# ARNOLDIA





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# FOLIAGE COLORS OF WOODY PLANTS APRIL TO SEPTEMBER

THE beauties of New England's autumn foliage have been fully described many times, which plants contribute most brilliantly to the display, and how this display differs from year to year, but little information is available about foliage colors of plants throughout the growing season. Nor is there much on record about colors of the early foliage as the leaves unfurl in the spring, how it changes from week to week, approximately when it comes and when it disappears. As a matter of fact, the bright colors of the early spring foliage are almost as beautiful as are the fall colors. All the data included in this paper were recorded in the Arboretum this year in connection with observations made weekly from April to October regarding foliage color changes. Such observations thus methodically recorded will be of considerable interest to the gardening public.

Many horticultural varieties of woody plants may present brilliantly colored foliage in the early spring, and such plants may have been given varietal names because of these characteristics. However, after a few weeks the foliage color gradually fades and by the end of June the leaves become a normal green. Such is the case with the common *Physocarpus opulifolius luteus*. On the other hand, some of the woody plants keep their foliage colors throughout the entire growing season, and such plants should be carefully noted. *Lonicera Korolkovii* is one example, and *Berberis Thunbergii atropurpurea* is another.

This is not in itself a plea for plants with colored or variegated foliage. Such plants are frequently entirely out of place in any landscape picture, simply because the foliage color is so pronounced that the shrub or tree itself is far too obvious and does not blend well with surrounding plantings. Because of their vari-colored foliage, some forms are actually deficient in chlorophyll and hence are sickly in growth and appearance, never developing into the good robust specimens we like to have in our gardens. Consequently, these color forms should be

used infrequently and only on special occasions where considerable thought has been given to their peculiar qualifications.

It should be noted that all the forms mentioned in this paper are in the Arboretum collection and that notes on their colors have been taken from observing the plants themselves, not from previously prepared lists. In recording these observations, it has been found that many plants bearing the varietal names of *lutea* or *aurescens*, etc., actually do not deserve such names since their color changes are so slight as to have no distinctive or ornamental value whatsoever. Sometimes only young plants will show variations in the foliage color and as they grow older, the foliage reverts to normal green. Such forms are not listed here.

Another point worth mentioning is the fact that when a plant is given a varietal name (either botanical or horticultural) because of its foliage color, for some reason the original plant may die or become "lost" and though the name itself may be carried in text after text, on the authority of the original record supported by herbarium material, it may be impossible to locate a living plant of the variety. From a perusal of various texts one will observe that many species have yellow leaved varieties, but it is extremely difficult to find the living plants of many of these. I reiterate that the plants here listed are actually growing in the Arnold Arboretum, and that the following color notes are based on observations made during the 1942 growing season. If certain named forms with known colored foliage are missing from this list, it means that they are either not in the Arboretum living collections or that their color variations were not sufficiently outstanding to attract attention.

# Early Foliage

The past spring was characterized by the relatively early appearance of the young foliage. Thus one willow tree, Salix alba vitellina, opposite the Administration Building in the Arboretum, is among the first trees to display its green foliage in the early spring. Frequently the buds are so far advanced that if a day or night with unusually warm temperature occurs at the right time, the tree will turn from an apparently inanimate object to a thing of living green almost over night. During the past three years the tree turned green over night on the following dates:—1940, May 1; 1941, April 15; 1942, April 6. From such data one can readily obtain an idea of the temperatures prevalent during the early spring. In 1940 the season was very late and in 1942 it was distinctly early. Consequently, actual dates of leaf appearance are not dependable from year to year for individual species, yet it is interesting to note the number of trees which come into early foliage together and which thus react regardless of whether the season is early or advanced.

The various colors of the young foliage of trees and shrubs are just as beautiful as are those in autumn foliage, only less vivid. Little attention is paid these early colors, possibly because they do not last very long, and also because so much that is interesting happens in the early spring when everything seems to be break-

However, I suggest that a study of the early spring colors next year will repay the effort to anyone interested in plants and plant life. The following forms all showed color prior to May 1, 1942, and most of them in this list gradually turned a normal green about June 1, after which little variation in their colors could be noted. Not all spring foliage colors are reported here for there are many trees and shrubs (the oaks for example) the foliage of which does not appear until mid May. These have not been recorded. Added to foliage colors are the hundreds of flower colors, the two combining to make the early spring so colorful. The Norway maple, for instance, is at first a clear yellow, not because of its foliage, but because the flowers appear before the leaves. Then as the flowers gradually fade, the green leaves appear and the general appearance of the tree changes from yellow to green. Such color changes are multiplied by the hundreds in spring. The following lists should prove helpful to all who wish to anticipate foliage colors in early spring:—

# DECIDUOUS WOODY PLANTS SHOWING THE FIRST FOLIAGE COLORS PRIOR TO APRIL 25, 1942

#### Green

Abelia biflora
Berberis amurensis
Berberis Dielsiana

Berberis Francisci-Ferdinandi

Berberis Gilgiana
Berberis koreana
Berberis notabilis
Berberis ottawensis
Berberis Purdomii
Berberis reticulata
Berberis Vernae

Cotoneaster divaricata Cotoneaster foveolata Cotoneaster lucida Deutzia glabrata

Euonymus europaea chrysophylla

Euonymus Maackii lanceolata

Euonymus macroptera Euonymus sachalinensis Euonymus sanguinea

Lonicera bella and varieties

Lonicera chrysantha

Lonicera notha

Lonicera Ruprechtiana and varieties

Lonicera tatarica latifolia Lonicera tatarica Leroyana

Lonicera Xylosteum

Malus robusta persicifolia

Prinsepia sinensis Prunus Padus sibirica Prunus Padus Spaethii

Pyrus ussuriensis Ribes, many species

Spiraea lucida

#### Yellow Green to Pale Green

Acanthopanax Sieboldianus

Acer campestre

Acer Mono Acer Negundo Acer palmatum heptalobum Aesculus Dupontii Hessei

Artemisia sacrorum

Malus robusta

Prunus Padus commutata Prunus Padus glauca Rhamnus Schneideri

Ribes alpinum Ribes luridum

Ribes odoratum

Rosa cinnamomea Salix alba vitellina Salix Matsudana

Salix rubra Tilia japonica

Tilia platyphyllos sphaerocarpa

# Dark Green

Chaenomeles japonica, most varieties Chaenomeles lagenaria, most varieties

Ribes divaricatum

Ribes grossularia uva-crispa

Ribes innominatum Ribes robustum

# Gray Green

Amelanchier asiatica Amelanchier canadensis Amelanchier sanguinea

Maackia Fauriei Prinsepia uniflora

#### Bronze to Reddish

Acer griseum

Acer platanoides Schwedleri

Acer rubrum

Amelanchier laevis

Berberis Thunbergii atropurpurea

Cercidiphyllum japonicum Corylopsis Veitchiana

Diervilla sessilifolia

Lonicera Maximowiczii sachalinensis

Maddenia hypoleuca Paeonia suffruticosa

Pyrus ussuriensis hondoensis

Rhus aromatica

Vaccinium angustifolium laevifolium

Viburnum cassinoides Viburnum fragrans

Viburnum Opulus nanum

# WOODY PLANTS WITH LEAVES VARIEGATED OR COLORED THROUGHOUT THE GREATER PART OF THE **GROWING SEASON OF 1942**

In the following lists are recorded those plants which have colored foliage (some color other than a medium or neutral green which makes the plant stand out from the surrounding background) throughout the growing season or a part of it. Plants appearing under a certain color heading have foliage of that color from the time the leaves first appear until the fall, unless another notation or date is indicated. "Normal by 7/6" means that the leaves of a particular plant have turned a normal green on or slightly before July 6, 1942. If no notes appear, the leaves remained colored throughout the season. Certain allowances must be made however, for the colors of the young foliage is considerably more brilliant than that of mature foliage. Thus in Berberis Thunbergii atropurpurea, the leaves of this plant first appear as a vivid scarlet and gradually fade to red. Some plants in the "bluegreen" list may border on the "gray-green" or "purple-green."

It may be well to cite another example of a plant with colored foliage to show how widely a plant may vary in foliage color. Kerria japonica picta normally has leaves with a light green leaf margin until July, after which time the leaf margin turns white. If a strong application of a nitrogenous fertilizer is given in June, the pale green margin may turn into a deeper green margin and remain so throughout the season. On the other hand, if the plant is grown in very poor soil, the margin may first appear white and remain white throughout the season. Another example is that of a golden-tipped form of Tsuga canadensis growing in Pennsylvania. It was noted by a bright-eyed nurseryman, and transplanted to his nearby nursery where the needles still had conspicuously golden tips. Then it was taken to "Far Country" or Hemlock Arboretum, the estate of Mr. Charles F. Jenkins, in Germantown, Philadelphia. Mr. Jenkins gave it every care including good soil, with plenty of nitrogenous matter. The tips turned a normal green and the tree could not be distinguished from any other specimen of Tsuga canadensis when I saw it last spring. A soil examination was made and the results show that the differences in the soil contents between Germantown and the original habitat of the tree may have been responsible for this change in color.

With these examples in mind, it can be readily understood that many plants may react differently under different conditions. The following notes record the foliage colors and their changes during the growing season of 1942 of all plants growing in the Arnold Arboretum with foliage any color except a normal green.

# NOTES ON DECIDUOUS PLANTS WITH LEAVES VARIEGATED OR COLORED THROUGHOUT THE SEASON, (OR PART OF IT) 1942

# Light Green

Acanthopanax Sieboldianus\* Acer japonicum Acer japonicum aconitifolium

dish bronze 7/31 — 10/10‡ Acer Mono

Acer Negundo pseudo-californicum\* Catalpa bignonioides aurea — normal

by 7/31 Larix decidua Ribes cereum\*

# Gray Green

Amorpha canescens

Andromeda glaucophylla

Andromeda Polifolia

Berberis dictyophylla

Elaeagnus angustifolia — gray

Elaeagnus umbellata

Hippophae rhamnoides

Lonicera Korolkovii — blue green

Lonicera microphylla — blue green

Lonicera praeflorens\*

Populus alba

Rosa Fedtschenkoana — normal by

8/18

Rosa rubrifolia — blue green

Rosa rubrosa "Carmenetta" \*

Salvia officinalis

Shepherdia argentea

Sibiraea laevigata

Zenobia pulverulenta

<sup>\*</sup> Foliage turns a normal green by 6/30

This plant had light green foliage until approximately 7/31 when the foliage turned a reddish bronze and remained that color for the rest of the season.

#### Yellow to Yellow Green

Acer japonicum aureum — normal by 7/31

Acer Negundo auratum — beautiful golden 4/22 - 7/12, changing from bright yellow on 7/6 to greenish by 7/31, normal by 8/18

Cornus alba Rosenthalii — turning purplish red 9/5

Fagus sylvatica Zlatia — leaves yellow when young, normal by 7/12

Hypericum Dawsonianum — yellow green

Lespedeza kiusiana — yellow green

Ligustrum Ibota vicaryi\*—only young leaves yellow by 6/30

Lonicera japonica aureo-reticulata — yellow leaves spotted green

Philadelphus coronarius aureus — yellow green; greenish by 8/18; green 9/5

Physocarpus opulifolius luteus — brilliant yellow 4/27; yellow green 6/10-7/5 (not outstanding); normal by 7/31

Pleioblastus distichus — foliage with leaves of varying stripes of green from yellow to dark green

Ptelea trifoliata aurea — young foliage yellow; mature foliage yellowish green; not outstanding

Pterostyrax corymbosa — yellow green

Stephanandra incisa — leaves vary from yellow green to dark green

Syringa vulgaris aucubaefolia — variegated yellow

Viburnum Opulus aureum — golden yellow 4/29; yellow green 6/10 — 9/5

Viburnum Sargenti flavum — young leaves yellow green

Weigela praecox variegata\* — variegated, dark green center, light green edge

Yucca filamentosa variegata — leaves yellow and green stripes

# Red to Reddish Purple

Acer palmatum atropurpureum

Acer palmatum atropurpureum "Oshi Beni" — normal by 6/30

Acer palmatum crispum — normal by 8/18

Acer palmatum Hessei

Acer palmatum ornatum — eventually turning bronze green

Acer palmatum sanguineum — turning from a deep red to a bronze

Acer palmatum versicolor — 5/12 — 6/8 normal by 6/30 with some foliage a "yellowish pink"

Acer platanoides Schwedleri — bronze 5/22 — 6/30; dark green 7/31 — 9/5

Acer platanoides Stollii\*

Acer Pseudo-platanus purpureum — bronze green

Aesculus carnea\* — light\_bronze

Berberis Thunbergii atropurpurea

Berberis vulgaris atropurpurea — deep purple 4/24; reddish purple 5/22-7/31; almost normal by 8/18

Malus "Arrow"—early foliage a good bronze 5/22; changed to a distinct reddish green by 6/8; turns more green but also has a slight reddish hue until leaf fall

Prunus blireiana Moseri — red to reddish purple

Prunus blireiana "Newport" — dark bronze 5/22 - 6/10; red 7/31; reddish purple 8/18 - 9/5

Prunus cerasifera applebiana — reddish purple

Prunus cerasifera atropur<br/>purea — dark red 5/22 — 6/10 ; reddish purple 7/31 — 9/5

Prunus cerasifera nigra — dark bronze 5/22 — 6/30; reddish purple 8/18 — 9/5

Prunus cerasifera Woodii — dark red 4/22 - 6/10; purplish red 7/31 - 9/5

Prunus glandulosa rosea — red leaves streaked with some green

Prunus Persica atropurpurea — shining red, excellent 5/27 - 7/31: reddish purple 8/18 - 9/12

Prunus spinosa purpurea — dark bronze 6/10; reddish purple 7/31 — 9/12

Prunus "Vesuvius" — dark red 5/22 - 7/31; reddish purple 8/18 - 9/5

Weigela florida foliis-purpureis — purplish green

Weigela Maximowiczii — 50% of leaves red or reddish, remainder green

#### Bronze

Acer palmatum\*—deep bronze 5/6; light bronze 5/22; green with slight reddish tinge 6/10

Acer palmatum dissectum — bronze green

Cotinus Coggygria purpurea — normal by 7/31

Fagus sylvatica — normal by 7/12

Rosa rubrifolia glaucescens\*

Viburnum Opulus nanum\* — bronze to bronze green

#### Purple

Acer platanoides rubrum — purplish red above, green below

Corylus maxima purpurea — mixed light and dark bronze by 6/10, old foliage normal by 7/31

Fagus sylvatica atropunicea — purplish green by 7/31

Note:—There are a number of forms of the purple beech, with varying intensities of foliage color. The lasting qualities also vary, possibly due to soil variations, some trees remaining with a purple foliage throughout

the season. Unfortunately, none of these forms are growing in the Arboretum.

Fagus sylvatica purpureo-pendula — purplish green by 7/31

# Green with White Margin

Acanthopanax Sieboldianus variegatus — some green in leaves but mostly white and yellow 7/6; leaves pale yellow blotched with green 8/18 - 9/12

Acer Negundo "crispum variegatum"

Acer Negundo elegans — yellowish edge 5/22 — 6/10; white margin 7/31—9/5

Acer platanoides Drummondi — yellowish margin 8/18 — 9/12

Buxus sempervirens albo-marginata

Cornus alba argenteo-marginata

Cornus alba Gouchaultii — margins blotched white 6/22-6/30; blotched pink and white 7/31-9/12

Cornus alternifolia argentea — white margin with some pink

Cornus florida Welchi — white margin with some rose pink blotching

Euonymus Fortunei gracilis

Euonymus Fortunei "Silver Queen"

Kerria japonica picta — light green margin until 6/30; white margin 7/31-10/28

# Green with Yellow Margin

Acer Negundo aureo-variegatum

Cornus alba Spaethii — leaf margin blotched

Cornus mas elegantissima — 6/8 — 9/5 pink in yellow margin, leaves look sickly Ginkgo biloba Ridgelandii

Ligustrum ovalifolium aureo-marginatum

Weigela florida variegata — margin yellow green

# Green with Red or Pink Margin

Acer palmata roseo-marginatum

# Variegated

Berberis Thunbergii argenteo-variegata — 25% of leaves variegated white and pink Lonicera tatarica Fenzlii — light and dark green variegated mottled 5/22-6/10, inconspicuous thereafter

Magnolia tripetala variegata — 10% leaves are variegated with yellow 5/22-9/5 Prunus cerasifera Hessei — leaf margins pink, yellow, white 7/6-9/12 (looks sickly)

Quercus robur argenteo-picta — some leaves are white and white spotted

40 Japanese Maple clons — various shades of red and green, not listed here because of similarity or questionable names, mostly showing various shades of red but a normal green by 7/31

## **EVERGREEN FOLIAGE COLOR**

# Light Green

Chamaecyparis Lawsoniana "erecta alba" leaf tips light green, normal by 8/18 Chamaecyparis thyoides Hoveyi — very light green, normal by 7/31 Taxus baccata variegata — young foliage yellow-green, leaves with light green center and yellow margin; older leaves normal green

# **Gray Green**

Chamaecyparis pisifera squarrosa — gray green to blue green Cryptomeria japonica — young leaves gray green Picea glauca — gray green to bluish green Picea mariana Doumetii

# Yellow

Chamaecyparis obtusa aurea
Chamaecyparis obtusa "gracilis aurea"
Juniperus chinensis "japonica aureo-variegata"
Taxus cuspidata aurescens
Thuja occidentalis conspicua
Thuja occidentalis Ellwangeriana
Thuja orientalis decussata

## Yellow Green

Abies nephrolepis — normal by 7/6 Chamaecyparis nootkatensis lutea Chamaecyparis pisifera aurea — normal by 7/6 Chamaecyparis pisifera "filifera aurea" -- normal by 7/6 Chamaecyparis pisifera "lutescens nana" -- normal by 7/6 Chamaecyparis pisifera "nana aurea" Chamaecyparis pisifera plumosa Chamaecyparis pisifera "plumosa aureo-compacta" Chamaecyparis pisifera "plumosa argentea" Chamaecyparis pisifera "plumosa flavescens" Juniperus chinensis aurea Juniperus chinensis "Pfitzeriana aurea" — normal by 7/6? Juniperus chinensis "plumosa aurea" Juniperus communis "aurea spica" — normal by 7/6 Juniperus communis "depressa aurea" - normal by 7/6 Picea Abies aurea — normal by 7/6 Picea glauca aurea — normal by 7/6 Pinus pumila — normal by 7/6 Taxus baccata aurea — normal by 7/6 Taxus canadensis aurea — young foliage tips yellowish green Thuja occidentalis aurea — normal by 7/6

Thuja occidentalis lutea

Thuja occidentalis pulcherrima — normal by 7/6 Thuja occidentalis "robusta lutea"

Thuja occidentalis "Waxen"

Thuja orientalis conspicua — young foliage yellowish green

# Blue Green

Abies Fraseri prostrata

Abies lasiocarpa

Abies Vilmorinii

Chamaecyparis Lawsoniana "robusta glauca"

Chamaecyparis nootkatensis

Chamaecyparis pisifera minima

Chamaecyparis pisifera "squarrosa intermedia"

Chamaecyparis pisifera "squarrosa

Chamaecyparis thyoides glauca

Juniperus chinensis oblonga

Juniperus chinensis Reevesi

Juniperus chinensis sylvestris

Juniperus communis

Juniperus glaucescens

Juniperus recurva

Juniperus Sabina prostrata

Juniperus scopulorum

Juniperus scopulorum "Cologreen"

Juniperus scopulorum glauca

Abies amabilis

Abies concolor — from light blue to blue green varying on different trees

Abies concolor violacea - young foli-

age blue

Abies lasiocarpa arizonica

Abies lasiocarpa compacta

Chamaecyparis obtusa ericoides

Chamaecyparis pisifera "squarrosa

pygmaea" - light blue 7/31

Juniperus chinensis "densa glauca"

Juniperus communis echinaeformis

Juniperus scopulorum columnaris

Juniperus scopulorum Gareei

Juniperus seravshanica

Juniperus squamata

Juniperus squamata Meyeri

Juniperus turkestanica

Juniperus virginiana Burki

Juniperus virginiana glauca

Juniperus virginiana McCabei

Juniperus virginiana reptans

Picea bicolor

Picea Glehnii

Picea montigena

Picea pungens

Picea pungens globosa

Pinus flexilis reflexa

Pinus monticola

Pinus parviflora

Pinus sylvestris

Pinus sylvestris fastigiata

Pinus sylvestris lapponica

Pinus sylvestris Watereri

Pseudotguga taxifolia — varies from

green to blue green

#### Blue

Juniperus scopulorum "Hill's Silver"

Juniperus scopulorum "Marshall"

Juniperus scopulorum "Marshall

Silver"

Juniperus scopulorum "Medora"

Juniperus scopulorum "Moonlight"

Juniperus virginiana "glauca Hetzi"

Juniperus virginiana pseudo-cupressus

Juniperus virginiana venusta

Picea Engelmanni

Picea pungens argentea

Picea pungens Kosteriana

Picea pungens Moerheimi

#### Leaves Whitish Underneath

(giving a gravish appearance at a distance)

Abies alba pyramidalis Picea jezoensis hondoensis

Abies homolepis Picea notha
Abies homolepis umbellata Picea Omorika

Abies Veitchii olivacea Pinus parviflora glauca

Picea Abies elegans

# Variegated

Taxus baccata "fastigiata aurea" - margin of leaves yellow

# EARLY COLORED AUTUMN FOLIAGE

Lists have already been published in a previous issue of the Bulletin of Popular Information, Series 4, Vol. IV, No. 14, 1936, of trees and shrubs which have specific autumn colors. No mention was made of those species which may be listed as turning color early in the fall; that is, actually the first to take on autumn coloration in the Arnold Arboretum. The following list shows those plants which began to turn color prior to September 1, 1942. This is very early, especially when it is understood that autumn color was not predominantly evident in the Arboretum until about October 7, and did not reach its peak until about October 14 this year. However, there are always plants which can be expected to change color early or at least begin to change color before the majority of other plants, as indicated by the following list. It should be noted that the season, the situation in which a plant is growing, the amount of rainfall and its seasonal distribution, all combine to determine the actual dates on which fall color first is evident and these dates vary from year to year. The following species are always the first to start the color procession.

# WOODY PLANTS SHOWING THE FIRST AUTUMN COLOR (ON OR PRIOR TO SEPTEMBER 1, 1942)

Abeliophyllum distichum — yellow green

Acanthopanax sessiliflorus — yellow green

Acer rubrum — few turning red

Acer rubrum Schlesingeri—turning red (holding its leaves fully colored until 10/1)

Aronia species and varieties - turning red and yellow

Berberis amurensis — turning deep red

Berberis Bretschneideri — 25% turning bright red

Berberis dasystachya — turning to red

Berberis Francisci-Ferdinandi — bronze green

Berberis Purdomii — turning deep reddish purple

Berberis Thunbergii — yellows and reds starting to appear

Berberis Thunbergii Maximowiczii — turning bronze

Callicarpa dichotoma — yellow green with little purple

Carpinus laxiflora -- young leaves turning red

Cercidiphyllum japonicum—few turning color, some leaves yellow and some bronze

Cornus alba — turning reddish purple

Cornus Amomum — turning bronze red

Cornus florida — few trees showing much red fall coloring (probably due to location and soil conditions)

Dirca palustris — turning yellow green

Euonymus alata — turning red

Euonymus Bungeana — trees vary — some turning yellow and others turning red

Euonymus europaea — turning reddish

Euonymus oxyphylla — turning red

Euonymus sachalinensis — many leaves turning red

Euonymus sanguinea — deep bronze

Hydrangea Bretschneideri glabrescens — turning yellow and brown and dropping

Lindera Benzoin — turning yellow green

Parthenocissus quinquefolia — few leaves turning red

Phellodendron amurense — few trees already turned bright yellow

Physocarpus bracteatus — 50% turning brown with a little red

Prinsepia sinensis — 25% turning bright yellow

Prunus Padus commutata — 50% bright red and dropping

Rhododendron yedoense poukhanense — few plants with leaves turning bronze red

Ribes aureum — starting to turn red

Ribes odoratum aurantiacum — 75% now deep red

Ribes odoratum praecox 50% of leaves bright red

Rosa carolina glandulosa — turning dark red

Rosa Roxburghii and varieties — turning bronze

Rosa setigera serena — turning bronze red

Securinega suffruticosa — turning yellow and dropping

Spiraea alba — turning yellow brown

Spiraea salicifolia — turning bronze

Stewartia ovata grandiflora — turning brown and purple

Tilia euchlora — 50% yellow

Vaccinium angustifolium laevifolium — bronze green and red

Vaccinium canadense — bronze green and red

Vaccinium corymbosum glabrum — turning red

Vaccinium Oldhamii — turning deep red

Vaccinium tomentosum rotundifolium — 50% of leaves dark red and green

DONALD WYMAN



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