵⁾ Plants obtained from these were soon lost.⁽⁴⁹⁾
D. pinnata received in Parma Italy from Madrid.⁽⁸⁵⁾
- 1790 Seeds received in Berlin and Dresden, Germany.⁽⁴⁰⁾
- 1800 *D. rosea*, received in Berlin from Dresden.⁽⁸³⁾
- 1801 Dahlias received in Turin Italy from Madrid.⁽⁸⁵⁾
- 1802 Dahlias received at Thiene Italy from Madrid.⁽⁸⁵⁾
 John Sloane brought seeds of *D. coccinea* from Paris to Chelsea, England.⁽⁴⁹⁾
 Cavanilles sent roots of *D. pinnata*, *D. rosea* and *D. coccinea* to Andre Thouin at Jardin des Plantes, Paris.⁽⁸³⁾
 John Fraser carried seeds of *D. coccinea* from Paris to Chelsea, England.⁽⁴⁹⁾
D. purpurea(pinnata) received in Berlin from Spain.⁽⁸³⁾
- 1803 Fraser seeds flowered at the Apothecaries, Gardens, Chelsea, England.⁽⁴⁹⁾
 E. J. Woodford carried a plant of *Dahlia rosea* to Vauxhall from Paris.^{(88)*}
- 1804 Lady Holland sent seeds from Spain to Holland House Kensington, England in May. They were flowered the same year by her librarian and gardener Mr. Buonaiuti.⁽⁸³⁾
- 1805 Friedrich Alexander von Humboldt sent seeds from Mechoacan, Mexico to Willdenow in Germany.⁽⁵²⁾ They were flowered the same year and named Georgina after Professor Georgi of Russia, a fellow botanist and traveler.⁽⁴²⁾
 Humboldt sent seeds from Mexico to Aiton in England.⁽¹⁹⁾
 Humboldt sent seeds from Mexico to Thouin in Paris.⁽⁸³⁾
 First double flower produced in Belgium.⁽⁸³⁾
 Willdenow issued the first classification of Dahlia species.^(83,104)
- 1804-1809 Several new species reported including colors of red, purple, lilac, pale and yellowish.⁽²²⁾
- 1805 Humboldt sends seeds to F. Otto, director of the Berlin Botanical Garden.⁽⁵²⁾
 Buonaiuti produced two double flowered in England.⁽⁸³⁾
- 1808 Hartwig of Karlsruhe obtained first double flower in Germany⁽⁸³⁾
 Otto received the first double from Stuttgart.
- 1809 Otto produced a double dahlia of his own at Berlin.⁽⁸³⁾

- Willdenow accepted Cavanilles name Dahlia in lieu of Georgina.⁽¹⁰⁵⁾
- 1810 William Aiton established the first species to produce both color groups *D. superflua*.⁽¹⁾ de Candolle accepts *D. superflua* and reported 5 varieties of *D. superflua* plus 3 varieties of *D. coccinea*.⁽²³⁾
- 1811 Donkelaar, director of the Botanic Garden at Louvain, Belgium reported three double forms.⁽¹⁰⁶⁾
- 1816 Haage of Leipzig produces a double form.⁽⁸³⁾
J. Lee of Hammersmith Nurseries, England produced the first fully double purple.⁽⁷⁵⁾
- 1817 Count Lelieur of France produced a double flower.⁽⁷⁵⁾
Compte de Vandes of France produced a double form.⁽⁷⁵⁾
C. Arentz of Leyden Holland produced double forms.⁽⁷⁵⁾
Hartwig of Karlsruhe, Germany produced a double form.⁽⁷⁵⁾
Van Eeden of Haarlem, Holland produced a double form.⁽⁷⁵⁾
- 1819 Donckelaar produced as many as 50 double form⁽¹⁰⁷⁾
- 1820 Donckelaar growing as many as 10,000 seedlings.⁽¹⁰⁷⁾
- 1821 Arentz produced first double White dahlia (WAVERLEY).⁽³⁶⁾
- 1824 Picture of first "formal decorative type appeared in Germany.⁽³⁵⁾ (Reproduced as Fig. 29. in Mich. Spec. Bul. No.266).
- 1826 Anemone-flowered dahlia (BELLA DONNA) reported grown by Mr. Drummond of Cork, Ireland.⁽⁹²⁾
First double scarlet dahlia reported. Smith suggested it had resulted from a cross between *D. pinnata* and *D. frustanea*.⁽⁹²⁾
It is now believed *frustanea* is the same as the earlier *D. crocea*
Over 100 varieties being grown in Germany.⁽⁷⁸⁾
- 1828 Plants of dahlias sell at \$2.50 to \$25.00 in England.⁽⁴²⁾
Complete control of stock of a new variety sold for as much \$2,500 in England.⁽⁴²⁾
First double Camellia-flowered dahlias described.⁽⁷⁹⁾
WILL'S SUNFLOWER, of the modern peony type introduced.⁽⁶⁵⁾
- 1829 First Anemone-flowered dahlia reported in Germany as (PAINTED LADY). This also credited to Mr. Drummond of Cork, Ireland.⁽³⁶⁾
(Also see 1826). Neither of these the same as the later (modern) ones.
First Show dahlia (SPHAEROCEPHALA) found at the nursery of Mr. J. Lee of Hammersmith.⁽⁸¹⁾
M. Desfontaines of France suggested placing all known varieties of dahlia under one name. Approved by other taxonomists of the day, establishing *D. variabilis*, Desf.
Prior to this each new form of dahlia was given a distinct botanical species name.
First bi-color dahlia (LEVICK'S INCOMPARABLE) produced in England.⁽⁴³⁾
- 1832 First Bi-color single produced in England.⁽⁶⁶⁾
First perfect Show dahlia (SPRINGFIELD RIVAL) produced by George Jones of Surrey England.⁽⁶⁵⁾
- 1833 Christian Deegen of Germany produced an Anemone-flowered Dahlia.⁽⁸⁰⁾
First Dahlia Classification register produced in Germany by Kirscht.⁽⁵⁶⁾ Listed Rose-flowered, Carnation-flowered, Ranunculus-flowered, Anemone-flowered, Helianthus-flowered, Aster-flowered, Poppy-flowered and Star-flowered dahlias.
First formal decorative type in Holland (TURBAN) pictured.⁽⁸⁰⁾
Fancy Dahlias produced by Count Lelieur,⁽³¹⁾ did not receive

- definite standing until 1844.⁽⁷⁰⁾
- 1843 First double dahlias of *D. coccinea* produced by Schlechtendahl and Pepin.⁽⁶⁾
- 1845 First scented dahlia produced by Godra of Neu Verbass, Austria.⁽⁶⁵⁾ In 1907 *D. coronata* was reported as the first fragrant dahlia and classified *D. coccinea odorata Bruanti*. It now appears quite probable that this was *D. crocea* reported in 1804 as resulting from the Humboldt seeds was in fact an early and unrecognized unrecognized reporting of *D. coronata*.
- 1846 Caledonia Horticultural Society of Edinburgh, Scotland offered a prize of 2,000 pounds to the person producing the first blue dahlia.⁽¹⁰⁶⁾
- 1851 Johann Sieckman of Kostritz, Germany introduced the first pompon dahlias. (Then called "lilliput"). Later named "pompones" by the French after the small tassel on their sailor's caps. Anglicizes to the present name in English speaking countries.⁽⁷⁴⁾
- 1852
- 1860 Pompon dahlias first appeared in England where they were known at first as lilliputian or bouquet dahlias.⁽⁷⁴⁾
- 1861 Pompon dahlias appear in the United States.⁽⁵¹⁾
- 1861 First all black foliage dahlia reported from Germany.⁽⁹⁹⁾
- 1872 J.T. Van de Berg of Jutphaas, Holland received a shipment of seeds, plants, etc. from a friend in Mexico. He was able to salvage a small piece of root which yielded a plant he recognized as a dahlia.⁽⁹⁸⁾
- 1872-1873 Van de Berg made cuttings which produced a different kind of flower than previously known, red in color. It was named *Dahlia juarezii*, after the late president of Mexico, Benito Juarez who had died earlier in 1872.⁽⁹⁸⁾
- 1873 *D. gracilis*, parent of the dwarf, bushy, singles introduced by Benedict Roezl.⁽⁴⁶⁾
- 1874 Van der Berg catalogued *D. juarezii* and offered it for sale. The flowers were described as "much like those of *Cereus speciosissimus*" earning the designation "cactus" dahlia.⁽⁹⁸⁾
- 1878 H. Cannell and Sons reintroduced THE PARAGON or a similar as PARAGON.⁽³⁴⁾
- 1879 First *D. juarezii* exhibited in England by H. Cannell.⁽¹⁰⁾
- 1880 First Tom Thumb types raised by T.W. Girdlestone and introduced by H. Cannell and Sons of Crawley, England.⁽³⁶⁾³ First Mignon type introduced by Dominicus of Schiedam, Holland.⁽³⁶⁾
- 1884 An all black foliage dahlia (LUCIFER) introduced by Rivoir of France. First modern peony-flowered dahlia.⁽³⁹⁾
- 1890 Peacock discovered the first Nymphaea (waterlily) dahlia growing in a rural garden in New Jersey. He introduced the first one in 1893.
- 1891 First single cactus offered for sale by Dobbie and Sons Co. Rothesay, Scotland.⁽⁶⁵⁾
- 1892 First "Gloria" dahlia (an anemone type, introduced by Schmidt of Erfurt, Germany).⁽³⁶⁾
- 1893 Peacock introduced the first Nymphaea (waterlily) dahlia.⁽⁷⁶⁾
- 1894 First Pyrethrum type dahlia (AEGIR) introduced by Heinemann of Germany.⁽³⁹⁾ Reported as originated by Servain of France.⁽⁶⁵⁾
- 1896 First Miniature Cactus (HERMAN KIEZE) produced by Schmidt of Erfurt, Belgium. Originally called Pompom Cactus.⁽⁹⁶⁾ First truly quilled dahlia reported.⁽³¹⁾

- First Anemone-flowered dahlia grown in France.⁽¹⁰⁶⁾
 First lacinated dahlia (PROGENITOR) originated by Wm. Keynes & Son of Wallsend, Australia. (Personal correspondence from Mr. Norm Williams to the author) Mr. Williams was apparently grandson-in-law of Mr. Keynes.
- 1898 PROGENITOR introduced into England where it was exhibited by Veitch and described as "furcated) (forked or branching).⁽⁶¹⁾
- 1899 First Couronne dahlia originated by Loiseau of France.⁽²¹⁾
 First Gloria dahlia grown in France.⁽¹³⁾
- 1900 First Collarette dahlia (PRESIDENT VIGER) developed by Gerard.⁽²⁶⁾
 A large Peony-flowered dahlia, developed by Wilhelm Pfitzer of Germany exhibited by M.H, Hornsveld of Baam, Holland.⁽³⁶⁾
- 1901 First Parisian dahlia (PARIS) developed by Miller ad Sons in France.⁽⁶⁾
- 1903 Single, giant-flowered dahlia introduced into France from Holland. Reported to be over 9 inches in diameter.⁽²⁰⁾
- 1904 First semi-double form of Peony-flowered dahlia developed at Lyon, France.⁽⁶⁵⁾ This is the modern form.
- 1907 *D. coronata* introduced into Europe from Mexico by J.C. Schmidt of Erfutt Germany.⁽¹⁵⁾
 A second scented dahlia introduced by Schmidt of Germany.⁽¹⁶⁾ Offered for sale in 1908, by Bruanti of Poitiers. Originally considered a variety of *D. coccinea*. and listed under the name *D. coccinea odorata*, Bruanti. Later identified as distinct from *D.coccinea*.⁽¹⁸⁾ Now considered same as *crocea*, first introduced through seeds in 1804.
 First "Collossal) dahlia (LE COLLOSSE) appeared.⁽³⁸⁾
- 1909 Coltness Gem developed by Wm. Hepburn of Coltness House, Wishaw, near Glasgow, Scotland. Now called "Mignon."⁽⁶⁵⁾
- 1910 Stredwick suggested the Miniature Cactus be renamed Rosette.⁽⁹⁶⁾
- 1911 Charm or Miniature Peony Dahlias introduced by Cheal & Sons Crawley, England.⁽⁶⁵⁾
- 1914 Star dahlias introduced by Cheal.⁽¹⁷⁾
- 1919 Stellar or modern orchid-flowered dahlia introduced by L. Martin & Sons of France.⁽³⁶⁾
- 1920 Clematis-flowered type originated by M. Wouters of Holland.⁽⁶⁵⁾
- 1921 First "officially accepted" Classification of Dahlias published in the Journal of the Royal Horticultural Society, London, Vol. 47 Pgs. 55-73. Include 16 classes with several sub-classes.
- 1925 ADS accepted the RHS Classification (ADS Bulletin, April 1925)
 First "Giant dahlias appeared.⁽³⁶⁾
- 1935 First Giant Anemone-flowered dahlias obtained by Cayeux. Reported to be 9 inches in diameter^(25P)

Various miscellaneous forms have continued to appear from time to time. One noteworthy example developed by Mr. Harold Miller of Redmond, Washington, has the unique form which combines the features of the Orchid-flowered type with that of the collarettes. At the time of writing it has been suggested they be called "Orchettes". Another unique form previously un-reported appeared in the author's garden in 1993. It can be described as a quilled orchid-flowered type. It has a consistent 8 petals completely quilled except for a match head sized opening at the tips. At the time of writing it is still being developed in an effort to improve the stalk and uniformity of tip structure.

CONCLUSIONS

Aztecs collected or cultivated dahlias as early as the 15th century.⁽³³⁾ Flowers were depicted in cave drawings and hieroglyphics. credited to the Aztecs of the 14th and possibly of the 13th century It was used as a religious symbol and for medicinal and cultural rather than esthetic purposes. Dahlia tubers were an important food source for the Aztecs indeed to this day. the indians of central Mexico rely on the tubers as a valuable part of their diet. It was woven into clothing for the Royal family, warriors shields, breast plates, necklaces, etc. It is the National flower of Mexico.⁽⁴³⁾

The first encounter by other than the peoples of Mexico seems to be well established as made by a Spanish citizen, Francisco Hernandez who was sent to Mexico in 1570 to investigate the "natural resources of New Spain." The first published pictures were drawings by a Hidalgo Gentleman, Francisco Dominguez who accompanied Hernandez on at least some part of his explorations. Both the report and drawings were published at Rome, but not until 1651, about seventy five years after first produced. Prior to publication the report was translated to Latin, and later to English.⁽⁸⁷⁾ Little recorded information is found concerning the next 126 years.

Although a good case might be made for any of the three suggested closest relatives, there appears to be no relationship so definite as to exclude any one of two in favor of another. It does seem quite likely that the dahlia descended from any of them through divergent variation and morphological differentiation. Bidens appears to be the most probable ancestor and have the most supporters. Even so it should not be considered definite.

It is impossible to determine how many dahlia species have existed. It is possible that (a.) more than one species descended from the immediate ancestor. (b.) that different species subsequently developed from the first dahlia species, or (c.) a combination of (a) and (b) was responsible for the many species of dahlias that have been reported in the past and unquestionably continue to develop today and will continue indefinitely. It is virtually certain that the list of reported species contains numerous duplicates.

In 1830 Smith⁽⁹²⁾ suggested all species dahlias could be assigned to one of two color groups, purple tinged or red tinged. In the decade of the 1920s Lawrence expanded on this theory and reported all species dahlias with the exception of *D. variabilis* could be assigned to what he called

Group I (ivory-magenta-purple, or Group II (yellow-orange-scarlet.⁽⁵⁸⁾ In 1931 he revised Group I by dropping purple and listing them as ivory-magenta. It is not clear what Lawrence included under the species name *D. variabilis*.

To combine all known colors in itself, *D. variabilis* must have come about through an interspecific cross between a species of each color group. It is obvious that there are several different forms not necessarily descendents from the same cross. Therefore for each form group i.e. double forms single forms and what has become known as the miscellaneous forms, any of those forms which include varieties of each color group must almost certainly result from an interspecific cross of the two color groups in the ancestry of each.

The modern garden dahlia descended from some older genera of the composite family probably through divergent variation. One of the earliest species was *D. zimapanii*, with other species developing either from it or more or less simultaneously from the same ancestral parent. The double forms of the modern Garden dahlia appear to owe their development to three distinct ancestral lines through two important inter-specific crosses.

The ancient ancestral stock would likely have been diploid and are now extinct. In the course of time several tetraploid species descended from that diploid stock. In this descent of the tetraploid progenitors of the modern garden dahlia differentiation occurred and among other distinctions gave rise to two flower-color groups, ivory-magenta and cream-yellow-scarlet.

Soon after being introduced into Europe the first of two momentous inter-specific crossings took place resulting in a relatively fertile octoploid. This cross is considered to have been between *D. pinnata* of the ivory-magenta group and *D. crocea* of the cream-yellow-scarlet group and resulted in combining both color groups in a single species, *D. superflua*. As a consequence many new and intermediate color combinations developed.

In 1829, all dahlias growing in Europe were reclassified under a catch-all name of *D. variabilis*, Desf.

In 1872 *D. juarezii*, a new form of dahlia which could and did readily cross with *D. variabilis*, Desf. arrived in Europe. From this second important cross most of the double forms of the modern garden dahlias as known today developed.

The early single dahlias were direct descendents of *D. coccinea*. Sometime after about 1804 it appears that *D. crocea*, an apparent early introduction of *D. coronata* probably inter-bred with *D. coccinea* giving rise to the fragrant single forms of dahlias first reported in 1843 from Austria. The introduction of *D. barkerae* in 1840 and a probable inter-specific crossing between it and *D. crocea* added the group I colors and produced the ultimate ancestral combination from which all the single forms of the modern dahlias have developed through selective variation.

Planting experiments show a sufficiently close relationship between the

single-flowered, the collarette-flowered and the orchid-flowered types as to suggest they are morphological variations of a single ancestral line. That line is likely made up of several parent species, each contributing significantly to their ultimate development. As with the double forms *D. crocea* has possibly been one of the more important factors in their development. If true this seems to be the common link between the double and single forms. Such a linkage is indicated by the observed natural variability which allows a large degree of morphological variation.

Early anemone-flowered dahlias were reported to have developed from *D. excelsa*, and perhaps an unknown dahlia of the group II color. Several versions of quasi-anemone types were reported between 1826 and 1935. The modern anemone-flowered types are most probably developed from the decorative dahlias and have the same ancestry as the modern decorative and cactus type dahlias.

Several versions of the Peony dahlias have been reported since 1826. With inputs from several sources they seem to have gone through several developmental variations.

It is highly probable that *D. crocea* was in fact a separate species and an early reporting of *D. coronata* and most likely one parent of both the double and the single dahlias, especially after its introduction in 1804.

The scented dahlias such as the Peony-flowered, the Orchid-flowered, the Collarettes and the singles, perhaps excluding the Mignon have descended from *D. coronata (crocea)* or developed from that species. The remainder of the single forms, the mignon, topmix and bedder dahlias are considered to have descended from *D. gracilis*. The ancestry of the Anemone-flowered types are greatly disputed. It is highly likely that there have been two developments of these types. As early as 1826 reports concerning Anemone-flowered dahlias circulated through England, Germany and France. They were variously described as quilled, having tubular disc florets, resembling a double pyrethrum, anemone like etc. A drawing by Mr. E. D. Smith appeared in *Flora and Pomona* in 1829.⁽⁹¹⁾

There was considerable resemblance of the overall form and foliage to the modern cultivar COMET, however the disc florets, tubular toward the base are flatly spreading at the tips. At least two reports claim or suggest it developed from *D. excelsa*, one in *Garden Chronicle* 3rd Ser. of 1900 and the other in *Garden Chronicle* 3rd Ser. of 1935. In 1896 an anonymous report in the *Garden Chronicle* reported the "first truly quilled dahlia". In 1935, Henri Cayeux of Le Havre, France introduced three varieties of anemone-flowered dahlias which he reported had been developed over the years 1926 to 1934 from the decorative type SIMONE LAURENT. He reported these to be 6-10 inches in diameter with 30" stems(p). One of those varieties CROIX DU SUD was listed in the *Classification of Dahlias* well into the 1970s.

APPENDIX

- (a) The terms "descent through modification", "divergent variation" and "independent creation" are Darwinian. The first two are used to explain the gradual alteration over many generations, whereby one genus or

species through natural selection varies until it is so different from the original as to warrant re-classification.

- (b) It is interesting to find that the term "Georgina, is still used in the 1992 German Dahlia, Fuschia and Gladiola Society Yearbook.
- (c) Most writers from the earliest days until the present have made this statement and used the term without citation of authority. The author has made an extensive search looking for historic Documentation. The first writer found using the term was Wm. Smith In 1830. However he seems to use it as a matter of fact without reference to circumstances of authentication. It is used here and in other writings by the author in the same context, and without citation of authority.
- (d) Since several of these later reported species are apparently identical to varieties of, or morphological variants of the earlier species they may indeed have had a part in the development of the garden dahlias but under the original not the later name.
- (e) Many reports^(28,32,etal) say Cervantes sent seed to Cavanilles. Cavanilles⁽²⁴⁾ himself as translated by Safford⁽⁸⁷⁾ reports they were "roots". As the obviously most authoritative source the author leans to this interpretation. This is supported by Lawrence.⁽⁶⁰⁾ He also used Cavanilles as a reference and says, "Tubers of two varieties of, *variabilis*, a purple, *D. pinnata* and a crimson *D. rosea*, were first sent from Mexico to Madrid in 1789".(the color descriptions he used are confusing but the use of the word "tubers, is beyond question.(c) Payne is quite definite in his use of the word "roots".⁽⁷³⁾
- (f) In 1839 Sir Joseph Paxton published an article titled "Á Practical Treatise on the Cultivation of the Dahlia" That book contained a letter written by von Humboldt in 1838. Adolph Deegen of Germany had found a copy in his Grandfather's (Christian Deegen) memorabilia. It is not clear to whom the letter was originally addressed but the words and sense of the letter would suggest some one in England, and quite likely Aiton, to whom he had also sent seed. It contained some very enlightening information and is therefore quoted to follow:

Dear Sir,

I want to thank you for your interesting work on the dahlia and want to inform you about my memories of my Mexico Journey, although by now these are pushed aside a bit by the fresher memories of my Asian journey. It is perhaps easier to make a discovery than to make a decision about priority-rights; in my case there will be no danger whatsoever as I only found, and did not make a discovery. When Mr. Bonpland and I ascended from the Mexican Highlands towards the Pacific Coast we came upon a kind of meadow (a rare thing in this tropical area.) The meadow was situated at an altitude of about 6000 to 6800 feet, east of the volcano Jurullo near Pazcuaro. Here we found flowering and seed bearing plants of Georgina. The height of the plants was 5 to 6 inches. This happened in 1803.

When we returned to Mexico we learned that Mr. Vincente Cervantes, the director of the botanical Garden already knew this plant and that he had sent seeds to the famous botanist Cavanilles in Madrid. When I returned to France in 1804, the Georgina already grew in the botanical Garden Montpellier in southern France, as was the case in England, because Lady Holland sent seeds from

Madrid Botanical Garden to her home-country. We spread the dahlias in the gardens of Paris all over Germany and the northern part of the European continent. Mr. Otto, the director of the Berlin

Botanical Garden, did more than anyone else to increase dahlia Growing, because he propagated the seeds grown from the seed we sent him endlessly. My countrymen prefer to call the plant Georgina as named by Von Willdenow to honour the famous Siberia explorer Mr. Georgi. Anyway Mr. Otto wrote me, that before I came home violet-coloured varieties only were grown in Europe. He also stated that in England all plants grown from the Madrid-seed were lost during 1804/05 and that the ones grown from seed sent from the Berlin Botanical Garden are the real ancestors of all dahlia varieties grown overthere now, I say varieties, because the majority of botanists, among them the most famous of all, Mr. Robert Brown, do not recognize dahlias as different species. This is about all my memory can tell you about the ancestry of the numerous dahlias which are so admirable in their beautiful colours. The foliage unfortunately, is far less beautiful than that of other popular Mexican garden-plants. *Cobaea scandens*. Certainly I was not the first European who saw a dahlia. Abbot Cavanilles introduced the first varieties in Europe, in the Madrid Botanical Garden. The journal I made, together with Mr. Bonpland just helped to make this beautiful plant more generally known and we helped to multiply the varieties by introducing new colours. Abbot Cavanilles already received dahlia seeds before 1791. In his beautiful book "ICONES" printed in 1791, he gave a picture of *Dahlia pinnata* in Tom. III. P57. Tab. 81, two other varieties or species were pictured in Tom. III. p.33. tab. 206. issued in 1794. At this time he grew violet, purple and pinkish-rose varieties.

Additionally we discovered two other plants which we introduced into the European gardens; *Lobelia splendens* and *Lobelia fulgens*. Their brilliant deep red colours are far more impressive than the colours of any dahlias, but they are more difficult to grow.

Please accept etc. etc.

October 20th, 1838 (signed) A. von Humboldt (Translated from the German to English by D. Eveleens Maarse)

- (g) Second only to the introduction of the Cavanilles species.
- (h) The author recalls seeing a considerably earlier date (believed to be 1819 or 1829) for this introduction but can not, at the time locate the reference.
- (i) Aztecs collected or cultivated dahlias as early as the 14th century.⁽⁴⁸⁾ Flowers were depicted in cave drawings and hieroglyphics credited to the Aztecs of the 15th and possibly of the 14th century. It was used as a religious symbol, for medicinal and cultural rather than esthetic purposes. Dahlia tubers were an important food source for the Aztecs; indeed to this day, the Indians of central Mexico rely on the tubers as a valuable part of their diet. It was woven into clothing for the royal family, warriors shields, breast plates, necklaces etc. It is the National flower of Mexico.⁽¹⁰³⁾
- (j) This was identified by Dominguez who made drawings for Hernandez as COCOXOCHITL.
- (k) The Western Mountains of the United States extend into Mexico where they divide into two rugged ranges, the Sierra Madre Occidental along the western and the Sierra Madre Oriental along the eastern coast. Just south of Mexico City these ranges unite to form the Sierra de Ajusco range, famous for the nearly 18,000 foot volcanic peak Popocatepetl. In the foothills of these

mountains lies the city of Cuernavaca whose present day inhabitants are descendants of the Quauhuahuacenses Indians.

- (l) Safford, in translating these reports likens both words to the word "syringe" which derives from the Greek words "syrinx" and "ingos" From Greek mythology syrinx was a nymph pursued by Pan and changed into a reed from which Pan made his pipes. Ingos is simply a pipe. Out of this these several translation, Aztec to Spanish to Latin to German, to English has come down to us such versions as water cane, water pipe, water pipe flower, hollow stem flower and cane flower. In all cases they allude to the hollowness of the stem.
- (m) Riley⁽⁸¹⁾ credits these excerpts to a translation by W. E. Safford of the "Madrid" edition of Hernandez report, and published in two papers.^(86,87) If by "Madrid" Edition he means the original report in Spanish, and if in fact that report had been destroyed by fire as reported by Wildon⁽⁶⁵⁾ this would not have been possible, since the Safford's translations were not published until 1919 and 1920.
- (n) Logic suggests this questionable parent is *D. crocea*, an apparent early and unrecognized introduction of *D. coronata*.
- (o) Later a "blue dahlia has been much sought after. In 1846 the Caledonia Horticultural Society of Edinburgh, offered a prize of 2,000 pounds to the first person producing a blue dahlia.⁽¹⁰⁶⁾ That prize has never been claimed and may still be in effect. Until genetic engineering alters the present constitution of the species the goal remains beyond reach.
- (p) In that day as in most countries today, especially in the botanical community the word "stem" is used in the true botanical sense as a common name for the caulicle. ie. the primary above ground growth of a plant, not as used in the US when referring to the stalk (the portion between the flower and the first set of leaves.
- (q) Several of the early reports of peony type dahlias were in name only. The classification "Peony-flowered" dahlia first came into usage in 1921 when the Royal Horticultural Society issued its first official classification. In 1925 The American Dahlia Society officially accepted the R.H.S. classification as published in the April 1925 Bulletin Series VI. Nr. 32. The 1921 R.H.S. classification included three categories of "Paeony-flowered dahlias: ie. Paeony-flowered Dahlias; Small Paeony-flowered dahlias and Dwarf Paeony-flowered dahlias.
- (r) Over the years there has been considerable confusion between the Rosette dahlias and the Peony types. Heinrich Junge⁽³³⁾ discussing the Rosette dahlias described them as "intermediate between small Decoratives and Poms. When International Classification was accepted they disappeared into other classes as did many we up to then considered Poms. Many of them being called Peony (meaning type _ not class) because it was perhaps the nearest to the Rosette in form. Others were called Duplex. Consequently many of the early flowers called peony were such by default only. Norton still uses the old classification.
- (s) A background of the Mignon dahlias is difficult to develop. Much history of dahlias is obtained from historical records based on reports of committees to which new cultivars are submitted for evaluation. The early Mignons were raised purely for mass plantings in public parks in their home towns and there is no available records from such judging committees. This summary is based about equally on historical reports and correspondence with Mr. Dirk Eveleens Maarse over th last 30-35 years. Mr. Maarse is the long time proprietor of Firma D. Bruidegom and a dedicated historian of dahlias and growers. He is related by blood to the Topsvoorts and the Maarses and by marriage to the Bruidegoms.

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