

American
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American

Horticulturist

Volume 55 Number 1 February, 1976

For United Horticulture . . . the particular objects and business of The American Horticultural Society are to promote and encourage national interest in scientific research and education in horticulture in all of its branches.

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Murray Keene
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O. KEISTER EVANS, Executive Director

MURRAY KEENE, Editor
JANE STEFFEY, Editorial Assistant
DONALD WYMAN, Horticultural Consultant
ALEX BERRY, Art Director

The American Horticultural Society, Publisher
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703/768-5700

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OUR COVER PHOTO by Guy Burgess. Yellow crocus—its' pollen is the source of saffron.

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The Vanishing Line Between Conservation and Horticulture

This issue of the *American Horticulturist* begins America's Bicentennial year. This anniversary of 200 years of achievement (and disappointment) comes at a time when major forces are reshaping the traditional priorities of how we treasure the natural resources of our land. Twenty decades ago, most of the basic blocks for living were within a short walk of our Colonial forebearer's homesites. Trees, shrubs and grasses were cleared for crops and game was abundant, but each new season forced us to extend our living spaces and cultivated land. Not all land was suitable, however. The marsh and wetlands were by-passed for the flatlands and rolling countryside. The hills and river-cut gorges were left as natural property dividers. Just like a life-sustaining culture in a petri plate, our people covered the continent from coast to coast. Still pockets of non-arable land were left almost untouched. These areas abounded with natural flora and fauna that were badly affected by human encroachment. The concept of conservation—the creation of preserves and national parks—was not even embryonic during this period.

Even today, many areas of natural beauty still evade the protective mantle of a federal, state, or private preserve.

Yet, each morning our newspaper brings us stories of the threat of a loss of another area of natural beauty. We have seen the development of countless groups who seek through funding, lobbying, and "education" to prevent or delay the disappearance of these isolated areas of natural beauty. The battle is expanding daily as new areas become vulnerable to development and/or the ravages of pollution.

Will there ever be a time when the conservationist can feel that the losses of natural beauty can be held in check? Will we ever stabilize our life-giving lands to create a positive balance sheet of energy, space, food, industrial necessity, environmental quality, and aesthetics?

This cannot be accomplished simply by preserving

millions of acres of land. Whether we like it or not, we must expect these areas to change. The outpouring from our cities and industries, the spills from our cultivated lands will flow, drift, permeate and pollute all lands in time. We must take the steps to identify the eroding and contaminating factors and seek ways to stop them.

Conservation must also go beyond the doomsday babblings of the voices of despair. Negativism has never been part of the American heritage.

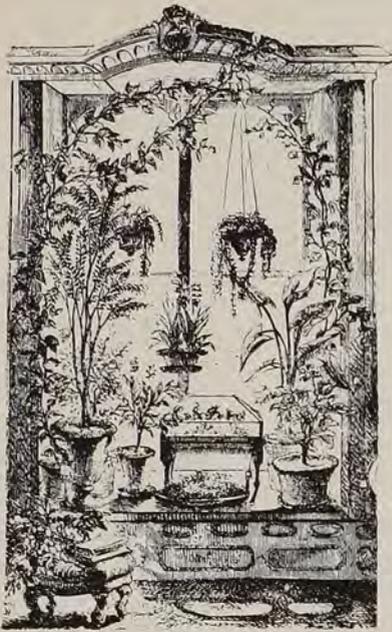
Conservation in its old sense emphasized maintenance. We now must broaden our endeavors to include renewing our resources. Horticulturists can help. We have always dealt with the renewal practices for plants.

Horticulturists already know how to breed, select, propagate, grow, transplant, install, train and maintain thousands of plant species. Unfortunately, we have really lavished our attention on a very limited number. The rose, the chrysanthemum, and the potato (as examples) have had hundreds of years of pampering and development. We must bring our skills to here-to-fore neglected plants. Many of our native American plants, which fill our meadows, gorges, and hill spaces, need re-emphasis as we strive to re-stock these areas.

I am most encouraged that our recent horticultural sessions in Hawaii presented new information on the germination requirements for several native plants. We must expand these activities to the hundreds of endangered native plants. As gardeners, we can and must use our skills to help repopulate vanishing floras.

Horticulturists are beginning to erase the lines between themselves and conservationists. Our tasks have only begun, for we must learn how to communicate what we know. The American Horticultural Society is dedicated to this education and communication. It awaits every member contributing his part, I hope you seek your ways to serve.

Henry M. Cathey
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PETER HENDERSON

Bringing the dark into daylight

By

*Edythe Henderson Scripps
and Dolly Maw*

A tall, erect man with piercing grey eyes and the mien of a statesman, this was Peter Henderson. His distinguished appearance seemed to call for a diplomatic attache case in his hand, but actually he was more at home with a shovel.

Men highly distinguished for botanical research termed him "The Great Horticultural Missionary". Others lauded him for "Bringing the dark, selfish and ignorant methods of the old School of Horticulture into daylight".

It all began in Pathead, a village twelve miles south of Edinburgh, Scotland, when Peter was born to Agnes and James Henderson, on June 9th, 1822. His father was a land steward, his maternal grandfather, Peter Gilchrist, a shepherd and later a nurseryman and florist. Young Peter took advantage of his grandfather's library and became an avid reader. At 15, he went to Edinburgh and found work in a liquor store. The sordid scenes he saw there made him give up his position in a few months and started his life-long temperance leanings. Returning to the country, he apprenticed in the gardens of Melville Castle. Competing in a competition open to all of Great Britain, he won a medal offered by the Royal Botanical Society for the best herbarium of native and exotic plants.

Arriving in New York in 1843 with but three sovereigns in his pocket, he set out hopefully to obtain employment. His first interview ended in such a rebuff it made a profound impression on him. He determined never to inflict such rudeness on others, if and when he had any authority. Future applicants always received courteous treatment throughout his lifetime and he diligently answered every request made of him.

His first positions in the United States were in the nurseries of George Thorburn at Astoria, Long Island and Robert Buist, Sr. at Philadelphia, one of the leading nurserymen and florists in the country.

Later he became a private gardener with Mr. Charles F. Spang of Pittsburgh and after accumulating a capital of \$500, started a market garden business in Jersey City with his brother James as partner. The partnership was dissolved after several years, with James concentrating on vegetable gardening solely, while Peter broadened his work into the ornamental fields.

In 1853 he opened an office in New York with McIlvain

& Orr, later known as McIlvain & Young, taking orders for greenhouse and vegetable plants and conducting an auction of small lots of plants.

Peter Henderson was a daybreak to dark worker. Conditions were far different from what they are today. For instance, the wooden tallies or labels were all laboriously made by hand in the 1850's.

Jealous of wasting time, Mr. Henderson paid a waiter in the restaurant he frequented, to watch for his coming and as soon as his face appeared in the doorway, his dinner would be on the table. He begrudged any time, however necessary, away from his dedicated profession.

In 1864 he erected a model range of greenhouses, heated and ventilated in an extremely efficient manner. He became an authority on the glass greenhouses of that day and helped novices in the business. His greenhouse diagrams showed him to be a competent draftsman and architect with a working knowledge of engineering. His ambition was to raise the florist business to the level of other mercantile pursuits.

Although Peter Henderson protested that he was "more at home handling a spade than a pen" he was a prolific writer, not only in personal correspondence, but as a published author. Hovey's Magazine, published in Boston, printed his first article which was on the transplanting of large trees. Other articles, primarily on vegetable culture but later on ornamental horticulture, appeared regularly in *The Horticulturist*, *The Gardener's Monthly*, *Rural New-Yorker* and *Country Gentleman*.

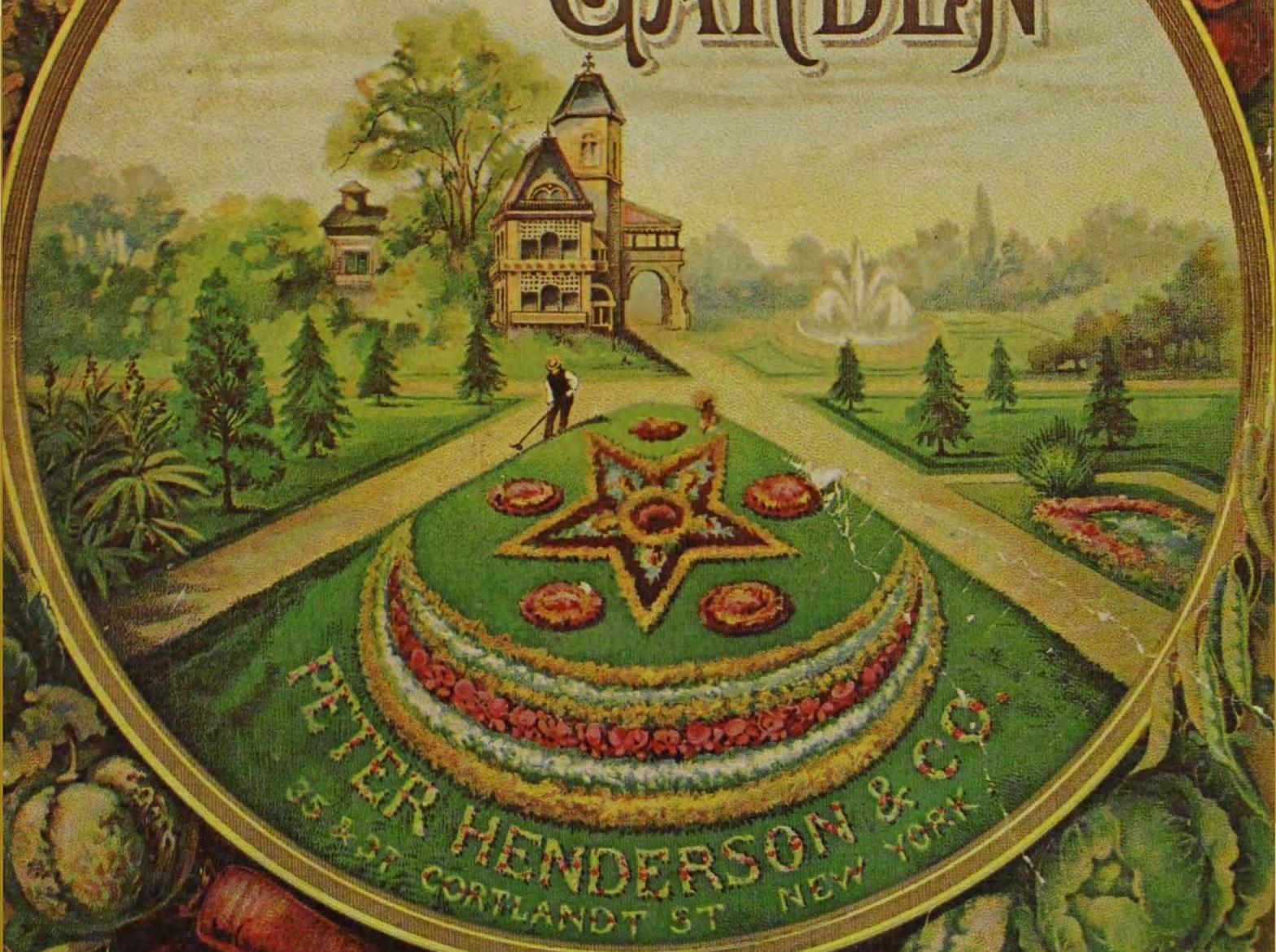
There was nothing of the selfish researcher in Peter Henderson. He believed in sharing his finds, stating, "I consider that man particularly unfortunate who asks a patent for what he thinks to be a discovery in horticulture, for there is a free masonry about the craft which begets a generous exchange of information, and he that holds a 'secret' to himself or intrenches his 'discovery' behind a patent right is not usually benefitted thereby".

His first book, entitled, "Gardening For Profit", was published in the summer of 1866. His usual work day consisted of sixteen hours of active labor which would have depleted the energies of an ordinary man but Peter Henderson had the dedication and drive to devote his late evening hours to his writing. His first book had a great

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Above and opposite page—Late 19th Century magazine advertisements for the Peter Henderson Co.

influence on the market-gardening and trucking interests of the country.

In 1868, "Practical Floriculture" was published. This book showed how flowers and plants could best be grown for profit. It did for aesthetic gardening what his first book did for material horticulture. Next came "Gardening for Pleasure" in 1875, written for the private gardener and giving guide lines for the propagation and culture of flowers, vegetables and fruits.

As an essayist, Peter Henderson showed his most delightful literary form. He tempered his scientific observations with a keen and whimsical sense of humor. These writings were published in 1884 under the title, "Garden and Farm Topics".

His fifth and most pretentious work was "Henderson's Hand Book of Plants", published in 1881. It was a large tome definitely encyclopedic in character with over 400 pages giving botanical classification, methods of propagation and culture of both useful and ornamental plants. This book met with excellent reception, but perfectionist that he was, he re-wrote and enlarged it in 1889, reading the last proofs just a month before his death.

In collaboration with William Grozier, a successful farmer of the time, he produced a book, "How The Farm Pays" in 1884. He was not only a constant contributor to a score of magazines right up until the time of his death, but he was so highly esteemed that he was offered the chief editorship of "Tilton's Journal of Horticulture" at an impressive salary for the year 1869.

Peter Henderson was a crusader. Being a scrupulously honest person, he had little sympathy for the charlatans of the horticulture business. He exposed them in newspapers and magazines and was exceptionally strong in his denunciations. He brought out the fact that otherwise intelligent men and women, successful in various professions and exceptionally acute in recognizing frauds, were gullible enough to believe the roseate promises of the flower pitchmen. He wrote, "In the springtime, when his garden instincts begin to bud and he sees in some window on Broadway flaming representations of fruits and flowers, he falls into the trap and is ready for the spoiler."

He deplored the swindling practiced in the fertilizer business: the packaging of ordinary fertilizer in containers with claims of specialization. One such vendor came to his office with an impressively canned fertilizer that he claimed had the wonderful properties of invigorating and stimulating all planted crops and at the same time would kill all noxious weeds. Henderson graphically compared the claim in an article, "If he had said he had a cannon from which, when grape shot was fired into a crowd, it killed only enemies—never friends—the one claim would have been as reasonable as the other."

Peter Henderson had the type of true genius that upsets all settled ideas. He was continually analyzing and testing, never taking anything for granted and often becoming a controversial figure by challenging theories. He took

issue with Charles Darwin's statement that certain plants such as the Drosera or Sundew and our Carolina Fly-Trap are fed by the insects which their wonderful structure enables them to catch. He made a thorough and exhaustive experiment in his greenhouses with 400 Fly Trap plants. The result was that the most careful comparison failed to show the slightest difference between those fed with insects and those that were not so fed. He also disputed Darwin's theory of "Graft-Hybrids" and published his views in a paper he read before the New York Horticultural Society in 1881, entitled "Popular Errors and Scientific Dogmas in Horticulture."

His questing mind overlooked no small detail. He was continually comparing methods and results. In Cleveland, Ohio, in June of 1880, he read a paper before the annual meeting of the National Association of Nurserymen, Florists and Seedsmen, on "The Use of The Feet In Sowing and Planting." He humbly started out saying that perhaps such a knowledgeable audience would know the importance of the use of the feet but candidly admitted that, although he had been engaged in gardening operations for over a quarter of a century, he did not fully realize until a few years ago, the full importance of how indispensable it is to use the feet in the operations of sowing and planting. He pointed out that the loss to the agricultural and horticultural community, from the habit of loosely sowing seeds or planting plants in hot and dry soils, is of a magnitude which few will believe until they have witnessed it. A loss he deeply regretted for the practice of "firming" was an almost certain preventive and easily achieved.

As an experiment, he had sowed twelve rows of sweet corn and twelve rows of beets, treading in, after sowing, every alternate row of each. In both cases those trod in came up in four days, while those unfirmed remained twelve days before starting, and would not then have germinated had it not rained. He added an important caution, not to tread or roll in seed if the ground is not dry.

His scientific interest pendulum swung in a wide arc from the highly technical to the simple and practical.

Ordinarily, a man of Peter Henderson's philosophical and literary talent would not have been a good merchant. He was the rare exception, innovating sales ideas, creating advertising and promotions that the advertising hierarchy of today might well envy. He was the first one to use full color in his catalogs and advertisements. Their dramatic impact on the public was tremendous. Henderson catalogs became the Bible of the gardening world, respected for their beauty and validity. In 1872, he offered the idea of procuring *all* gardening supplies from one firm. His slogan was "Everything For The Garden" from seeds to lawn mowers and tools.

He was the first man in the country to initiate the true and natural way of proving the vitality of seeds—by sowing them in the soil. Seedmen's former plan was to germinate them in moist cotton or flannel which was a mislead-

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Peter Henderson

Fac-simile of Mr. Henderson's last signature.

ing method.

Many of the household words used today, such as Golden Bantam Corn and Country Gentleman Corn, came from the Henderson experiments. During his career, he introduced many novelties that have become standard varieties.

Feeling that most lawn mowers were too heavy and cumbersome, Peter Henderson tapped his engineering genius to develop the lightest and easiest running mower possible. It was called, "The Henderson Featherweight Lawn Mower" and received enthusiastic acceptance.

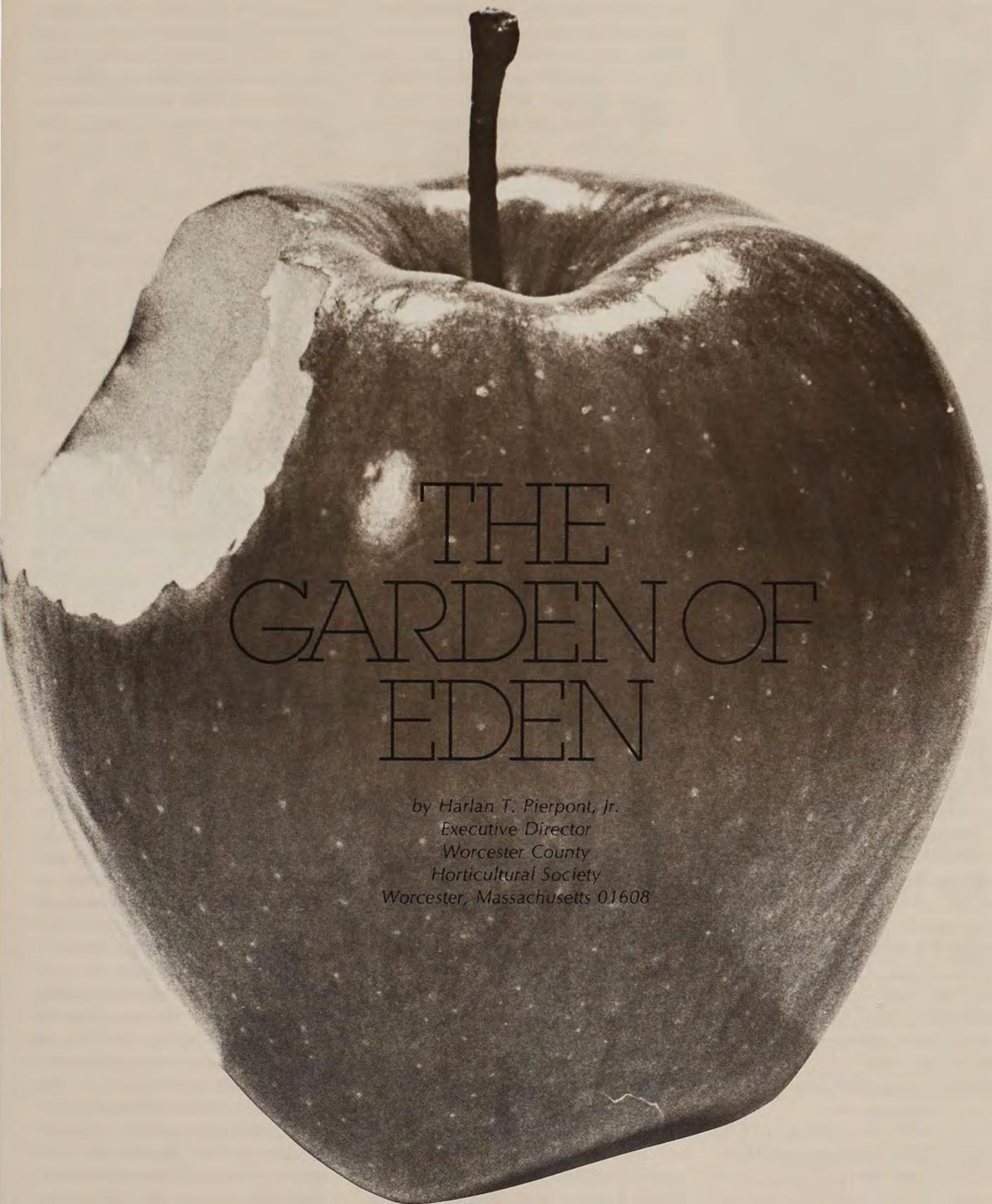
He was the rare type of practical dreamer who visualized the ultimate in garden beauty and then proceeded to offer every possible aid to the achievement of it.

The advent of a new Henderson catalog was a stellar event, eagerly anticipated by estate owners, small farmers and anyone with a miniscule plot of ground. Every one of the 200 or more pages was studied, consulted and followed as *the* definitive advice on the subject. Catalog cultists today treasure them as collector's items and they still have the power to make the reader want to dig his hands into the soil (even if only a window box in a condominium) and bring forth some of the promised magic and beauty.

Because of his temperate, no drinking, no smoking life, Peter Henderson was extremely healthy. His single illness was an attack of pleurisy in 1875. A bout with pneumonia in January, 1890, made him take to his bed briefly. Even then, he took time to pencil a reply to the editor of the Florida Dispatch regarding the famous "American Beauty" rose, questioning whether it was really of American origin. His reply stated the circumstances under which the rose was found and that the variety was really an old French rose, "Madame Ferdinand Jamain". Even in illness, the life-long habit of answering every query sent to him, and moreover answering in his personal longhand, persisted. His correspondence was voluminous. In the last twenty-five years of his life, he received letters of thanks from more than seventy thousand people. In today's ecology conscious world he should receive new recognition for his zeal in obtaining the best possible from the soil, both in material sustenance via food and aesthetic enrichment via floral beauty.

The measure of the man was aptly stated in one eulogy published in the Phrenological Journal, "If he had been trained to engineering in its broadest sense, literature in connection with science, law in connection with ethics, he would have been a strong man."

Perhaps his contribution to mankind is best summed up by this quote from Jonathan Swift (1667-1743) Voyage to Brobdingnag, Chap. VII, Part II. "And he gave it for his opinion, that whoever could make two ears of corn, or two blades of grass, to grow upon a spot of ground where only one grew before, would deserve better of mankind, and do more essential service to his country, than the whole race of politicians put together."



THE GARDEN OF EDEN

*by Harlan T. Pierpont, Jr.
Executive Director
Worcester County
Horticultural Society
Worcester, Massachusetts 01608*



Ever since Eve seduced Adam, the apple has been important in the lives of men and women. History tells us the apple was first found in Persia—known as the fruit of love—and is said to have caused the fall of Troy. During the Roman civilization it was important, cultivated and taken by the Romans to England. Many years later, seeds were brought to the New World by the early settlers where the only native apples growing were small crab apples.

Probably a majority came from England with the Pilgrims, but we do know the French in Canada brought apples with them too, such as "Lady" or "Fameuse". One of my own favorite apples—the best early one for a delicious pie, is the Gravenstein which originated in Germany, and who can forget the Red Astrachan brought to this country from Russia? The first apple we have record of growing in the colonies was the Roxbury Russet in 1649—which is said to have made the finest cider. To the colonists the apple was a mainstay of their existence. Besides being eaten fresh or cooked, apples produced cider and from this, vinegar, so necessary to the old farm for preserving and pickling. Apples do not come true from seed, however, so consequently in a few years hundreds of varieties were producing fruit in the colonies—sweet, sour, large and small, early or late—some good keepers and some poor.

Thus, one day by chance, in 1870, on the Canadian farm of a Mr. McIntosh was discovered that superb seedling—with dark red skin and

white flesh—a favorite today of many—the McIntosh. Another old and important apple was the Baldwin or Woodpecker, one of the best keepers or winter apples. Before the days of modern fruit preservation, a good husbandman needed early apples—as well as those that would keep well through the long New England winter.

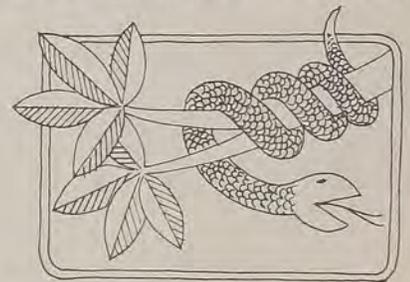
Soon after 1740, the Baldwin came up as a chance seedling on the farm of John Ball in Wilmington, Mass. It was cultivated and enjoyed locally. Some years later the farm was sold to the Butters family and because woodpeckers liked to frequent the tree, the fruit became known as Butters, Woodpecker or just Pecker. About 1780, the Middlesex canal was being constructed under the direction of a Colonel Baldwin who became aware of this fine apple which he propagated and promoted so that it was eventually given his name. It is said that during the late 19th century it was the country's single most important apple for export. In one season, fifteen hundred barrels were exported to India alone! Forty per-cent of all apples grown were Baldwin! But, it had a serious weakness causing its eventual demise. It only bore fruit every other year. However, so that we will not forget this apple, so important as a winter keeper before the days of artificial refrigeration, a granite monument to the Baldwin was erected in Wilmington, Massachusetts.

This brings me to another tale—that I must recount of how the whole apple and fruit industry of the west coast started. Henderson Luelling, born April 25, 1809 in Salem, North Carolina, moved as a boy with his family to Ohio founding a town called Salem. They soon moved into Indiana and then Iowa in towns they named Salem. From his nursery there, we find him in 1847 planting an assortment of apples, peaches, pears, plums, cherries and other fruit in two specially built wagons which contained special moisture-retaining soil. We are told the two wagons

were filled with about 700 trees.

"On a spring day, in Salem, Iowa on April 17, 1847, Henderson Luelling, his first wife and eight children, started the traveling nursery toward the Oregon Territory. On May 17th they crossed the Missouri River. All summer the family and nursery wagons traveled westward. Many times throughout the summer the trees' need for water came before human needs. What a sacrifice this family made in helping to settle the West! And while crossing the Bear River in Southeastern Idaho, one wagon and all of its contents was lost—one half of his total nursery stock. It has never been known whether the varieties of nursery stock had been equally divided in to two wagons in case of such an accident or not. At least Henderson never confided to others on this subject.

When nearing the mountains of eastern Oregon, some miles away from the Whitman Mission, Dr. Whitman sent a scout to meet them, to advise Henderson that it would be prudent to stop and locate his family and the nursery stock in the Grande



Ronde Valley of eastern Oregon, because the Indians near Walla Walla, Washington were getting hostile toward the settlers. But Henderson's mind had been made up many miles back and much time ago, and plans were to continue on to the Willamette Valley. And so, in September of 1847, just two months before the Whitman Massacre, the Luelling Family and nursery wagons arrived at the Whitman Mission.

Soon thereafter, the nursery, livestock and family arrived at Dalles, Oregon, on the Columbia River. All possessions and the family then, were rafted down river to Fort Van-

couver, arriving on November 17, 1847. After about a month's stay, the Luellings moved over to Portland, Oregon, then a small town upon the banks of the Willamette River. The nursery stock was heeled in the ground, in December, for the winter months.

Almost immediately, Henderson went about locating property, purchasing a Land Claim, where the present Waverly Country Club, near Milwaukie, Oregon is situated. A close friend and previous traveler, William Meek, had brought some fruit seed with him. With Henderson buying the Land Claim on the banks of the Willamette River and William Meek buying an adjacent Land Claim, a firm was established called "Luelling and Meek" Nurseries.

Thus in the spring of 1848, on the Land Claims of "Luelling and Meek", was established the first nursery and orchards, of the commercial fruit varieties, then recommended by the newly formed "American Pomological Society", upon the Pacific Coast.

It took just one year after the start of the nursery stock from Salem, Iowa to Milwaukie, Oregon, until the Luellings had their nursery stock in the ground, over 2000 miles from start to finish. How near it came to failure is here revealed. "The Family had been under the Indians' watchful eyes when passing through the Blue Mountains of Eastern Oregon. And as told by a Christian Indian, in later years, the Indians had watched the strange moving trees and thought them to be protected by the Great Spirit, and so the family had not been attacked."

It was said by R. C. Greer, pioneer nurseryman of Oregon, that "Out of the Prairie Schooner, that crossed the plains, mountains and deserts from Salem, Iowa to Milwaukie, Oregon—has come more wealth to the state of Oregon than from any ship that has ever entered the Columbia River."

As told to Seth Luelling, his brother, the apple varieties brought to the coast were Sweet June, Astrachan, Golden Sweet, Summer Pearmain, Summer Bellflower, Gravenstein, Red Cheek

Pippin, Seek-no-further, Rambo, King, Golden Russet, Yellow Bellflower, Baldwin, Lady, White Pearmain, Northern Spy, Spitzenberg, Winesap, Green Newton, Jennetting, Tulpehocken, Holland Pippin and a few lesser sorts."



These were among the important and favorite apples of the day. Early apples and late winter keepers, sweet apples for eating and others more tart for cooking. However, with the advent of artificial refrigeration and modern storage methods during the 1930's, all this suddenly changed. The criterion now was merely taste as all varieties could be kept—hence today in our markets we see only four or five standard apples—pleasing to taste and easy to grow.

Because of this and the general exodus from country to city, many farms were abandoned and their orchards left untended. During the depression of the 1930's, a young Mr. Stearns L. Davenport, a graduate from the University of Massachusetts, was hired by the state to work with the WPA to oversee cleaning up these old farms to avoid the spread of disease. He noticed that many of the old time favorite apple trees were being lost forever as these orchards disappeared. Thus, a few years later when Myron Converse, President of the Worcester County Horticultural Society, was searching for a project of importance for the society to undertake, Mr. Davenport, now its secretary, suggested collecting many of the better old varieties of apples and putting them into a "preservation" orchard.

At first it was felt this orchard should be on President Converse's Farm, but Converse recommended that for ease of maintenance, the orchard, be placed on the farm of Mr. Davenport in North Grafton. Davenport was run-

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ning a substantial production orchard and thus care and supervision were simplified. Mr. Davenport was truly a modern day "Johnny Appleseed".

He and the Society's Fruit Committee developed a list of some 60 old time favorites and set out to find them. Among these were the Roxbury Russet, Lady, Westfield-see-no-further and Sops of Wine—what lovely names! For many years he looked for the Sterling or American Beauty and finally found an old tree growing right nearby in Sterling. One of the apples desired, the High-Top Sweeting, originally grown in New England seemed to have completely disappeared until after years of searching, it was found growing in California, probably taken there by Luelling.

This collection of some 60 varieties was completed by Mr. Davenport in 1968. He was then 81 years old. Because of his age, Mr. Davenport could no longer operate the farm and production orchard and he sold it to a gentleman named Poulin. The Society thus had their collection of old varieties now on Mr. Poulin's land. For a few years, Mr. Poulin contracted to maintain and care for the collection, but in 1970 announced that he could not continue and would cancel our agreement. Fortunately, a friend and neighbor, Old Sturbridge Village, felt that this was a logical extension of its New England Village Museum and offered to allow us to move the whole collection to Sturbridge. Five acres of woodland on the north side of a hill (perfect for an orchard) were cleared and fenced. Meantime, Mr. S. James Mistark of the Horticultural Society was busy grafting all the old varieties on to new root stock using dwarf malting No. VII.

While discussing this special orchard, I would be remiss not to mention briefly that all the preservation trees are being grown on dwarfed root stock EM VII. Although dwarfed fruit trees are very old, beginning with the Greeks in the third century before Christ, fruit production did not begin until the nineteenth century. In the early 1900s, Sir Ronald Hatton of the

Following is a listing of the old varieties of apples in the Orchard.

Alexander	Jefferis	Saint Lawrence
American Beauty	Jonathan	Salome
American Pippin	Lady	Seekonk Sweeting
Baldwin	Lady Sweet	Shepards Sweeting
Ben Davis	Late Strawberry	Shiawassee
Benoni	Lyscom	Smokehouse
Black Gilliflower	McIntosh	Somerset of Maine
Blue Pearmain	Maiden's Blush	Sops of Wine
Canada Red	Malinda	Stark
Canada Reinette	Melon	Stone
Chenango Strawberry	Mother	Summer Bellflower
Cox Orange	Newtown Spitzenburg	Summer Rose
Crow Egg	Nodhead	Sutton Beauty
*Davey	Northern Spy	Swaar
Deacon Jones	Northern Sweet	Sweet Bough
Duchess of Oldenburg	Oliver	Sweet Winesap
Dyer	Opalescent	Thompkins King
Early Harvest	Ortley	Titus Pippin
Early Joe	Palmer Greening	Toman Sweet
Early William	Paragon	Twenty Ounce
English Beauty	Peck's Pleasant	Wagener
Esopus Spitzenburg	Pewaukee	Washington Greening
Fallwater	Pomme Grise	Washington Strawberry
Fall Pippin	Porter	Wealthy
Fameuse	Pound Sweet	Wellington Bloomless
Garden Royal	Primate	Westfield, Seek-No-Further
Golden Russet	Pumpkin Russet	White Pippin
Golden Sweet	Pumpkin Sweet	Winter Banana
Gravenstein	Rambo	(Winthrop) Greening
Grimes Golden	Ralls	Winter Pearmain
Hawley	Ramsdell Sweet	Wolf River
High Top Sweeting	Red Astrachan	Wright
Hubbardston	Red June	Yellow Bellflower
Hunt Russet	Rhode Island Greening	Yellow Newtown
Huntsman	Ribston	Yellow Transparent
	Roman Stem	Utter
	Roxbury Russet	Vandevere

*Not an old variety

Items we're searching for:

Arkansas Black	Rusty Coat	Green Sweet
Bullock	Sheriff	Holland Pippin
Cole's Quince	Summer Pearmain	McLellan
Domine	Winter Sweet Paradise	Margaret
Golden Pippin	Yellow Sheepnose	Moore Sweet
Green Sweet	Baker	Priestly
Harvey	Black Jersey	Pryor
Lowell	Chandler	Red Russet
Mann	Cogswell	Sweet and Sour
Minkler	Cooper	Sweet Greening
Pennock	Danvers Sweet	Tufts
Plumb Cider	Early Strawberry	Victuals and Drink
Richard Graft	Gloria Mundi	Winesap
	(Monstrous Pippin)	

East Malling Research Station in Kent, England, collected all the best root stocks from many countries, and grew them into pure clonal lines. He introduced sixteen of them to the trade as standardized, true to name, root stocks.

The so called "Malling" "East Malling" or EM rootstocks are widely used not only in England but here and in other countries. For our climate, we find the EMVII best. These trees grow 12 to 15 feet high and bear fruit in one-third the time it takes a standard tree. These trees thus can be pruned, sprayed and picked by a man standing on the ground—much faster and easier than the old method requiring tall ladders for working the old full size trees.

Scions from the Preservation Orchard have been shipped to every state in this country, Canada, Mexico, England and Denmark. Many historical projects such as Williamsburg, Virginia have been supplied scions from the original orchard. The Society will continue to send out the scionwood which will eventually be taken from the S. Lothrop Davenport Preservation Orchard at Old Sturbridge Village. The orchard is being operated as a joint responsibility of the two institutions. It may be visited with special permission from Old Sturbridge Village which plans to sell cider and fruit of the old varieties as soon as available, (in two or three years.)

Grafting scions and budstock for the propagation of these trees are distributed by the Worcester County Horticultural Society, 30 Elm Street, Worcester, Mass., which also maintains a superb library specializing in books on fruit.

To be at their best, apples ought to be eaten in orchards, framed in Autumn sunshine. We feel there is no apple grown today that can compare with these old time favorites—maybe it's our lost childhood—rather than lost varieties that is hard to find.

Fortunately, some 115 of the best of the old apple varieties are still being grown in the S. Lothrop Davenport Preservation Orchard at Old Sturbridge Village, Sturbridge, Mass.

George Washington's River Farm Facilities



Available for Garden Club Meetings, Tours, Lectures, Luncheons.

The River Farm Mansion at the American Horticultural Society's National Headquarters in Mount Vernon, Virginia, offers a delightful change of pace for your next garden club meeting or program. Our beautiful ballroom can be set up in conference, classroom or luncheon style to accommodate your needs. In good weather our large walkout terrace provides a perfect setting for luncheons, teas, or cocktails.

If you like, a private guided tour over the historic grounds can be arranged, including a dramatic slide presentation "Through the Seasons at River Farm." Also available is a tour of AHS's Plant Sciences Data Center.

We can also offer suggestions regarding caterers and lecturers for your convenience.

River Farm Cottage Shop

A highlight of your day is certain to be a browse through the River Farm Cottage, offering exotic and rare plants for sale, a unique array of pots, gardening aids, the latest in horticultural books and gifts. Usually there will be at least one special display of unusual plant material such as bonsai miniatures, dried flower arrangements, tray gardens . . . offering new and creative ideas for professional and amateur plant enthusiasts alike. Proceeds from the sales are used in maintenance and development of River Farm as a National Horticultural Center.

For details about River Farm facilities and programs, the River Farm Cottage shop, assistance in planning your meetings, luncheons, teas, tours, contact Bettie Coombs at our headquarters office (703) 768-5700.

Mon.-Fri. 9:00-5:00

Contributions are normally involved to cover expenses.

The Society reserves the right of scheduling events at the River Farm.

Going South

Lorraine Burgess
202 Old Broadmoor Road
Colorado Springs,
Colorado, 80906
Color Photos: Guy Burgess

With the first hint of spring, desert the blustery weather of the north and drive south to visit the remarkable garden estates of Louisiana, Alabama, Georgia, and North and South Carolina.

Wander at your leisure through the Sarah Duke Gardens on the Duke University campus at Durham, North Carolina. Spend several days at Colonial Williamsburg, Virginia watching the quickening of life in the 100 or more small gardens among the restored houses, and in the magnificent Palace Gardens. Enjoy the Pavillion garden designs on the University of Virginia campus at Charlottesville, and Thomas Jefferson's home at Monticello.

Do a circle tour of the gardens around Charleston, South Carolina, including the Cypress, Magnolia, and Middleton Place estates, and of course the old town gardens of the harbor city. Search out the Orton Plantation and the Greenfield Gardens at Wilmington, North Carolina, and the Tryon Palace at New Bern, North Carolina.

Spend a week, if you can, at the Callaway Gardens at Pine Mountain, Georgia. This is a complete resort, with lakes for swimming and boating, a fine golf course, and handsome, naturalized gardens. Travel further south to the Cypress Gardens at Winter Haven, Florida, or bend down to the Gulf, and visit the Bellingrath Gardens at Theodore, Alabama. Bellingrath has huge live oak trees beside great expanses of emerald-green lawn, and an excellent Japanese garden in a separate ravine.

Around New Orleans the choice is wide. First you should visit the Vieux Carre private gardens in the historical old town, and then the Longue Vue Gardens on an estate in a newer section of the city. Formal in character, the Longue Vue designs feature dancing fountains and ballerinas in early evening concert in a silvan garden setting. Out from New Orleans you can go up river to the Rosedown Plantation at LaFayetteville, of the Live Oak Gardens, formerly Rip Van Winkle Gardens at Jefferson Island, or northwest to the Hodges Gardens at Many, Louisiana.

At Shreveport you should visit the Barnwell Center, and look in on the new American Rose Center now under development. It has a series of gardens and water features, all dedicated to the display of the nation's favorite flower,

the rose. A journey through these fine 'pleasure grounds' will launch your gardening year, even if it is still snowy when you return home. Having seen the first sprouting of a sub-tropical spring, having reveled in the beauty of azaleas, rhododendrons, and white and pink dogwood, you can return home inspired, to participate in a second spring in your own, still beautiful, home town.

If you wish a listing of botanic gardens and horticultural institutions in the U.S., consult the AHS Directory of American Horticulture.

BELOW—Spacious lawn with live oak tree hung with Spanish moss, Theodore Alabama, Bellingrath Gardens.

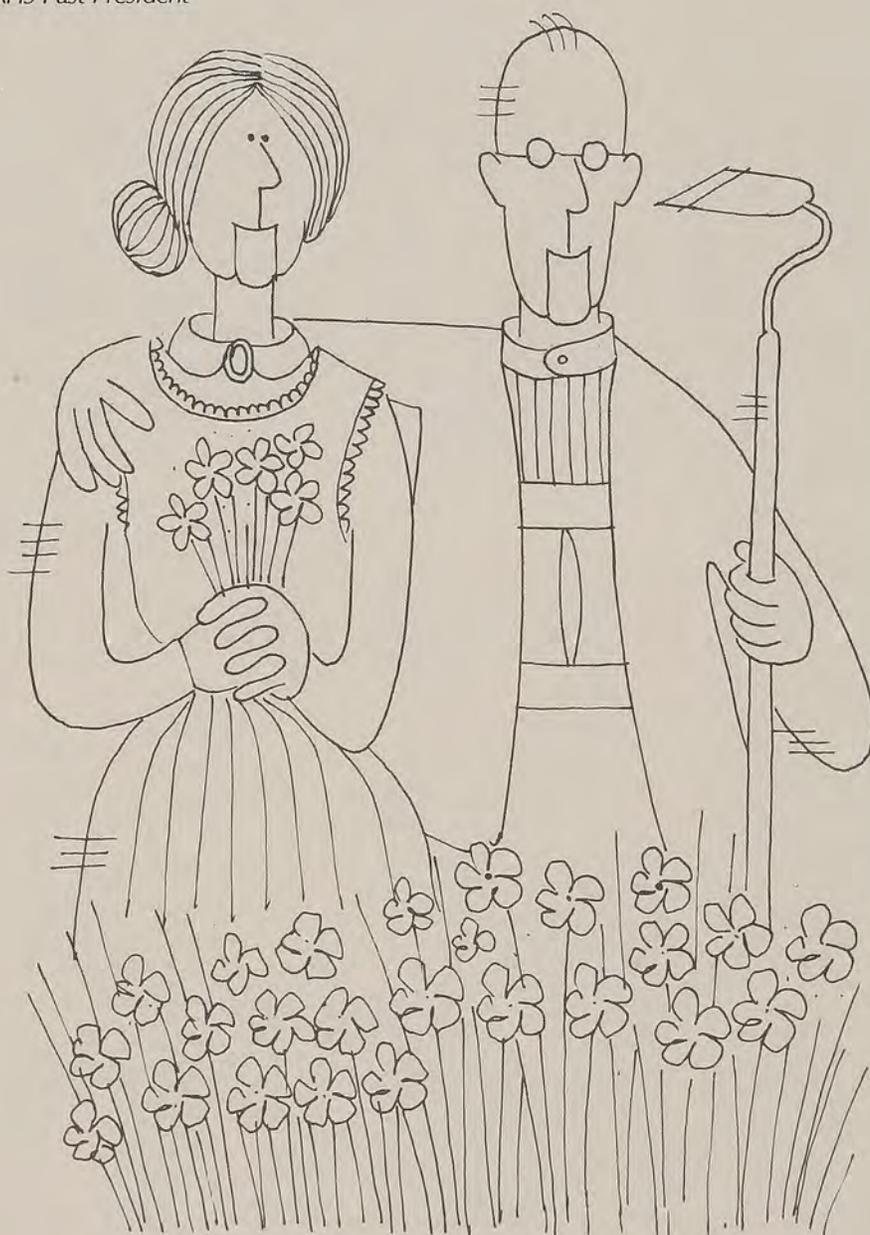
RIGHT—Underplanting of Coronation Gold pansies with Oxford tulips (foreground) and violets around daylily clumps under Flowering Parkman crab in Sarah Duke gardens, Durham, N.C.





Low Maintenance Gardening for Two Old Codgers

by Donald Wyman
AHS Past President



When you are through raising a large family, have them all happily married and in homes of their own, it is time to take a hard look at the grand old house in which you have been living all this time. Sure it has memories, and you like the arrangement of things—but the garden— isn't it pretty large? Are there young people around to browbeat into mowing the lawn, pulling the weeds, raking the leaves and shoveling the snow? How can two people live happily in a twenty room house and an acre or so of garden without being dog-tired each night from the care thereof?

Anyway, we crossed the bridge, and are now enjoying life to the hilt, as a matriarch and a patriarch should. House-wise we are down to a small condominium type place, all on one floor and simply love it. No grass to mow, no snow to shovel, if the water faucet leaks we make believe we don't understand plumbing and call the superintendent. When we want to take a trip for a week end or for six weeks, we lock the front door, call the superintendent and forget all about the place until we return. That is living!

But, we like to grow plants and want a garden, and certainly neither of us would be happy without one. Rules are, that we can not plant anything in front of the house, but that we can have a "foundation planting" at the rear. Also, we fortunately have a hundred or so feet of woods at the rear where we are "experimenting" with all sorts of plants. One of us is an eternal optimist where plants are concerned, and she believes everything will grow in the shade, on a gravelly base with plenty of root competition from the pines and oaks—and she keeps planting. The other of us, sits back and grins, taking it easy on the terrace while she gets into all sorts of problems with that woody planting. He is almost cer-

tain of the outcome, yet there is sufficient doubt to make him look and take notice once in a while just to see what she is doing.

He has supplied her with a goal to reach for—a well established foundation planting about that little house. Formerly, both of them had large gardens, worked in them incessantly, and when, at the experienced age of three score years and ten they decided to marry a second time (with the whole hearted approval of some 33 children, grandchildren and in-laws) they were confronted with a small space for the garden. After deep thought it was decided that was satisfactory for they wanted to travel anyway. But, 300 square feet for an interesting garden? It was easy!

First we set up a few policies, before even starting to select the plants. All plants had to be in the “low maintenance” category, that is, under four feet in height, no serious disease or insect problems, easily grown without special soil conditions or locations needed. Then, to keep up interest throughout the growing season, there had to be a sequence of bloom. She, being very feminine, always kept him on needles and pins for she would never agree to being away from home at any particular season. They both liked to travel, hence the garden should be of interest at all seasons.

She is an avid “arranger” and although he likes his plants to be kept just so, to keep her interest, he had to allow her to “prune” anything for use in bouquets in the house. This saves him work, gives her enjoyment, and frequently provides a good base for a hot argument! Some of the shrubs will grow out of scale and have to be kept down to a proper size anyway and this arrangement, although it has its ups and downs, works well in the long run and seems to keep arrangements indoors at all times. A few *Leucothoe* branches as a background

in a bouquet outlast several arrangements of florist-purchased flowers in the foreground.

Watering was not a serious problem for the roof was without gutters and hence an ample supply of water always fell on the foundation planting during every rain. Even during droughts, when they were away, a neighbor or a daughter, would water once a week if it were absolutely necessary. (Some of the neighbors in this little “village” wanted to do a lot more than just water when we were away, but we felt their enthusiasm might lead to other problems so we let it go at just watering.)

To aid with the weeding problem, a mulch is always much in evidence, in our case peat moss, for it is easily obtained and easily applied. Actually, on his part of the garden (the foundation planting) he only had to weed twice—this past year—a total of two hours comparatively easy work. In her part of the garden (the woods) it seemed she was always fussing about when she was home, but he never did keep track of the amount of time she spent for he felt it would eventually prove wasted effort—although admittedly it has not been so yet. That woods garden with its rock plants, low shrubs and bulbs is very beautiful, and he is always hopeful that there is enough of interest there for the squirrels, chipmunks, rabbits, ground hogs, crows and pheasants, to keep them away from his foundation planting.

In our foundation planting (of only 300 square feet) there are approximately 200 different things. Admittedly every time we try to dig in a new bulb or perennial, we find something is already there, but usually we can squeeze an additional treasure in. An experienced gardener (and most grandparents are in this category) knows where to find lists of plants from which to select the proper ones. We have bloom from earliest spring,

that is March, until Thanksgiving. She has her favorites, and although he may not think so much of some of them, they have to go in until that time when she agrees they “may” be a little out of place—then they are relegated to the woods. Whenever we agree that a plant is really out of place, grows too much, or neither of us likes it—out it comes. (It must be obvious to the reader that these two old codgers not only derive fun from growing the plants, but in spending a considerable time talking about them, and that is the case.)

Our suggestion is to list those plants you like, see if they fit into your scheme of things, then use them. The plants suggested here are certainly not the only ones by any means, but they are the ones we have chosen.

First would be the low woody plants. Dwarf white pine and dwarf hemlock both of which are important for winter interest. *Leucothoe*, warty barberry, *Chamaecyperus obtusa* ‘Nana’, mountain-laurel (it must be pruned), *Pieris floribunda* ‘Millstream’ is one of the low evergreens, *Mahonia nervosa*, *Juniperus conferta* (an excellent low ground cover), *Gaylussacia brachycera* the box-huckleberry, the Wilson rhododendron which must also be kept rigidly pruned after it is through flowering, all are a few of the good evergreens to add year-round interest, especially during the winter. The yellow leaved Japanese barberry a deciduous shrub, is one of her pets and is always appearing in her arrangements for its excellent yellow foliage. He has inserted the red leaved ‘Crimson Pygmy’ as one of his. *Cotoneaster horizontalis* for its fruits, Rhododendron ‘P.J.M.’ which must also be rigidly restrained, are some of those included.

Such shrubs are not bunched in the planting, but distributed along where they will appear to best advantage.

By: Lorraine Burgess
202 Old Broadmoor Road
Colorado Springs
Colorado 80906
Photos: Guy Burgess

Sno' Beautiful



Flowers That Bloom in the Spring

ABOVE—Red Robin tulips race the snows to perform their celebration of Spring.

RIGHT—Red Emperor tulips, when in full bloom reveal a black, yellow-edged base. Early Flowering, it is a giant beauty.



It is wonderfully exciting to have flowers in your garden that are bold enough and strong enough to bloom in the snow. To achieve this small-scale miracle in February and March, you must plant at least a bushel of bulbs the previous fall.

Choose a sunny well-drained corner of your garden, and then forget them until you get anxious for the wonders of the new foliage year. Each bulb is a complete plant package in itself. It carries its own food and it will send out roots during the winter sufficient to take in from the soil the moisture it needs.

As a token gesture choose Snow Drops (*Galanthus*), also known as Christmas Bells in single or double forms. Tuck Grape Hyacinths (*Muscari*) under shrubs or on a rocky slope. *M. azureum* is a bright blue. *M. botryoides* album, a sparkling white. Plant the lesser-known Winter Aconite (*Eranthus*), a buttercup yellow in the shade of trees. Start with a dozen or two bulbs and, in a few years, by self-seeding you will have a whole colony of flowers. Aconite blooms so early it stands ready to greet the crocus, and it does not seem to mind bad weather.

Try some tiny squills (*Puschkinia*) with all-white flowers, or striped, to clear blue. *P. libanotica* grows with stalks of pale blue flowers in thicker clusters. Include wood hyacinths (*Scilla hispanica*) in white, pink, and deep blue as company for taller daffodils or tulips, or use the shorter *S. siberica* in a jeweled sapphire blue as a base for naturalized mass plantings. Spot some sweet-scented hyacinths among your other spring flowers. They and narcissi bring you the first sweet fragrance of spring. Hyacinths are available in an ever widening range of colors, white, yellow, Delft blue, purple, and more recently, bright red. Their flowers last longer than those of other bulbs, spanning the hiatus between the daffodils and the late tulips.

Toss crocus bulbs on your lawn, and then dig them in, where they fall, down under the sod. Select from white, purple, striped, and gold va-



Early blooming reticulata iris 'Cantab' does best in a sheltered corner, nestled in a cluster of dried leaves.

rieties. After they bloom allow the leaves to ripen so they may provide new food for the bulbs for the following year. After they turn brown you can cut the lawn without harming the crocus plants.

Plant daffodils on sloping ground in random drifts. If they are in well-drained soil and fertilized each spring, they will prosper and increase for years to come. Choose from white, yellow, even pink varieties in a myriad of standard and unusual forms, with long and short trumpets, and single or double petal groupings. Include Poetaz Narcissi and the hybrid jonquils. Find a place, close by the house, for miniature daffodils in cyclamen, trumpet, or bulbous hoop-petticoat forms.

Consider the unexpected beauty of the species *Iris reticulata*. Almost as early as crocus, they are hardy and bright in color. The basic color of the *reticulata* is deep purple, but there pale blues (*I.r. cantab*) and a mulberry (*I.r. Joyce*) for you to choose from.

Finally, welcome the tulip in all its wondrous variations. Start with the early-blooming species and botanicals (*T. persica*), (*T. dasystemon*), (*T. kaufmanniana*), (*T. clusiana*), and (*T. saxatilis*). From these small but colorful ancestors have come all the great hybrids of history, the Fosterianas, the fringed Crispas, the

Darwins, the Oriental Griegii, the shaggy Parrots, the lily-flowering vase-shaped blooms, and the bunch-flowering Bouquet strains. No wonder the madness and the popularity associated with this favorite spring-flowering bulb.

Bulbs differ from other perennials in that their rootlets die back each year, with only the bulb surviving. Their growth cycle departs from normal, lasting only a short time in early spring. It is better to plant them apart from perennials that need much water in summer months, a time when the bulbs prefer dryer feet. Use them instead with blue fescue, vinca, or ajuga, ground covers that survive well with a minimum of moisture. The continuing life of a bulb is largely dependent upon the nature of its division (A hyacinth splits after the first year's bloom, forming new small bulbs, and does not bloom again for several years until the new bulbs have grown large enough for the cycle to repeat itself.) Because of the unpredictability of the tulip, it is generally grown as a crop plant, being lifted after bloom, and replaced with some kind of annual. Happily, most other bulbs live and increase with no more than a generous top dressing of richly-manured soil or other fertilizer. (Do not add manure to the soil as you plant the bulbs.) You are dealing with a renewable miracle, so enjoy the encounter, year after year.

LOW MAINTENANCE GARDENING

Continued from page 17

However, they are the first ones put in the foundation planting, for they are the most important. Then one considers the placement of the perennials and the bulbs. Both groups are essential for continuing interest and bloom.

Hostas, especially the variegated ones, we have included along with pachysandra and its variegated variety. *Coreopsis auriculata* 'Nana' is a good low plant with bright orange flowers for nearly eight weeks during the summer. *Dicentra eximes* blooms in our garden from June until frost. We placed it in front of the yellow leaved Japanese barberry where I thought it looked extremely well, but she informed me that the colors clashed, so it will be moved. Another little plant is *Potentilla tridentata*, with small white flowers and evergreen leaves which never grow over twelve inches tall, so for that reason we planted it on the corner of the border, in front.



Some of the taller perennials would include *astilbe*, *Christmas fern* (which we have planted in a prominent place where we can see it from the dining room all winter), *Iberis sempervirens*, *Alchemelia alpina*, *Sedum spectabile* for its large flower cluster in the fall, *Liatris*, the gas plant, *Maries' balloon flower*. She simply had to have the oriental poppy from her old garden, but I think it is too large for its space—however it stays. Coral bells, *Aster frikartii*, meadowsweet, leopardsbane, pink yarrow, *Veronica longifolia* and even *Hemerocallis*, are fitted in at proper places.

Naturally there is room for a few spreading ground covers, for this aids in reducing the space for weeds. Violets are always a good selection for some bloom a long time. The Euro-

pean wild ginger (*Asarum europaeum*) has evergreen leaves, is only about six inches tall, and spreads thickly and slowly. Myrtle is good, but can't be allowed to spread to much. Moneywort or Creeping Charlie has merit, and there are several colored forms of *Ajuga* that can be placed here and there under some of the woody plants. As they increase, they are dug up and placed to augment the woods planting. Galax, a charming little evergreen from the South finds a small spot in the shade, and Bishop's hat or *Epimedium* is placed near the hemlock where it is always a dense mass of foliage. One or two copper colored forms of heather have been included, but though certainly colorful, are not happy with our winters. Christmas rose is another little plant right outside our dining window where we can see it doing its thing even when surrounded by snow.

When these plants, and many others are arranged and planted, then it is time for the bulbs, for these bring flowers early in the season before other plants are off to a good start. Snowdrops, grape hyacinths, scillas, various crocus varieties and the lower growing narcissus are some. Especially included, near the front of the planting are several clumps of the very low and diminutive *Narcissus asturiensis* which is always extremely interesting in the early spring for it blooms at about the same time as our specimen plant of *Adonis amurensis*. Double bloodroot is given a special spot at the borders edge in front of the dwarf white pine. Lilies in the background and a few ornamental onions lend summer interest and fall crocus surprises us every autumn with its unexpected appearance.

An interesting low maintenance garden can be planted and be easily maintained by tired, worn out, grandparents. It does not include much effort on their part, only some careful and experienced selection. All grandparents are experienced and growing a few plants can help keep them young in spirit for many a year to come!

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BONSAI

*Clifton Pottberg, President
Croton Hill Farms, Inc., Sparks, MD.*

The choice is yours. Bonsai can provide you with a hobby, a totally engrossing pastime, or a way of life.

The job of learning the particular synthesis of art, technique, craft and science that is bonsai is not simple. But it is straightforward and highly rewarding. Many of the techniques used are applicable to other aspects of gardening. The creation of satisfying bonsai is not something requiring many years to do.

What is bonsai? In Japanese, bonsai means "tray planting". The word used to be hachi-no-ki, meaning a "potted tree", and it implied a trained tree in a pot. The word bonsai was invented to distinguish the trained tree which looks like a natural big tree, from a tree trained in any other way, which might look like an ideograph, or a pompommed topiary, or whatever. Bonsai is not bonsai if it isn't in a pot.

Basically, bonsai is the creation of a model—not a duplicate—or the shape of the adult, mature tree (or trees, or total landscape) in miniature. Living plant materials are used as the medium of expression, and are potted in a container which is visually compatible with the plant. Even this explanation is a vast oversimplification, but it is useful for our purposes. The job is too big if we concern ourselves with the additionally important and fascinating study of Japanese philosophy, or the onion layers of significance which attach to any form of beauty, abstract or otherwise. In this article, we will only attempt deciphering the "how to" of the art.

In styling a bonsai, we change the shape of the small tree to make it fool our eye into thinking it is a larger tree, out of perspective. To do this, we must discover how a mature tree differs from a young tree. The ways are numerous; here are a few:

- Leaves and secondary branches are much smaller relative to the overall size of the tree (we can't duplicate the smallness in bonsai, but we can dwarf the leaves significantly with proper culture after a few years).

- The trunk is generally thicker relative to the height and the branch thickness. We can't magically increase the trunk thickness if we wish a quick bonsai. We wait several years for the trunk to thicken while the plant is growing, often leaving it in the ground for that purpose. Or we can cut back and reduce the height of the plant relative to the trunk thickness.

Photo courtesy of U.S. Department of Agriculture.



JUNIPER BONSAI—one of the priceless collection of 50 Bonsai plants presented to the American people by the Nippon Bonsai Association of Japan to commemorate America's Bicentennial. The collection, housed at the U.S. National Arboretum, Washington, D.C., is expected to be a major showpiece during our Bicentennial year.



- There is more taper to the trunk.
- Roots form a strong buttress at the base of the tree.
- The bark is more gnarled and rugged (this is also developable in bonsai, but it takes time).
- There is generally more branching. In many evergreen conifers the branches actually descend. In other trees the final form is what is termed "broom style", an upside down broom shape, typified by the American elm.
- Both forms are rarely found among young trees but are duplicable with training in bonsai.
- The apex of the tree is not fast growing and pointed but slowed and rounded or occasionally almost flat.
- The foliage is usually fuller, and on the conifers, the foliage of each branch is layered with a flat, frond-like effect.

Obviously, the more differences between young and mature trees that we discover and use; the more graceful, rough, majestic, strong, old, large and beautiful we can make the little plant look, the better.

To use these variances in shape to transform the small plant actually requires only elementary horticultural theory. In pruning and shaping the plant, the basic pruning techniques of thinning and heading are selectively used. They are also combined with a technique of shaping wherein copper or other soft wire is wound spirally about parts of the tree to bend them to new shapes. So the process of shaping a bonsai is relatively simple. Let's explore it.

We can start with a seedling, cutting, or grafted plant, and train it by frequent pruning and occasional wiring as it grows. We can also take a larger plant and prune it back and wire it. The first method is slow, but such training from the beginning often gives better results. The other is faster and can provide us with a larger bonsai. Sometimes naturally dwarfed plants can be found in the wild which can be made into masterpieces quickly. In this article we'll take a piece of nursery material or a similar plant and analyze the components of the work of styling it into what looks like a large tree. The result will not be a finished product, for the refined appearance of bonsai will take some time after the initial styling to develop; a better term is "bonsai in training."

Since every side of every potential trunk line is different, a side which looks best must be picked to be the front of the tree. If the tree has many upward growing branches, we can select a branch to continue the line of the lower trunk, cut off the trunk above it, and wire the branch into a new position. Often in this way the height of the tree can be reduced, not only increasing the apparent thickness of the trunk, but the taper as well. If there are flaws in the shape of the trunk, we can possibly change it now with wire or hide the flaws with foliage. In general, the line of the trunk, which is the unifying force of the whole tree, must itself be a unity. It must be graceful and strong in appearance and maintain the same type of curves along the whole length of the trunk. If part of it is angular for example, it all must be angular, rather than part being



Author winds tree with copper wire to achieve desired shape. Note how severely the limbs have been pruned.

angular and part being straight, or gently curved.

The look of the root structure and the position of the roots around the trunk must be taken into account. If the roots are crossed or uneven, or there are few visible roots, perhaps most of them being behind the tree, a new root system must be grown, or a new front of the tree found. Of course, with some plants, a new surface root system grows quickly, and we needn't worry about the appearance of the roots. These types of trees, which include several junipers, result in an easier job of making bonsai.

The next step is to pick the branches which will remain, and prune away the rest. This is perhaps the most difficult step. Branches must be chosen which are healthy, with thicker and longer basal branches. They must be picked in such a fashion as not to suggest a man-made pattern of branch placement. The object is to create a feeling of three dimensionality to the tree without hiding too much of the trunk. Branches should not be equidistant nor one directly over another. To aid the student, the Japanese have devised a rule which we call the "rule of three" in branch placement. Basically it is the picking of branches in groups of three in the following fashion: one, more or less to the side of the tree, one, more or less to the back, and the next to the other side, in ascending order. The process is then repeated. This is a rule of thumb which considerably reduces the memory burden of the student when trying to sort out the branches.

After the excess branches are pruned away, the remaining ones will be wired and bent into their new shapes. If we have decided to simulate the shape of a mountain pine, spruce, or fir, the branches are gently bent down



After roots are pruned, the "bonsai in training" is placed in pot.

from the trunk to resemble the aged droop of the branches of the mature tree. Further pruning of the foliage, cutting back of the branches and secondary wiring follows to finish shaping the foliage and to complete the basic styling. Later, when new growth occurs which is out of harmony with the shape we wish to maintain, it is pinched off when young and tender. This pinching off also helps to refine and fill out the foliage.

Once the top of the plant has been shaped, the roots must be pruned to fit in a pot. The pot should be chosen carefully. It must be able to hold enough root system to nourish the plant and to keep the composition from looking top heavy. On the other hand, if the pot is too large it will decrease the apparent size of the tree. Further, the color of the pot must not detract from, but rather accent any color interest of the tree. This is especially important since we see color before form, and bonsai is primarily an art of form. This is why so many unglazed brown pots are used for bonsai. Like the frame to a picture, the function of the pot is to harmonize with the lines and curves and rhythm of the tree. Unlike a frame, it is not there just to delineate the visible part of the landscape in which the tree is growing, but also to suggest the rest of the landscape beyond the pot, thus creating an "unstated element", which adds so much to oriental art. Of course, the use of the unstated element is just as important as the tree itself.

After the pot is prepared with potsherds or screen over the ample drainage holes, a large particled bottom drainage layer is added. The roots must be carefully pruned to fit in the pot. The tree is placed so that it and the pot are in balance (not symmetry) to create a unified composition.

Soil is then settled around and among the roots and a layer of topsoil is added to support moss or other small ground cover. Finally the whole is carefully but thoroughly watered.

After potting, a two week rest period in the shade follows for the tree. During this time, syringing is especially important. Transpiration and its resultant water loss must be held to a minimum to avoid more strain on an already severely weakened root system. But shortly, if the soil was well chosen, and kept moist, the roots will begin growing again, creating many new water absorbing root tips, and the plant will revive.

In bonsai, the soil which is used must have properties very closely matching the optimal conditions for health of a given plant. The major necessary qualities are: fast drainage, relatively low water retention, aeration, a correct acidity balance, and sharpness of soil particle edges. All of these factors promote root health and a maximum number of root tips. Often a bonsai tree is healthier than its counterpart in the ground, where less than perfect soil conditions usually exist.

One successful soil mix used by many bonsai hobbyists is nothing more than a mix of large particled sharp sand, and clay granules used as a litter in cat pans. A caution here: a few brands of cat litter are not baked at a high enough temperature to maintain their granular consistency; a few others will list dangerous chemical additives. Decomposed granite, where available, is also used as a base for the soil mix.

Nutrients are obviously important too, but they were omitted from the list of soil requirements since they may be added gradually later. In fact, metering food to a totally non-nutritive soil allows us to give the plant exactly the amount necessary to sustain maximum health, without much growth occurring. However, it is even more important to use slow release fertilizers for bonsai than for other plants. The bonsai roots are confined and thus susceptible to injury. For the most part, any slow, gentle, general purpose fertilizer used at about half normal strength, will do. The feeding schedule should start in early spring, and continue through mid-summer and then stop. This will help avoid causing any late growth which may not have time to become cold hardy by the first frost.

If adequate protection is given the bonsai during each winter dormancy period: if it is fed and watered carefully; pruned when necessary; if the wire is removed before the cambium grows out around it; the tree will continue to improve aesthetically indefinitely.

Some plants, like the poplar, have short life spans and shouldn't be used. Even when those plants with other poor qualities, e.g. leaves that are too large, are culled from the list, the number of good plants for bonsai remains great. Even indoor tropical plants can be used for bonsai. They may not always live as long as outdoor bonsai but still make excellent material.

Native Azaleas

Oconee hybrid (Judge Reynolds)



Rhododendron calendulaceum (orange)



I find my favorite is the plant that may be in bloom at a particular season or the one that I happen to be looking at at the time. A garden cannot be made up of just one plant or a group of similar shrubs. Each plant has its own features of importance during the year. A garden would be incomplete without using hollies, particularly for the winter season for their glossy, evergreen foliage and attractive fruit. Nor could one assume that a garden be complete without good ground covers, such as pachysandras, *Rohdea japonica*, the asarums or many other favorites. I do feel that native azaleas often have been overlooked in the past and are certainly one of our more attractive groups of native plants. With the rapid expansion of our cities and development of our rural and wooded areas, we find that the native plants are being destroyed and lost for the future.

As gardeners and conservationists, we need to become aware of our rich native flora and take advantage of the beauty it offers.

While many of these plants are not generally available in the nursery trade, they can be propagated by seed, root cuttings and other methods.

Native azaleas are not adaptable to all parts of the country due to hardiness and soil acidity requirements.

Several species such as *Rhododendron nudiflorum*, *Rhododendron calendulaceum*, *Rhododendron bakeri*, and *Rhododendron vaseyi* are hardy to Zone 4 and 5 while the southern species may not be adaptable beyond Zone 6.

I would never attempt to pick my favorite azalea species from the fifteen or more indigenous to the United States. Each species becomes my favorite while it is in bloom with its colorful flowers, filling my lungs with its delicate fragrance or noting the colorful foliage in the fall.

Botanists and horticulturists often disagree on the identification and classification of the native azaleas. Needless to say they are members of the genus *Rhododendron*. I prefer to be called a "lumper" rather than a "splitter" in trying to classify or name every color form due to the variability of each species or from the numerous natural hybrids often found in the eastern United States. The following discussion of native azaleas is based on the sequence of flowering at Callaway Gardens in Georgia and may vary some each year or may not be the same in other climatic areas.

Early spring flowering species flowering before or with the new spring leaves:

Rhododendron canescens, the Piedmont or Florida

Fred C. Galle, Director of Horticulture,
Callaway Gardens, Pine Mountain, Ga.

Rhododendron prunifolium



pinxterbloom, native of the Southeast, with its fragrant flowers varying from pure white to light pink, is certainly a welcome sight in the early spring.

Rhododendron austrinum, Florida azalea, is a southern counterpart of the above and equally noted for fragrant yellow flowers.

Mid-spring azaleas flowering with the new foliage:

Rhododendron speciosum, the Oconee azalea is a variable species found in a narrow band across the State of Georgia and extending into Alabama and South Carolina. This species is not well known and varies from orange to brick red. It hybridizes readily with other southern species, producing some very attractive and indescribably lovely colors of yellow, peach, pumpkin, deep rose and pink. The Oconee azalea is not fragrant, but many of the hybrids are delightfully fragrant. This plant is adaptable to summer droughts and other unfavorable sort of conditions. However, one should not expect to ignore a drought tolerant plant, for it will require the same watering and care as other plants after transplanting until it gets established.

Rhododendron nudiflorum, pinxterbloom azalea is valued for its cold hardiness and its enticingly fragrant white to pink flowers. *Rhododendron roseum*, the Pink

Rhododendron calendulaceum (yellow)



Shell azalea, is a very similar species and noted for the clear shell-pink, fragrant flowers.

Rhododendron atlanticum, Coastal azalea, is a low stoloniferous plant, usually three feet or less in height. The fragrant white to pink flowers are noted for their glandular pubescence. Both *Rhododendron nudiflorum* and *Rhododendron viscosum* are also generally stoloniferous in habit of growth and stoloniferous forms of azaleas have been found in other species.

Rhododendron alabamense, the Alabama azalea, with its fragrant lemony spiced flowers, are white with a very prominent yellow blotch. This species is typically a low plant, seldom seen in the wild, and hybrids are generally medium to tall shrubs with the spicy fragrant flowers varying from white to shades of pink.

Rhododendron vaseyi, the pink shell azalea, is a high elevation plant, native to a few counties in North Carolina, but found adaptable to lower elevations, contrary to many other mountainous plants. Its fragrant pink flowers are very attractive and lack the distinct floral tube as on most other species. A white flowered cultivar, 'White Find', is available in some nurseries.

Rhodora, *Rhododendron canadense*, is similar to the pink shell azalea with the floral tubes divided nearly to



Azaleas and dogwoods are among Spring's first introductions, offering vivid color and dancing light. Brookgreen Gardens, Murrell's Inlet, S.C.

the base. The flowers vary from rose-purple to white. *Rhodora* is native to the east coast of Labrador, south to New Jersey and is generally difficult to grow in the South.

Late spring or early summer flowering, after leaves are developed and before new flora buds are formed:

Swamp azalea, *Rhododendron viscosum*, is variably stoloniferous. The fragrant white to pink flowers are noted for their long slender tube and pubescent twigs.

Sweet azalea, *Rhododendron arborescens*, is often confused with the swamp azalea. The fragrant white flowers and reddish stamens, plus smooth stems are distinguishing characters. In the south there is a later flowering form of this species flowering with Plumleaf azalea in early summer.

Rhododendron calendulaceum, the flame azalea, is probably the best known species. The large non-fragrant flowers vary from clear yellow to orange and red. Two flowering phases are often reported, the early phase occurs at lower elevations of the Appalachian Mts. and is often lighter in color, while the late flowering phase is usually dark orange to orange-red and found in higher elevations. John Bartram wrote "This is the most gay and brilliant flowered shrub known."

Late flowering in early summer after the winter buds are at least partly formed:

Cumberland azalea, *Rhododendron bakeri*, follows the flame azalea in flowering. The non-fragrant small flowers vary from orange-yellow to red. The plants are found in open woods at high elevations of the Cumberland Plateau in Kentucky, Tennessee to the mountains of North Georgia and Alabama.

Rhododendron serrulatum, hammock-sweet azalea, is a close ally of the swamp azalea from the Southern Coastal Plains. The small white flowers have a delightful fragrance.

The late flowering phase of sweet azalea, *Rhododendron arborescens*, indigenous to the south flowers in July in central Georgia.

The distinctive plumleaf azalea, *Rhododendron prunifolium*, is indigenous to a small area of southwestern Georgia and adjacent to Alabama. The non-fragrant flowers borne in July and August are predominantly red-orange to red, with lighter shades also found. This species, along with other southeastern azaleas, has proven to be hardy far north of its native range.

The handsome western or Pacific azalea, *Rhododendron occidentale*, is a challenge for the eastern gardener with very few successful reports. However, in the west it has few rivals, with its large, fragrant, white to pink flowers.

The native azaleas are excellent for light shade, for a shrubbery border or a woodland garden. The late spring and summer flowering species respond to morning sun and protection from the midday and afternoon sun. The flowers on those late flowering species will retain longer on the plant. Native azaleas, as with other plants, require good planting soil preparation, being sure of adequate drainage, and sufficient organic matter. Avoid deep planting, for azaleas are shallow rooted.

Collected plants from the wild should be cut back to compensate for loss of roots in digging. Wild azaleas in the woodland often have a very sparse root system. To prove this point a 6-8' azalea was dug with a 6' ball, far larger than normal. In exposing the roots it was estimated that only 20% of the roots were with the plant. The plant was cut back to 12" and heeled-in with shredded pine bark. New shoot growth developed rapidly, also a complete new root system of fine hairy roots. An acid base fertilizer should be used and would start with a 10-6-4 analysis for the first several years. Soil tests are very inexpensive and should be used on an established planting to find out nutrient requirements. While native azaleas are a challenge to find, four or more species should be used in the same garden to extend the floral season. The deciduous native azalea can be combined well with the introduced evergreen azalea and rhododendron and compliment many other flowering shrubs and trees. In the woodland garden they combine well with all other shade loving native woody plants and herbaceous plants such as dogwoods, oak-leaf hydrangea, kalmia, ferns, trillium and many other excellent native plants.

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HOUSEPLANTS



UNDER LIGHTS

Text and Photos by
CHARLES MARDEN FITCH
Talisman Cove
Mamaroneck, N.Y.

Light for our houseplants comes traditionally from the sun. The task of keeping tropical plants warm while still providing adequate light has occupied horticulturists since the Romans grew fruit trees in sun beams coming through the crude glass windows of stone buildings. More recently glass or plastic greenhouses, acrylic skylights, picture windows, and similar modern structural advances help us provide bright light for indoor plants.

Artificial Light

Artificial light will help you grow plants indoors where light is now insufficient. I have been growing plants under various combinations of light sources for more than 20 years. Some of my houseplants, *hemerocallis* seedlings, spring bulbs, and summer annuals are grown in a dark basement where they receive only fluorescent light.

Many orchids in my lean-to greenhouses are grown with a combination of direct sun and fluorescent light. Still other tropical plants receive only diffuse sun and thus depend on supplemental light from broad spectrum fluorescents for sturdy growth.

Foliage Facts

Foliage plants such as *Monstera*s, *Philodendron*s, many ferns, *Syngonium*s and similar selections adapted to life in dim jungles will do quite well indoors with low levels of diffuse sunlight. Providing artificial light for foliage plants, in rooms where daylight is available, will serve to promote compacter growth and provide dramatic theatrical lighting at night.

Natural Habitat

Several months ago I returned to the Amazon basin and during the course of study measured the variation in light intensity between the jungle floor and a jungle clearing. Within the jungle, at the level of many foliage plants we grow indoors (*philodendron*s, *syngonium*s etc.) I measured about 25 footcandles, on a cloudy-bright day. Walking a few yards into a clearing, where sunlight came directly through, I found 3,200 footcandles!

Some of the plants we enjoy in captivity actually receive a combination of these extremes, but with one or the other intensity dominating. For example the *marantas* and *episcias* I observed grew where, for short periods each day, the sun shone on them directly. The rays came through open patches in the cover or the plants grew along the edge of a clearing, perhaps on a river bank, where early morning sun could reach them directly.

However the actual duration of direct rays striking the foliage was but a few minutes. Soon the forest floor plants were in diffuse light, sometimes in very dim light, for the rest of the day. Naturally you can save electricity and still have beautiful plants if you pick species with such low light requirements for placement indoors where light is dim.

Incandescent Uses

I would not wish to grow houseplants under pure incandescent light for several reasons. Most importantly the efficiency of incandescent light distribution, per watt of energy required, is way below that of fluorescent tubes. Think about how much light a 75 watt flood provides com-

pared to even a single 40 watt fluorescent tube (48 inches long). Excessive heat from incandescents is another reason to avoid trying to grow plants with these bulbs as the only source of light. The reflector floods and spots do have a real value for plants indoors; they are excellent for theatrical lighting, to create dramatic shadows, to illustrate your favorite plants at night.

For all indoor trees and vines directional incandescent lighting is easier to control than fluorescent. The beam of an incandescent lamp carries better than the diffuse light from a fluorescent tube. The incandescent lamps also fit into many types of decorative ceramic-based fixtures which are suited to modern decorating plans.

Use incandescent lamps to supplement daylight around tall indoor specimens; palms, *scheffleras*, large coffee trees, big *monstera*s. Such dramatic living decorations will benefit from 10 to 14 hours of incandescent light each day. You will find this system working well in office buildings where tall accent plants survive many months with no direct sun.

The office plants, even those sometimes replaced by interior decorating firms, stay attractive with a combination of incandescent lights, fluorescent fill lights, and in a few cases some diffuse daylight. Direct glare from the overhead fluorescents is usually avoided by covering the fixtures with wedged louvers or frosted plastic shields. These same glare reducing items can be used in home situations.

Rotation

Of course some large offices contract horticultural decorating firms to continually rotate plants in public places. By rotating their rental

specimens a contracting firm can keep them in a healthy condition with occasional growing periods in an ideal environment. This same idea is useful when you are growing houseplants. I grow many species under lights in the basement or below benches in the greenhouse. When the specimens are in bloom or perfect leaf I display them for maximum appreciation. Even though a display area may have less than ideal light and humidity, the plants will not suffer unduly if they remain in such a location 4 to 6 weeks.

Rotation is especially practical with houseplants under lights since the most efficient growing systems are not the most attractive. Bright four to six lamp fixtures over moisture trays, three or four tiers tall on a big frame or cart, are not easily integrated into a livingroom or den decorating plan. In the basement or spare room you can have an extensive efficient light garden with the main consideration being practicality and ease of care rather than aesthetics.

For example growers of succulents and bromeliads report excellent color and plant habit with Vita-Lite lamps. Orchid growers are enthusiastic about Wide Spectrum Gro-Lux. Recent reports give good reviews to Agro-Lite tubes. There are still more types of fluorescent lamps, some of them designed for other applications but now offered for horticultural use.

Incandescent bulbs used to be mixed with Cool White or Warm White fluorescents to furnish more of the red-orange light plants need. Since broad spectrum horticultural lamps were introduced I find it is not necessary to mix incandescent bulbs with fluorescents in order to obtain maximum growth and flowering on tropicals.

What's the Difference?

The major difference between fluorescent lamps in the home is their visible color. For foliage plants and many medium light level species of gesneriads and begonias I note satisfactory growth under a combination

of Warm White with Cool White lamps. However for orchids, succulents, bromeliads ready to bloom, and similar flowering plants I see better growth, more flowers, with the broad spectrum lamps. This is even more important for indoor plants which receive no sun at all.

Which broad spectrum lamp you prefer depends upon the color you like. If you wish to light plants in a livingroom or to supplement window light without changing the foliage color or flower hues, choose a lamp with daylight color temperature. Two currently available are Vita-Lite of Duro-Lite Co., and TruBloom of Verilux Co. Both have the color of noon daylight.

Sylvania's Wide Spectrum Gro-Lux and the newer Agro-Lite of Westinghouse are excellent broad spectrum fluorescents with slightly pink light but still suitable in living areas. The standard Gro-Lux lamp, recommended by Sylvania for starting seeds and growing many indoor plants, has a rosy glow which enhances flower and foliage color.

Pinks and reds vibrate under standard Gro-Lux, and Rex begonias show colors never seen in daylight. The rosy-pink light is theatrical and I think fun to use but this is not the lamp for your livingroom or bookshelf garden if you insist on perfectly natural colors.

Back left. *S. 'Ophelia'*, *Begonia bowerae* nigramarga. Front left Saint. 'High Stepper'. Front right *S. 'Astro Pink'*.





This shelf garden has mirror coated parawedge louvers just under the lamps to stop glare. Plants are Asparagus at left, begonias, dwarf gesneriads, planted in waterproof tray.

Maximum Success

No matter which lamps you choose or what plants you enjoy growing there are some basic energy saving steps to increase light gardening pleasure. You will be able to initiate at least several of the following procedures to maximize success and to minimize electric bills:

1. Use lights for dual purposes. A room can be pleasantly lit with the same lamps used to grow plants on a bookshelf or table.

2. Capture all available natural light by locating light gardens near windows, skylights, even by glass basement doors.

3. Install an efficient timer to provide automatic regulation of the day-length.

4. Arrange for reflective surfaces around your light garden so all the light produced will be best used. In bookshelf gardens paint back, bottom, and sides with flat white paint or install mirrors to double the view while reflecting light rays. Elsewhere use aluminum foil or durable reflecting materials such as Roscoflex which can be glued, stapled, tacked, and washed. (Rosco Labs, Port Chester, N.Y. 10573 will send sample

book of reflective materials for \$1.50).

5. Provide fluorescent lamps in light garden carts or bookshelf gardens instead of less efficient incandescents. Save incandescents for lighting after dark, especially of dramatic tall specimens.

6. Install broad spectrum fluorescents which provide the best utilized colors and keep plants close to the tubes for maximum light absorption.

Further Details

These are but a few ideas for enjoying your houseplants and producing maximum flowering. For sources of supplies, nurseries that offer rare tropicals, and an extensive presentation of this subject please consult "The Complete Book of Houseplants Under Lights" (Hawthorn Books, 1975), a volume I wrote especially for enthusiastic gardeners such as fellow members of the American Horticultural Society. You might also enjoy membership in the Indoor Light Gardening Society.

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a sleeper...

Have you tried a fruit clamp lately? Know where to buy an apple sleeve? Eaten any sugared herbs or a fresh jujube?

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Are you familiar with the Minnesota Tip" for wintering roses? Do you know how to have sweet corn ready for picking by July 4? Ever tried the French Intensive Method of raising lettuce? Tried licorice root mulch or black gravel on tomatoes? Know any strawberry shortcuts?

"The Avant Gardener - A Handbook & Sourcebook of All That's New & Useful in Gardening", published by Houghton Mifflin Co., is a sleeper that will make you think you're Rip Van Winkle.

The year of the garden boom has found a proliferation of gardening books published. Thank goodness this one doesn't fall into the common garden variety: the ego-trip written by a little old lady whose thesis encompasses the gems she's grown on her kitchen window sill, or the academic putdown written by a know-it-all horticulture professor outlining the same "how-to, now-is-the-time-for" rehash, as if all his readers are blooming idiots whose best medium for learning is repetition and whose main learning resource is Sesame Street.

Any book that can inspire its reader to dream up a new garden gadget - and "The Avant Gardener" may well have this effect on some - has got to be a real gold mine of information - none of it moldy.

The book's strength is in its swift newspaper style - no long orations on the technical aspects of growing, just the latest scoop. It beats the yellow pages as a source for finding things...

If you want to keep up on what's new in gardening, there's not a better book out... -Mary B. Good, *Garden Editor*, Paddock Publications.

"The Avant Gardener - A Handbook & Sourcebook of All That's New & Useful in Gardening", by Thomas and Betty Powell, 263 pages, large 7 x 10 format, lavishly illustrated, \$6.95 paperback, \$12.95 hardcover, is available postpaid from:

THE AVANT GARDENER
Box 489, New York, N.Y. 10028

Continued on page 39

The Nona Whitney Evans Memorial Reading Garden

*Richard T. Isaacson
Librarian
Garden Center of Greater
Cleveland*

Outside The Garden Center of Greater Cleveland's library is a small, beautifully designed garden, The Nona Whitney Evans Memorial Reading Garden. Dedicated in 1972, this garden was given in memory of Nona Whitney Evans by her parents, Raymond and Elizabeth Evans. Mrs. Evans has stated in a brochure on the garden, "The design and planting plans were devised to enhance The Garden Center grounds and provide beauty for all the senses. Each plant, shrub and tree has a 'raison d'être'—beauty of shape, texture, odor, blossom or berry. Each has a history of its own, having been observed elsewhere in gardens somewhere across the U.S.A. and usually documented and photographed in its original location. The plant material is mostly unique to this area and will



hopefully give pleasure and ideas to all garden lovers."

The garden includes a vine-covered pergola, airy gazebo and many redwood benches for reading and reflection. The trees, shrubs, perennials and ground covers often lead gardeners into the library for more cultural and historical information on the plants. Throughout the growing season, gardeners of the Cleveland area can study the uncommonly grown plants described below.

The earliest tree to flower in the garden is the Yulan magnolia, *Magnolia denudata*. A native of China, this upright growing magnolia has creamy white blossoms that appear about one week ahead of the more common *Magnolia x soulangeana*,

the saucer magnolia. Another of the garden's magnolias, the later flowering *Magnolia virginiana* or sweet bay magnolia is the type-species of Linnaeus's genus *Magnolia*. A type-species is the plant for which the whole genus is named. The sweet bay magnolia was introduced in Europe in 1688 when John Banister shipped a specimen to Henry Compton, Bishop of London. *Magnolia virginiana* is hardy to zone 5 being native to the Atlantic coastal plain from Massachusetts southward to Florida. In the north it is usually a shrub or small tree but from the Carolinas

southward it often reaches the height of 75 to 100 feet. While flowering is often extended its main flowering period is in early July.

Two selected hybrid dogwoods, *Cornus florida* 'Cloud Nine' and *Cornus kousa chinensis* 'Milky Way' blossom following the Yulan magnolia. Both have large creamy white bracts and are more showy than the native dogwood species. *Styrax japonicum*, the Japanese Snowbell, resembles its American relative *Halesia carolina*. This short, spreading tree is attractive year around but when in flower in June with its clusters of 3 or 4 fragile, white, bell-shaped flowers it is one of the most beautiful of all small flowering trees. *Halesia carolina*, very popular in the southeastern United States, is un-



commonly grown as far north as Cleveland. This more upright growing tree has similar white, bell-shaped flowers, but they are borne earlier in the spring before the leaves appear.

Many trees when grown out of their natural hardiness range will remain small or shrub-like; the Japanese stewartia, *Stewartia pseudo-camellia*, is one. In the reading garden this 60 foot native of Japan has formed a short, spreading shrub with camellia-like flowers (See *American Horticulturist* Vol. 54, #6 Winter 1975). Flowering in July, this is one of the more showy summer trees. *Oxydendrum arboreum* or sourwood is becoming more commonly grown as an ornamental tree in Cleveland on its northernmost range. Also summer flowering, the white, one-sided racemes persist into the fall when they vividly contrast with the bright scarlet foliage.

The-fall flowering *Franklinia alata* with its showy, fragrant, white flowers blooms over an extended period from mid-August until frost. Native to Georgia, it was collected by John Bartram in 1770 and sent to his garden in Philadelphia. It was last recorded on its native site in 1790 when Dr. Moses Marshall of Philadelphia visited its restricted range. An unusual evergreen tree that adds interest throughout the year is *Pinus densiflora oculus-draconis*, the dragon's eye pine, which has needles with cream bands that gives it the appearance of a variegated pine. Other trees in the garden include *Carpinus caroliniana* (American hornbeam), *Evodia danielli* (Korean evodia), *Cornus florida pendula*, and *Quercus prinus* (chestnut oak).

The earliest flowering shrub in the garden is the dwarf fothergilla, *Fothergilla gardenii*, with its small spike-like, delightfully fragrant flowers which appear before the leaves. Growing 3 feet tall, this native southeastern United States shrub was discovered by Dr. Garden of Charleston. Named after Dr. John Fothergill, a London physician and avid plant collector, this low growing fother-



One of the many areas to rest and read in the garden.

gilla turns a brilliant deep yellow in fall. The fragrant viburnum, *Viburnum carlesii*, is endemic to Korea and is one of the first viburnums to bloom in the spring. Although only introduced to the West at the turn of the century, this viburnum has an old-fashioned quality to its bloom and habit which makes it one of our most popular viburnums.

The selected hybrid azaleas such as 'Rosebud', 'Snowball' and 'Old Gold' were carefully chosen for their vigor and flowering habit. Azalea 'Old Gold' planted outside the library windows, carries outside the warm golds and greens of the decor of the library. In dense shade under a large tree one of the summer flowering shrubs, *Hydrangea quercifolia*, or the oakleaf hydrangea, with its cool hued, paniced blossoms makes an effective late summer showing. Discovered by John Bartram in the southeastern United States, this hydrangea is one of the more adaptable hydrangeas being tolerant of shade and also of more sunny conditions.

Abelia grandiflora or glossy abelia is one of the most floriferous of flowering ornamental shrubs. This abelia grows to 4 or 5 feet with semi-evergreen, glossy leaves and delicately shaded flowers which appear

from June to November. It is a shrub that should be more widely grown. Other shrubs include the rare *Lindera angustifolia*, *Buxus microphylla compacta*, *Euonymus nana turkestanica*, *Stephanandra flexuosa incisa nana*, *Enkianthus campanulatus*, and *Neillia tibetica*.

Because of the growth in popularity of ground covers, many gardeners find this garden's unusual ground covers of major interest. Ground covers include such species as *Ceratostigma plumbaginoides* (leadwort), *Vinca minor alba* (white myrtle), *Potentilla tridentata* (three-toothed cinquefoil), *Polystichum acrostichoides* (Christmas fern), *Liriope regale* (regal lily-turf), *Asperula odorata* (sweet woodruff), *Iberis 'Autumn Snow'* (candytuft), *Geranium sanguineum* (cranesbill), two species of the barrenwort *Epimedium niveum* & *roseum*, *Chrysogonum virginianum* (golden star), selected heathers including *Calluna 'Mrs. J. H. Hamilton'* & *Calluna vulgaris 'Else Frye'*, and *Asarum europeum* (European wild ginger).

Geranium sanguineum or cranesbill is especially effective forming a spreading dense mound of fine textured foliage. The small, pink blossoms with their delicate tracings

are included in the vine collection.

Other specimen perennials include the use of *Primula* 'Nosegay' hybrids & 'Pacific' hybrids under the pergola and specimen plants of *Paeonia suffruticosa*, white-spiked snakeroot (*Cimicifuga racemosa*), and many *Campanula* species.

All these plants and many others can be observed and studied in this attractive garden. The Nona Whitney Evans Memorial Reading Garden and other gardens surrounding The Garden Center of Greater Cleveland provide a living outdoor resource to The Garden Center's educational and cultural programs. Truly this garden is described by Josephine Nuese's definition of a garden in her excellent book *The Country Garden*, "To me a garden is an area, or a series of related areas, wherein one finds reassurance and tranquility, surprise and delight; its beauty lies in the subtle balancing of scale and proportion, line and form, mass and texture, contrast and accord, the whole affiliated yet full of small surprises. Such a garden imparts a benediction, enlarging the mental and emotional habitation . . ."

flower intermittently throughout the summer with the major bloom period being in June. The European wild ginger, *Asarum europeum*, has proved a most desirable ground cover. With its glossy, evergreen foliage, this ground cover seems to thrive in shady locations and in locations with more sun if kept watered during the summer.

Perennials are used as feature plants in the garden with special collections of helleborus and clematis. Included in the helleborus collection are *Helleborus niger* (Christmas-rose), *Helleborus lividus* (Corsican Christmas-rose) and the variable *Helleborus orientalis* (Lenten-rose). The blossom color of *Helleborus orientalis* has been extremely variable, ranging from creamy white to purple. The clematis collection includes both shrubby perennials and the vines used on the pergola and gazebo. *Clematis wyvale* and *Clematis integrifolia coerulea* are both grown as shrubby specimens being 2 to 4 feet and upright in habit. *Clematis* Hagley Hybrid, *C. lanuginosa candida*, *C. 'Duchess of Edinburgh'*, *C. 'Mrs. Cholmondeley'*, *C. montana rubens*, and *C. 'Ramona'*



Arbor in reading garden.



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My Favorite Plant

Double File Viburnum

Francis De Vos
Director
Botanic Garden of the
Chicago Horticultural Society
Glencoe Ill. 60022

The Double-file Viburnum is one of the aristocrats of our gardens. Its dependability and adaptability have endeared it to gardeners, nurserymen and landscape architects. The simple beauty of its branching habit, foliage and flowers are assets to any landscape planting at any time of the year. One of the great thrills for any gardener is to see a specimen plant of the Double-file Viburnum planted on a slope and in full bloom. When viewed from a higher elevation the flat-topped flower clusters arranged along the length of the horizontal branches are uniquely beautiful.

The confusing nomenclature that has plagued the Double-file Viburnum has made it difficult for gardeners and nurserymen to communicate with one another about this plant. This confusion partly arises from the fact that the basic species, *Viburnum plicatum*, refers to the plant popularly known as the Japanese Snowball. This is a garden form that was long cultivated in China and Japan and introduced by Robert Fortune in 1844, several years before the wild form. This plant has all sterile flowers and has been also known botanically as *V. tomentosum* var. *plicatum*, *V. tomentosum* var. *sterile* and *V. tomentosum plenum*. The wild and reproducing plant from China and Japan that would normally bear the species name is relegated to variety or forma status and is known today as *V. plicatum* var. *tomentosum* or by some taxonomists as *V. plicatum* f. *tomentosum*. Many nursery catalogs persist in listing the Double-file Viburnum as *V. tomentosum*.

Plants of the Double-file Viburnum that are sold in the nursery trade as *V.*



plicatum tomentosum or *V. tomentosum* represent, depending on one's viewpoint, as a somewhat uniform or variable assemblage of plants with flat-topped flower clusters made up of an outer whorl of sterile flowers and inner cluster of fertile flowers. This so-called standard form is commonly treated as if it were a cultivar or a definite variety when in actuality the name *V. plicatum tomentosum* represents the wild form and all those plants of the species *V. plicatum* that have an outer whorl of sterile flowers and an inner cluster of fertile flowers.

This nomenclatural muddle persists when individual plants of *V. plicatum tomentosum* are selected and given cultivar status. The cultivar known as 'Mariesi' has larger flower clusters and is one of the better fruiting types. Technically this plant should be designated a *V. plicatum tomentosum* cv. 'Mariesi'. It is easy to

understand why the name of this and similar cultivars is shortened by most writers and nurserymen to *V. plicatum* 'Mariesi' or even *V. 'Mariesi'*.

Other cultivars of the Double-file Viburnum include: 'Lanarth' that originated in St. Keverne, Cornwall, England—'Lanarth' is a wide spreading form with a somewhat less horizontal branching habit; in 'Pink Beauty' and 'Roseum' the sterile ray florets turn pink under some conditions as they age; 'Rowallane' originated at Rowallane Gardens, Saintfield, Ireland and has smaller leaves, flowers freely and fruits abundantly.

The Double-file Viburnum is a broad spreading shrub with horizontal branching. Under most conditions it will reach a height of 8-10'. Many specimens are as broad as they are high. It is dependably hardy in USDA Zone 5 and Wyman's Zone 4.

In the Chicago area, the Double-file Viburnum comes into flower in late May or early June. The flower clusters are borne in double rows along the upper sides of the branches and have been referred to by the English nurseryman, Edwin Hillier, as giving the appearance from a distance of icing on a cake. The bright green pleated leaves are attractive throughout the summer and the autumn foliage a dull but attractive purplish red. The fruiting effect is somewhat variable depending on the season and the cultivars that are grown. The fruits are at first red and finally turn black.

The Double-file Viburnum is a quality plant that deserves a place in any garden where it will grow.

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Dr. Henry M. Cathey

Light Levels:

Low — minimum light level of 25 footcandles, preferred level of 75 to 200 footcandles

Medium — minimum of 75 to 100 footcandles, preferred level of 200 to 500 footcandles

High — minimum of 200 footcandles, preferred level of 500 footcandles

Very high — minimum of 1,000 footcandles, preferred level of over 1,000 footcandles

Name	Mature Size	Light Level	Water Requirements
<i>Aechmea fasciata</i> (Bromeliad)	pot plant	medium	moist
<i>Aglaonema commutatum</i> (Chinese evergreen)	pot plant	low	moist
<i>Aglaonema</i> "Pseudo-bracteatum" (Golden aglaonema)	pot plant	low	moist
<i>Aglaonema roebelinii</i> (Peuter plant)	pot plant	low	moist
<i>Aloe variegata</i>	pot plant	very high	dry
<i>Araucaria excelsa</i> (Norfolk island pine)	tree, floor, pot plant	high	moist
<i>Asparagus sprengeri</i> (Asparagus fern)	pot plant	medium	moist
Begonias, other than metallica and rex	pot plant	very high	moist
<i>Brassaia actinophylla</i> (Schefflera)	tree, floor, pot plant	medium	dry
Bromeliads (many species)	pot plant	medium	moist
<i>Chamaedorea elegans</i> (Neanthe bella palm)	floor, pot plant	low	moist
<i>Chamaedorea erumpens</i> (Bamboo palm)	tree, floor, pot plant	low	moist
<i>Chamaerops humilis</i> (European fan palm)	tree, floor plant	high	moist
<i>Cissus antarctica</i> (Kangaroo vine)	pot plant	high	moist
<i>Cissus rhombifolia</i> (Grape ivy)	pot plant	medium	dry
<i>Citrus mitis</i> (Calamondin)	pot plant	high	dry
<i>Codiaeum</i>	pot plant	very high	dry
<i>Coleus</i>	pot plant	very high	wet
<i>Crassula</i>	pot plant	very high	dry
<i>Dieffenbachia amoena</i> (Dumb cane)	floor, pot plant	medium	dry
<i>Dieffenbachia 'Exotica'</i> (Dumb cane)	pot plant	medium	dry
<i>Dizygotheca elegantissima</i> (Spider aralia)	floor, pot plant	high	moist
<i>Dracaena deremensis</i> (Green dracena)	floor, pot plant	medium	wet
<i>Dracaena deremensis 'Warnecke'</i> (White striped dracaena)	pot plant	medium	dry
<i>Dracaena fragrans massangeana</i> (Corn plant)	floor, pot plant	low	wet
<i>Dracaena marginata</i> (Dragon tree)	tree, floor plant	medium	wet
<i>Episcia</i>	pot plant	very high	wet
<i>Eriobotrya japonica</i> (Japanese loquat)	tree	high	moist
<i>Fatsia japonica</i>	floor, pot	medium	moist

Name	Mature Size	Light Level	Water Requirements
(Japanese aralia)	plant		
<i>Ficus benjamina exotica</i> (Weeping java fig)	tree	medium	moist
<i>Fiscus elastica</i> 'Decora' (Rubber plant)	tree, floor pot plant	medium	moist
<i>Ficus lyrata</i> (Fiddle leaf fig)	tree, floor plant	medium	moist
<i>Ficus philippinensis</i> (Philippine fig)	tree, floor plant	medium	moist
<i>Ficus retusa nitida</i> (India Laurel)	tree	medium	moist
<i>Howea forsteriana</i> (Kentia Palm)	tree, floor plant	low	moist
<i>Hoya carnosa</i> (Wax Plant)	pot plant	medium	dry
Impatiens	pot plant	very high	moist
<i>Ligustrum lucidum</i> (Wax leaf privet)	tree, floor plant	medium	dry
<i>Maranta leuconeura</i> (Prayer plant)	pot plant	medium	moist
<i>Nephrolepis exaltata bostoniensis</i> (Boston fern)	pot plant	medium	moist
Orchids (many species)	pot plant	very high	moist/dry
<i>Pelargonium</i> species (Geranium)	pot plant	very high	dry
<i>Peperomia caperata</i> (Emerald ripple)	pot plant	low	dry
<i>Petunia hybrida</i> (Cascade type)	pot plant	very high	moist
<i>Philodendron hybrids</i> (Self-heading philodendron)	floor, pot plant	medium	moist
<i>Philodendron oxycardium</i> (Common philodendron)	pot plant	low	dry
<i>Phoenix roebelenii</i> (Dwarf date palm)	floor, pot plant	medium	wet
<i>Pittosporum tobira</i> (Mock orange)	floor, pot plant	high	dry
<i>Pleomele reflexa</i> (Green pleomele)	floor plant	medium	wet
<i>Podocarpus macrophylla</i> Maki (Podocarpus)	tree, floor pot plant	high	moist
<i>Polyscias guilfoylei</i> (Parsley aralia)	floor, pot plant	medium	moist
<i>Rhapis excelsa</i> (Lady palm)	tree, floor plant	medium	wet
<i>Saintpaulia</i> species (African violets)	pot plant	very high	moist
<i>Salvia splendens</i> (Scarlet sage)	pot plant	very high	moist
<i>Sinningia</i> species (Gloxinia)	pot plant	very high	wet
<i>Spathiphyllum</i> "Mauna Loa" (White flag)	pot plant	medium	dry
<i>Tagetes</i> species (Marigold)	pot plant	very high	moist

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BONSAI

Continued from page 22

Naturally this brief explanation skips much pertinent and essential information in most facets of bonsai work. In particular, it overlooks the styling work needed to maintain the shape of the bonsai, the work of developing pleasing proportions, and many further considerations of how branches or a line of trunk are chosen. The considerations of styling, the art in the art of bonsai, take as their rules those same universal ratios and values that have guided, perplexed, and bemused all artists since the first rudimentary "stick-in-the-sand" portrayal was done by pre-man. Bonsai art has consumed many creative individuals' lifetimes. It is a great challenge and intrigues even the best trained artists. The need in bonsai is to create an effect of balance and grace which occurs in the randomly pruned shape and branch placement of the real adult tree. Naturally, a white pine in meadowland varies in shape from one on a wind-blasted ridge. Both vary from an American elm, or a red maple. The study of tree shapes alone can be an immensely complex and interesting pastime.

The problem is further compounded by the task of dealing with many different tools. Combine this with the ways individual plant materials behave under those tools, copper wire, and the restricting culture of small containers, and bonsai becomes an extremely complex art.

While the lessons to learn may seem long, shortcuts are available. With proper instruction you can do compelling work soon after you have started. Then you can progress and experiment and explore the mysteries of bonsai on your own.

The one drawback to bonsai is that they do require somewhat more care than other potted plants. This includes more frequent watering as a result of the soil mix which is used. But the attention they demand is our pleasure to give, and it seems a small price to pay for insurance that the tree will live long enough for us to hand it on to our children, and often our grandchildren.





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New York-1975

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Fitch is a well-known naturalist, horticulturist, photographer and journalist. His articles and photographs have appeared in *The New York Times*, *Americas*, *Bon Voyage*, *Plants Alive*, *Horticulture*, *Flower and Garden*, *The American Orchid Bulletin*, various encyclopedias and other publications.

Helen Van Pelt Wilson edited the book which generally is assurance of high quality.

Fitch is the author of two other fine books that may still be available: *The Complete Book of House Plants* (Hawthorn, \$9.95, 1972) and *The Complete Book of Terrariums* (Hawthorn, \$8.95, 1974) both edited by Mrs. Wilson.

There are two sections. Part 1 covers the basics of light gardening, with complete easy-to-understand instructions on how to do it. Part 2 contains instructions on how to take care of hundreds of plants appropriate for light gardening.

"You need light for living," says the author, "and this same illustration around your home can help you grow beautiful houseplants. You can create gardens all over your house, double the growing space in a greenhouse, or turn your basement into a tropical paradise by gardening under lights.

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T.S.

ORGANIC GARDENING UNDER GLASS

By
George (Doc) and Katy Abraham
Rodale Press, Inc.
Emmaus, Pa.-1975

308 pages, illustrated, \$8.95

Doc and Katy are well-known greenhouse growers and garden writers in Naples, N.Y. They teach horticulture at Community College of the Finger Lakes, and have their own weekly *Green Thumb* radio and T.V. shows in Rochester. They write the *Green Thumb* syndicated column which appears in 135 newspapers and magazines.

"We wrote this book to help you discover a whole new world of gardening under glass," they say. "There are more home greenhouses and outdoor vegetable gardens now than at any time in history, a change brought about by tight money, high food costs, and a yearning for good flavor and freshness.

"No store-bought vegetables can match the taste of the crops you grow and you can have fresh fruits and vegetables almost any time of the year.

"There's an even more important reason for gardening under glass," they claim. "It is therapy. That is, to us, the main reason why everyone should have a hobby greenhouse. It helps heal minds and bodies. Today many hospitals use horticulture as a therapeutic tool for rehabilitation. It makes more sense to spend a hundred dollars for a greenhouse than to spend a thousand dollars in doctor bills."

Before you spring for a greenhouse, they say, take a good look at catalogs and at other people's greenhouses. They come in all sizes and shapes, and whichever variation you decide upon, whether it's a sunny plant room, a bay window, or a full-scale model, the addition of a greenhouse might be the nicest thing you ever did for yourself or your home.

T.S.

THE GREAT BOOK OF BIRDS

By
John Gooders
The Dial Press
New York-1975

352 pages, wonderfully illustrated, \$24.95

John Gooders is an ornithologist of international repute. He is perhaps best known for his editorship of the part-publication *Birds of the World*, which built up into an impressive nine volume encyclopedia. He

THE BOOK OF LANDSCAPE DESIGN

by
Ortloff, H. Stuart and Henry B. Raymore
Wm. Morrow & Co.
January 15, 1975
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The American Horticultural Society

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Each of the programs are individually planned and researched in an effort to produce a distinctive itinerary for members of the Society who have great diversification in their horticultural interests. It will be noted that these itineraries are quite different in many ways from the non-objective usual tourist programs. They are not 'hop, skip, and jump' trips covering huge areas and continents in minimum periods. They are planned for the sophisticated traveler with a common interest in horticulture—a magnificent bond. All airlines are scheduled I.A.T.A. flights.

These travel adventures are planned on a basis of providing the best of comforts in the areas visited. Since each of the groups are strictly limited in numbers, early reservations are recommended. Many previous projects have been fully subscribed several months prior to departure. Early enquiries are extended preference.

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(15 days or June 3rd (22 days)

EXPLORATION OF CALIFORNIA AND ITS HORTICULTURE 16 days—April 1976

EXPLORATION OF THE PACIFIC NORTHWEST (Oregon-Washington) (Vancouver) 16 days—May 1976

A SUMMER EXPLORATION OF THE ORIENT July 16th to August 6th, 1976

AN EXPLORATION OF NEW ZEALAND (The Garden Isles of the South Pacific) October—November 1976 23 days

AN EXPLORATION OF SOUTH AFRICA September 1976 22 days

If you wish further details concerning any AHS Travel explorations briefly outlined above, please write AHS Tours c/o American Horticultural Society, Mount Vernon, VA, 22121. We will send you complete brochures as soon as they are available.



STATEMENT OF OWNERSHIP MANAGEMENT AND CIRCULATION

(Act of August 12, 1970: Section 3685. Title 39. United States Code.)

1. Title of Publication—*American Horticulturist Magazine*.
2. Date of filing—September 19, 1975.
3. Frequency of issue—Bi-Monthly—December, February, April, June, August, October.
4. Location of known office of publication—7931 East Boulevard Dr., Alexandria, Va. 22308.
5. Location of the headquarters or general business offices of the publishers—7931 East Boulevard Dr., Alexandria, Va. 22308.
6. Names and addresses of publisher, editor, and managing editor—Publisher—The American Horticultural Society, Mt. Vernon, Va. 22121. Editor—Murray Keene, The American Horticultural Society, Mt. Vernon, Va. 22121. Managing editor—none.
7. Owner (if owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding 1 percent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a partnership or other unincorporated firm, its name and address, as well as that of each individual must be given.) The American Horticultural Society, Mt. Vernon, Va. 22121.
8. Known bondholders, mortgagees, and other security holders owning or holding 1 percent or more of total amount of bonds, mortgages or other securities—none.
9. Omitted.
10. The purpose, function, and nonprofit status of this organization and the exempt status for Federal income tax purposes have not changed during preceding 12 months.

11. Extent and Nature of Circulation	Average No. copies each issued during preceding 12 months	Actual No. copies single issued published nearest to filing date
A. Total No. Copies Printed (<i>net press run</i>)	27,000	23,500
B. Paid Circulation		
1. Sales through dealers and carriers, street vendors and counter sales	—	—
2. Mail subscriptions	25,531	21,836
C. Total Paid Circulation	25,531	21,836
D. Free Distribution by Mail, Carrier or other means Samples, Complimentary, and other free copies	110	48
E. Total Distribution (<i>sum of C and D</i>)	25,641	21,884
F. Copies Not Distributed		
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I certify that the statements made by me above are correct and complete.

(Signed) Murray Keene

