

American

Horticulturist



Volume 52 Number 3 Fall 1973

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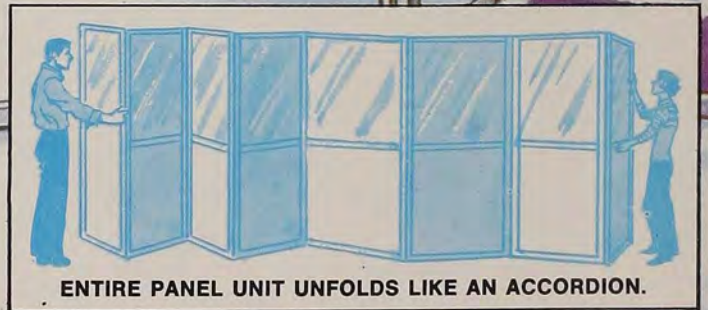
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STH 73-6

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Crown



Photo courtesy of L. H. Bailey Hortorium.

Dr. L. H. Bailey at age 89, taken at the Fairchild Tropical Garden.

Newer and especially younger readers of this magazine, hearing of the "Liberty Hyde Bailey Medal" awarded by the Society almost annually, might well wonder who the man was. With the conferring of this honor scheduled during the forthcoming Horticultural Congress in New Orleans, a re-introduction is in order. Almost a generation has now passed since Doctor Bailey died in 1954.

Liberty Hyde Bailey is deservedly called the "father of American horticulture." The American Horticultural Society perpetuates his memory appropriately by naming its highest award for him. Through his own energy and interests, combined with the times in which he lived, Bailey played a towering role in shaping American horticulture.

Born in 1858 on a Michigan farm, of a Vermont-born father whose name also was Liberty, he lived an amazingly productive life centered from beginning to end on the world of plants. His career was caught up in the tremendous agricultural expansion over this continent, and he played no small part in it. Starting as a professor of horticulture in Michigan and later at Cornell University, he was chosen director and then first dean of the new College of Agriculture at Cornell early in this century. He guided its beginnings and headed it toward its present leadership position.

His most outstanding innovation touching our own times

was the concept of university extension services. Because he loved and respected farm people as the true basis of society, he pioneered in finding ways to furnish them with up-to-date knowledge and methods from the universities. Sometimes it was by publishing extension bulletins; sometimes, more directly, it was by setting out in his buggy to call on them. He insisted that ornamentals be included in the extension subject matter, because people needed beauty as much as bread and butter.

He was a prodigious writer. Today's gardeners know him best for his still-used three-volume *Standard Cyclopaedia of Horticulture* and the concise dictionary *Hortus II* (both co-authored and edited with his daughter). There were scores of other books, bulletins, guides, essays—even a book of verse called *Wind and Weather*. They brought him national renown as a conservationist, teacher, scientist, naturalist and philosopher. Politics once beckoned, but he rejected that role. He became first president of the then-new American Society for Horticultural Science.

In 1935 he presented to Cornell University the Liberty Hyde Bailey Hortorium, an institution including his personal library and plant collections, which then and now, exists to relate basic botanical information to the horticultural world. "Hortorium", incidentally, was a word coined by Bailey.

Bailey was an enthusiastic and tireless gardener. His interests ranged from plant to plant as one kind after another took his attention. At various times his garden abounded with a hundred kinds of campanulas; or overflowed with squash and pumpkin vines, dianthus or something else. "The way to know a plant is to grow it," he would say. His 90th birthday saw him in a West Indian jungle collecting palms to add to his already large collection.

An unabashed idealist and romanticist, Bailey held a philosophy that was thought quaint a few years ago—faith in individualism, in the benefits of country living, in the basic goodness of nature, in man's creative role as the steward of the land and the grower of plants. After several decades of neglect, these attitudes are again ascending. His once-proposed "Society of the Holy Earth" now has a strangely contemporary ring to it. So his values have proved to be durable.

In preparation for their bicentennial anniversary as a nation, Americans will be reviewing the roster of great men and women of the past who helped build toward the present. On matters of horticulture, Liberty Hyde Bailey has cast a very long shadow across this land.—Rachel Snyder

JOHN PHILIP BAUMGARDT, *Editor*

The American Horticultural Society, *Publisher*

7931 East Boulevard Drive, Alexandria, Virginia 22308

O. KEISTER EVANS, *Executive Director*

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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OUR COVER PHOTO—The River Farm, near Mt. Vernon, has become national headquarters for The American Horticultural Society. The story of this historic Virginia property begins on page 6 of this issue. Photograph by Murray C. Keene, director of Public Relations, The American Horticultural Society.



The River Farm house, river front.



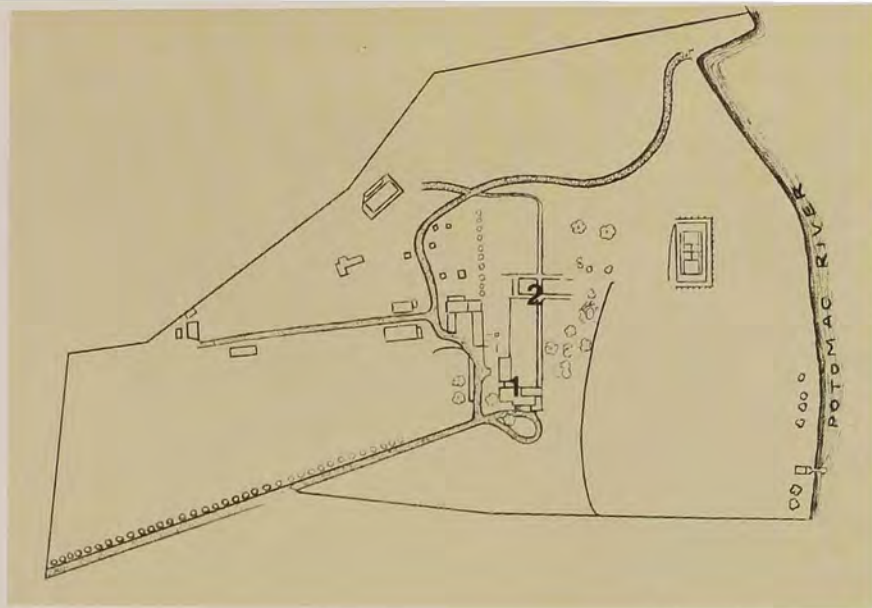
“I Rid to the River Farm...”

George Washington

The American Horticultural Society has a new address; the simple return, A.H.S., Mount Vernon, Virginia 22121, covers up three hundred years of exciting history. Thanks to the generosity of Mrs. Enid A. Haupt, A.H.S. was able to purchase a tract of almost twenty-seven acres on which is sited a grand old mansion surrounded by lawns, trees, gardens, and out-buildings. Once a property of George Washington, this land and house have figured in American history almost since its beginnings. How fitting that a historic house, cherished by our first President, and land for which he hired a foreign gardener, should become the permanent home of the American Horticultural Society. What an obligation A.H.S. has assumed in accepting responsibility for maintaining this property.

Early Historic Background

The tract of land now owned by A.H.S. lies on the Virginia side of the Potomac about five miles south of Washington, D.C. Before settlement, this was the land of the Piscataway Indians. As farmsteads expanded up the Potomac, settlers encountered the village of the Piscataway approximately opposite the A.H.S. site. Missionaries baptized the daughter of the Chief of the Piscataways, naming her Mary. Mary was raised and educated in the Virginia household of an



The formal gardens.

Property map.

1—House.

2—Formal gardens.



Photos by Murray C. Keene.



Roses thrive at the River Farm.

English gentlewoman, Margaret Brent. Later she married Captain Gyles Brent. The Captain, in 1653, obtained one patent of land from Thomas, Lord Culpepper, and another a year later. Both tracts, one for 800 acres and the second for an adjacent 1000 acres, were filed in the name of the Captain and Mary's one-year-old son, Gyles Brent, Junr. The young proprietor of 1800 acres of fine Virginia farmland was scarcely a credit to his father, a Somersetshire gentleman and his mother, a Piscataway princess. Though well educated, he joined others in warfare against his Mother's people. His wife obtained a judicial separation in May, 1679, and while on a visit to England he died in Middlesex, September 2, 1679. The Gyles Brent, Junr. property reverted to the ownership of his cousin, George Brent of Woodstock. By marriage the 1800 acre tract on the Potomac River eventually came into the ownership of William Clifton. At that time the property occasionally was referred to as Clifton's Neck.

William Clifton was not an able manager, though he spent considerable effort developing the farm tract. He had built a brick home on the land prior to 1760 (*Homes and Gardens of Old Virginia* sets the date before 1757); as early as August 14, 1755 his affairs were entangled and in the *Maryland Gazette*, published at Annapolis, he offered part of his holdings for sale.

George Washington became interested in the property and made Clifton an

From
Lord Aberconway
Telephone: Abbey 7151

8 The Sanctuary,
Westminster,
London, S.W.1

15th May 1973.

**Letter of congratulations
from Lord Aberconway,
president of the Royal Horticultural Society.**

Mr. David G. Leach,
President,
The American Horticultural Society,
1674 Trinity Road,
North Madison,
Ohio.

Dear Mr Leach

It was with much pleasure that the Council of the Royal Horticultural Society has learnt that the American Horticultural Society has been presented with the means of acquiring a National Center for American Horticulture, at Wellington.

On behalf of my Council I hasten to send to your Society all good wishes on this momentous occasion. I am sure that with this splendid new facility the American Horticultural Society not only will go from present strength to future greater strength, but also will be able to give practical help and service, as I know is your intention, to kindred bodies.

The generosity of Mrs. Haupt in giving your Society this splendid gift will ensure that the art and science of horticulture, so dear to so many American hearts, will advance still further. It will assist, encourage and stimulate many gardeners throughout the United States to further achievements in a splendid pursuit. You are indeed the recipients of a wonderful gift.

I send you all our best wishes.

*I am
Yours sincerely
Aberconway*



Clematis cultivar on the garden wall.

Agriculture at the River Farm

George Washington was a competent and conscientious husbandman. He loved his properties, spending many hours riding from plantation to plantation, overseeing the work. From his diary entries of October, 1786:

"Wednesday, 11th. I rid to all the Plantations, found most of my People had gone to the races. Those remaining in the Neck were clearing rye which had been tread out the day before and preparing to continue their wheat sowing tomorrow."

"Thursday, 12th. Rid to all the Plantations. Began in the Neck to sow Wheat in the middle cut of drilled Corn."

The diaries and letters of Washington reveal that it was partially due to short crops that he had to borrow travelling money. One also senses in his records a reluctance to leave his land to assume the presidency. As March, 1789, days passed and it became apparent that his country would call him away, workers on the plantations were harrowing and sowing spring crops; grass seed, barley, and oats.

While land development and agriculture were all-important, General Washington was not insensitive to the beauty of his Virginia properties or of the desirability of enhancing parklands and gardens. Already during his tenure the name of Walnut Tree farm occasionally was applied to the piece of ground that A.H.S. now owns. The first presently discovered record of a gardener at Washington's properties goes back to 1788.



The newest wing of the River Farm house.

Photos by Murray C. Keene.

Washington was looking over his land, particularly the road leading from his ferry (over the Potomac River) at Walnut Tree Farm, on Thursday, November 13, 1788. At Cameron he encountered his friend and personal physician, Dr. James Craik, who introduced him to two visiting German friends, Herr Wilmans and another unnamed gentleman. The group rode on to Mount Vernon; after a brief visit, Dr. Craik returned to his home in Alexandria, but the German guests stayed for the night. Washington walked over his grounds with his visitors, describing his plans to brighten Mount Vernon with flowers; he planned to have a greenhouse, and he wanted to have the best possible kitchen gardens with every herb obtainable, carefully nurtured by someone who knew his business.

Excerpts from Washington's November 14, 1788, diaries tell the rest of the story:

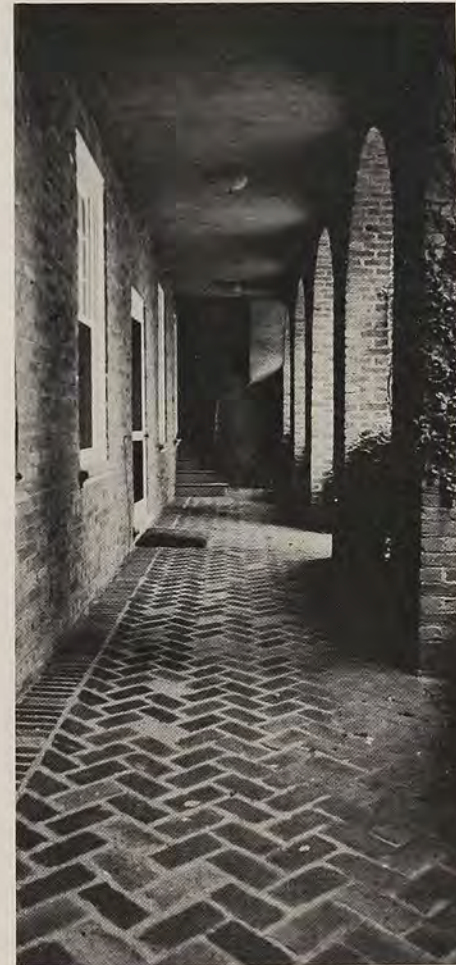
"Friday, 14th. Mr. Wilming (Washington's misspelling), the German Gentleman above mentioned having offered to engage a Gardener for me and to send him in a ship from Bremen, . . . he is to be a compleat Kitchen Gardener with a competent knowledge of Flowers and a Green House. . . ."

"After Mr. Wilming went away, as soon as breakfast was over I rid to all the Plantations . . . Mr. Lear finished to day what was left undone yesterday of the Survey of the Roads."

Finally, in a letter expressing his thanks to Mr. Wilmans, Washington wrote on October 12, 1789, from New York: "The Gardner who you have been so good as to procure for me arrived here on the 14 of September, and set off a few days after for my seat in Virginia, where he will enter upon his duty, and, from the account which you have given of him, I have no doubt but I shall be pleased with his services. The plants and seeds, which you were so good as to send to me arrived safe, and the Gardner has taken them to Virginia with him." One hopes that the gardener, Herr Ehlers, enjoyed being transplanted to Virginia by pre-arrangement. Perhaps concentrated researches among old records may reveal that one sunny day he, too, rid over to the River Farm and did something about the gardens. In any case, it is nice to think of his doing so.

The name of Tobias Lear appears above in one of the Washington diary entries. Tobias Lear was an important person in the Washington household and an important person in the history of George Washington's River Farm. Born in New Hampshire, Lear was a graduate of Harvard University who lived for some

Horticulture at Mount Vernon



A quiet arcade in the colonial Virginia manner.

The Washington Farms on the Potomac River, from a survey and map prepared by Washington, himself. The River Farm appears in the far right section.

- A** *Neither these lines, one or two medium farms, neither is capable of high improvement into meadows but to be so, requiring to be drained. — There are no towns*
- B** *Great part within these lines is in Wood, but there is a middle sized farm, with a house thereon, and a mo*
- C** *Peopled the same advantage. — The whole of it is cu*
- D** *Is cleared land, and might be added to River far*
- E** *The use of this farm is given a relation.*



Published by the Mount Vernon Ladies' Association, 1945.



An early illustration depicting Washington's death. In attendance are Dr. James Craik, Tobias Lear, Martha Washington and a household servant. Photograph lent by Mrs. Elsie Fawkes Jackson, Washington, D.C.

years in Europe. Being socially acceptable, a man of good taste, and with a good nature, he fitted into life at Mount Vernon. Indeed, he married into Washington's family not once, but twice.

Lear served George Washington as personal secretary in the post war years at Mount Vernon, throughout Washington's presidency, and thereafter. In 1793 he left the President's service to go into a mercantile enterprise but returned five years later. He stood at the President's bedside, holding his hand, when Washington died on December 14, 1799. Following Washington's death Lear became an accountant in the War Department, and on October 11, 1816, he died at his own hand in the gardens at the River Farm.

References
 formed independent of the others. — The greater of the
 of low; part of it was already retained; and the possible remains
 of soil.
 a succession of woods covered an elevation for a
 beautiful site for a gentleman's seat.
 nes of the wood, but has a house on it.
 ns; — or if that farm should be subdivided it might form part
 s on the River.

Farms and their Contents

Union Farm		Muddy Hole Farm	
Field N ^o 1	120 acres	Field N ^o 1	63
2	129	2	68
3	121	3	52
4	120	4	54
5	110	5	65
6	116	6	80
7	125	7	74
Meadow	22	Clover lots	20
25	67		476
Clover lots	20		
	925		
Dogue R. Farm		River Farm	
Field N ^o 1	70	Field N ^o 1	120
2	74	2	120
3	74	3	125
4	74	4	132
5	75	5	132
6	73	6	130
7	80	7	120
Meadow	38	Pasture	212
18		Orchards &c	84
12		Clover lots	32
10		Union Farm	928
36	114	Dogue Run F ^o	649
Clover lots	18	In the 4 farm	3260
	649		

December. 1793




Facsimile reproduction of the original in the Huntington Library, San Marino, California. Reproduced by permission.

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Washington expressed his high regard for Tobias Lear (who, following Washington's presidency lived at the River Farm adjacent to Mount Vernon) when he wrote in his will: "To Tobias Lear, I give the use of the Farm which he now holds, in virtue of a Lease from me to him and his deceased wife (for and during their natural lives) free from Rent, during his life." Tobias Lear referred to the property as Walnut Tree Farm; after his death in 1816, the farm passed to George Fayette Washington and Charles Augustine Washington.

The property was occupied by two generations of the Washington family, Charles A., a grandnephew, being the last, until 1859. Quakers, moving to Fairfax County from New Jersey, purchased George Washington's River Farm



View of the house from the river lawn. The sunken wall in the foreground, invisible from the house, kept livestock from the home lawn. It is called a Ha-Ha.

Photo by Murray C. Keene.

from the estate. The owner from 1919 who sold the property to A.H.S. was Mr. Malcolm Matheson.

The *Washington Sunday Star's* writer, "Rambler" visited the estate in 1904 and referred to it as "this broken and pathetic house." Revisiting the property in 1925, he described the beauty of the house and gardens, recalling the earlier desolate appearance of the estate. The Mathesons had made major changes and improvements in both house and gardens.

Names of the River Farm

Numerous titles have been affixed to the property and to the house which A.H.S. has purchased. Known at various times as Clifton's Neck, the River Farm, Walnut Tree Farm, and possibly, locally, as Johnson's Ferry, after Washington's tenant, Samuel Johnson, Wellington has been a common recent name. Quite early the name Wellington becomes associated with the property, particularly with the house.

One author remarks that Clifton built a brick home, calling it Wellington, after the Iron Duke. The *Alexandria Gazette*, in an 1825 advertisement, refers to the property as Wellington. The Historic Landmarks Survey of Fairfax County gives Wellington as the name of the property, and describes the present estate; "set back from East Boulevard Drive and screened by extensive plantings, the beautifully landscaped property slopes down to the Potomac River." Today, one more title is added to this distinguished list of names; American Horticultural Society Headquarters. Which of the traditional names will the leaders of A.H.S. choose for their letterhead? Perhaps elapsing time and customary usage will determine a name.

Gardeners will make pilgrimages to the new A.H.S. headquarters. Though the River Farm's ferry no longer operates, and the spring in which Washington took great pride is not a part of the present reduced tract, and the fishing pier has long since disappeared, the gently rolling Virginia landscape still descends gradually to the river frontage where one can stand to view the Washington Monument. Great walnut trees still shade beautiful lawns, and Mr. Matheson's plantings of boxwoods, magnolias, wisteria, and other ornamentals blend into a park setting of serene beauty. During the latter half of the Eighteenth Century the River Farm enjoyed quite a stir of publicity due to William Clifton's financial problems and Washington's acquisition of the property. In 1971, after little national publicity for more than 200 years, the property was brought to the nation's attention when the Soviet Union attempted to purchase it. The U.S. State Department refused permission for the sale. In 1973 Wellington again enjoyed wide-spread publicity when President David Leach announced that his organization, the American Horticultural Society, had purchased the estate with funds provided by the Enid A. Haupt Charitable Trust. Today Clifton's Neck, George Washington's River Farm, Lear's Walnut Tree Farm, Wellington, belongs to the gardeners of the United States. Careful hands will lovingly restore history-laden old buildings; skilled hands will develop exciting, challenging gardens. *Our* bit of Americana lives to become ever more useful and beautiful. ☞

HONOR AWARDS

Dr. David Goheen Leach, President of The American Horticultural Society, was presented the Jackson Dawson Medal of the Massachusetts Horticultural Society by M.H.S. President Russell B. Clark at the Society's Annual Meeting. The Jackson Dawson Medal is awarded annually for skill in the science and practice of hybridization and propagation of hardy woody plants. The award to A.H.S. President Leach was made "in recognition of your outstanding contributions in hybridization and propagation of rhododendrons."

A.H.S. members who grow rhododendrons connect Dr. Leach's name with *R. yakusimanum* and with its outstanding selection 'Mist Maiden', also with fine Leach hybrids such as 'Janet Blair', 'Tang', and 'Lodestar'. Dr. Leach's book *Rhododendrons of the World* is a standard reference work in the area of rhododendron hybridizing, classification, and nomenclature. Presently Dr. Leach, in his research grounds at North Madison, Ohio, is working particularly on yellow rhododendrons with greater winter hardiness than that found in presently available selections.

Other awards made by the Massachusetts Horticultural Society this year were presented to A.H.S. members; Professor Emeritus George



Dr. David Goheen Leach, left, receiving the Jackson Dawson Medal of the Massachusetts Horticultural Society from Russell B. Clark, president of the society.

Lewis Slate of Geneva, New York, received the Thomas Roland Medal awarded for exceptional skill in horticulture; Dr. Henry Thomas Skinner, Director Emeritus of the U.S. National Arboretum, received the Large Gold Medal of M.H.S. for eminent horticultural accomplishment; and Mr. John E. Voight,

Garden Director of the Milwaukee County Park Commission, also received the Society's Large Gold Medal for his role in the development and maintenance of an outstanding botanical garden and the promotion of horticultural excellence in the Milwaukee County Park System.

Dr. George Lawrence honored at Swarthmore College

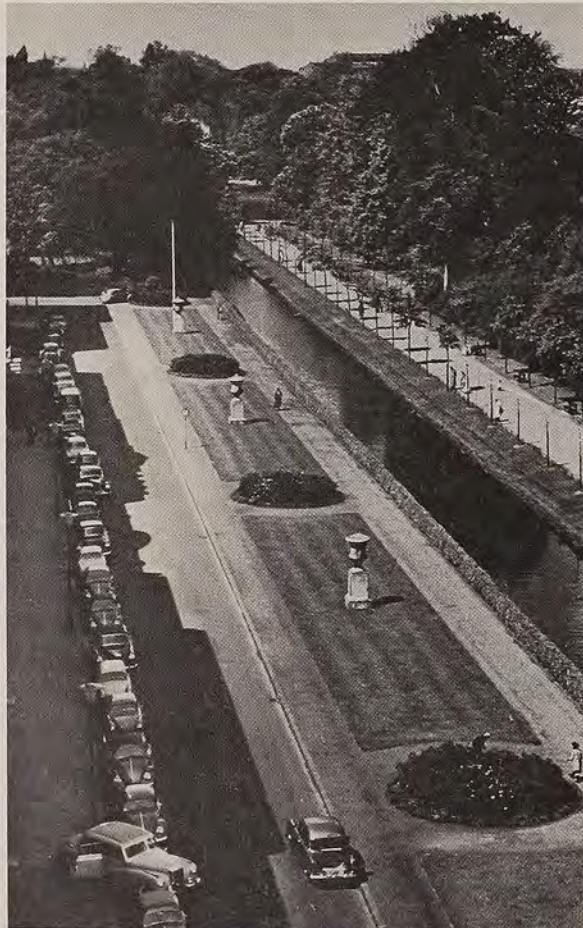
Dr. George H. M. Lawrence, internationally recognized authority on horticulture and botany, founder, past director, and current non-resident research fellow at the Hunt Botanical Library of Carnegie-Mellon University in Pittsburgh, recently was presented the Arthur Hoyt Scott Horticultural Medal and an award of \$1,000 during commencement ceremonies at Swarthmore College.

Dr. Lawrence, long associated with the American Horticultural Society, was a student of Liberty Hyde Bailey at Cornell University and served as Bailey's graduate assistant. Receiving his Doctorate degree in 1939, Dr. Lawrence served as professor of botany and later as a director of the famed L. H. Bailey Hortorium at Cornell.

The Arthur Hoyt Scott Horticultural Medal was established in 1929

to promote the love of gardens and of beautiful planting. It is given to distinguished individuals for achievement of great merit. In presenting the Medal, Dr. E. K. Cratsley, Acting President of Swarthmore College, cited Dr. Lawrence for "his tireless efforts in improving man's knowledge of the plant sciences" and for his immeasurable contribution "to the understanding and appreciation of the taxonomy and literature of cultivated plants."

GREEN SPACE AND



ABOVE: European cities are adding new trees to old plantings where inner city green space is at a premium. Inviting promenades encourage strolling rather than driving.

LEFT: Who would suppose that shops of the central commercial district line both sides of this European boulevard? Grass, flowers, trees, and water greatly relieve the "concrete canyon" aspect.

ATMOSPHERIC POLLUTION

José Carrillo de Albornoz*

"Now is the time for all good men to come to the aid of their planet." This apocalyptic call, which recalls a recent "Time" advertisement, is used by Hubert B. Owens, dean of the School of Environmental Design of the University of Georgia, to begin a work on the importance, during the next ten years, of all possible research and practical effort to keep our planet habitable.

Without going into the many factors which are destroying our environment, let us concentrate on one small area where environmental damage is already becoming a matter of alarm: the air of large cities. In 1990, according to a recent scientific report, more than half of all people will be living in cities of more than 100,000 population. Making sure that they can breathe is not a matter of "caring for a privileged few."

Any moderately well-informed person knows that the levels of dust, smoke and poisonous gases are reaching the danger point, and that weather conditions sometimes make them even worse. Noise is another factor which is exceeding the limits of mere nuisance to cause definite upset.

Green spaces and city trees have not only cultural, esthetic, social and psychological values, but also are effective agents in the struggle against noise and urban atmospheric pollution.

First, as an aside, let me defend the use of the word "pollution" in the sense used here, which is common to many modern languages. The Royal Academy of Spain has recognized it thus and added it to the latest edition of its dictionary, disregarding, fortunately, the opinion of some professional writers who, with an antique prudery, consider this usage nearly a crime.

In an earlier issue of this journal, Lopez Cayetano, an outstanding meteorologist, discussed the harmful effects of polluted city air on plants in parks, gardens and avenues. These effects, which keep getting worse, keep diminishing the number of plant species which can be planted in our urban green areas. But the numerous species which resist such pollution, are very helpful in lessening the pollution damage.

We will not review here the function of chlorophyll in the life of our planet. The assimilation of carbon dioxide and the release of oxygen, performed by green plants, is vital to the entire world, although the small green areas of a city are not enough locally to renew the city air. Different authors give different statistics, but we may consider in general that one hectare of green

area provides about 10 to 15 kg of oxygen per day, or enough to provide for the breathing needs of a dozen people. Based on this, if we depended only on this source, we would need 800 m² of green space per capita, as an absolute minimum. But this is not the main function of city green spaces and trees in relation to city air. Nor shall we discuss the fact that many plants fix small quantities of the poisonous carbon monoxide. In this context, the old reference to parks as "the lungs of the city" turns out to be literally accurate.

Capturing dust from city air is where the role of vegetation becomes truly important. A. Raad, parks director in Rotterdam, in a recent documented report on this, cites many meaningful examples, some of which we here summarize.

Near the main station in Frankfurt were found 18,000 dust particles per cubic centimeter, while from 1,000 to 3,000 were found near the Rothschild park. On streets planted with trees there were found 3,000 particles per cubic centimeter against 10,000 to 12,000 in nearby streets without trees.

We may easily draw conclusions about the increased importance of trees on streets and in parks, as a dust filter; and we may emphasize this with the fact that vertical and mixing air currents which carry aloft the dust particles deposited on the ground are almost eliminated in streets with rows of trees along their walk ways.

The amounts of dust retained by the trees and washed down by rain to the ground are different for different species. Conifers are excellent filters, but as evergreens they are less able to stand the city environment, since their stomata become covered with successive layers of dust and they die of asphyxiation. Deciduous trees are generally more able to survive because they renew their foliage each year.

The 70,000 trees which decorate the streets of Barcelona are something besides a matter of esthetic pleasure or pleasant shade. Each year they get rid of 14 million kilograms of atmospheric dust from the city. We believe they are deserving of affection like that suggested by a writer of Galicia to a friend who was going home for a visit: "give a hug to one of the pines." ❖

**Doctor of Agricultural Engineering.*

Translation of an article that appeared in the January, 1972 issue of *Parques y Jardines* (Parks and Gardens), Publication of the Parks and Gardens Municipal Service of Barcelona, Spain.



Plant collectors and assistants returning to a New Guinea village after a day in the field.

Photos by J. J. Higgins.



Impatiens of 'New Guinea Giant' type collected beside a stream near Wau.

New *Impatiens* from New Guinea

Harold F. Winters*

New kinds of ornamental plants always interest a few gardeners. It is seldom, however, that plant introductions create such immediate excitement as a collection of *impatiens* we brought recently from the subtropical highlands of Australian New Guinea. These new ornamentals were collected during a plant exploration of New Guinea, January to April, 1970, by myself and J. J. Higgins. These *impatiens* introductions met with instant popularity.

Our ornamental plant collections also included species of *Begonia*, *Hoya*, *Rhododendron*, ferns, and a few representatives each of many other plant groups. The expedition to New Guinea was jointly sponsored by the Agricultural Research Service of the U.S.D.A. and the Longwood Foundation, Kennett Square, Pennsylvania. It was the twelfth such expedition for new ornamental-plant germplasm to different areas of the world.

Impatiens has been cherished for generations as a flowering window-garden plant. Recently it has become the most popular bedding plant in the eastern United States for shady and semishady moist areas. In such an environment it grows and blooms well. A flux of new varieties—new colors and plant types—has appeared on the market during recent years. Flower breeders vie with one another to create different forms. Most notable are the new varieties that develop into compact plants without pinching and those with a wide range of flower colors and patterns. Of great interest also are

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varieties that can be grown from seed each year by the nurserymen or home gardener. Our collections were timely, therefore, to supply the plant breeders with new germplasm.

During the past decade, impatiens has become increasingly important in commerce. The National Bedding Plant Producers Association estimates the annual retail value of all ornamental bedding plants in the United States at \$125—150,000,000. This is exclusive of chrysanthemum and geranium (*Pelargonium*). One large producer estimates that impatiens plants account for two to three per cent of this total, or more than \$3,000,000 annually. The percentage of impatiens in relation to other kinds of plants is increasing each year. New flower colors and plant types are eagerly sought by the nurserymen for propagation. Contributing to the popularity of impatiens is its tolerance to air pollutants. A recent report by Adeipe, Barrett, and Ormrod rated impatiens with marigold, celosia and salvia for tolerance. Coleus and snapdragon showed less injury, but begonia and petunia were more sensitive. Air-pollution tolerance, however, depends to a great extent on the individual cultivar. The main reasons for increasing popularity of impatiens are ability of the plants to flower in the shade, to flower over many months, and the neat appearance of the plants because of their self-cleaning habit.

Since at least the turn of the century, botanists had known about New Guinea impatiens. A few kinds were grown in the conservatories of Europe and England at that time. Probably the main reason they were not introduced to horticulture is that seeds are difficult to find where the plants grow naturally. As with other *Impatiens* species, the mature capsules of New Guinea species explode at the slightest touch, scattering the seeds in all directions. We collected seeds when we could find them, but for the most part we procured cuttings. The succulent cuttings from many collections perished while en route to the United States, but, luckily, twenty-five kinds survived. They were obtained from a variety of habitats, such as forest clearings, moist stream banks, the borders of foot paths and roadsides, and from cultivated plants.

Cultivation of impatiens in New Guinea usually is limited to the borders of village tracks, gardens, and the new roads now being built by the Australian Administration. Propagation is easily accomplished by pushing the rapidly wilting stems into the moist soil. That the primitive people would

Display of commercial *Impatiens* varieties in foreground, New Guinea collections in background.

Color photos by author.



White flowered 'New Guinea Giant' *Impatiens*.

Pastel shades are frequent in 'New Guinea Giants'.



Orange-flowered *Impatiens herzogii*.

bother to cultivate them at all shows a real love of beauty. Stopp reports that the Mt. Hagen people rub the large petals and young leaves of "kontip", *Impatiens mooreana* Schlechter, into burns. This is the only use I know for impatiens, other than ornamental.

Most of the Australians and others living and working in Highland New Guinea fail to recognize the rarity and beauty of the native plant material surrounding them. Impatiens, however, has an articulate advocate in the person of Mr. John C. Lowien, District Supervisor of Forests, for the Mt. Hagen area. He has assembled a beautiful collection at the Korn Farm Forest Tree Nursery. Fortunately, his duties require travel throughout the Western Highlands. When Mr. Lowien encounters a different impatiens, he transplants it to the nursery, from which he graciously allowed us to take cuttings.

We were fortunate in that two air-freight shipments from Mt. Hagen, containing the impatiens collections as cuttings, arrived in Washington after only five days in transit. Some air shipments were as long as twenty days en route because of delays at transfer points. When this happened, succulent material such as impatiens had rotted before arrival in Washington. Several lovely varieties from other parts of the Territory were lost because of these delays. Perhaps *Impatiens* species can be the major objective for a second expedition to New Guinea.

The Department of Agriculture released the impatiens collections in February, 1972. More than one hundred distributions have been made to nurserymen, plant breeders, and other scientists. Vegetative propaga-

tions of some may be offered for sale by nurserymen in 1973. Several seedsmen are evaluating the collection for possible development of seed-propagated varieties.

The New Guinea collections represent a wealth of new genetic characters not seen in commercial varieties now grown in the United States. In most of the collections the plants may grow into stout, one-meter (3.28 ft.) specimens, but others are low and bushy, only 30 centimeters (12 in.) tall. Individual flowers in the collections usually vary from 2.5 to 5 cm. (1-2 in.) in diameter with spurs of equal length. One introduction produces flowers of 7.5 cm. when well grown. In the New Guinea collections, only one flower is produced on each peduncle. Flower color ranges from pure white through pastel shades of lavender and pink to magenta, and from pale orange to dark

vermilion or scarlet. Leaf and stem color varies from green to intense dark red. In addition, the leaves may be beautifully variegated with white, yellow, or pink. Some introductions rival croton and coleus for decorative foliage. The stems usually are stouter and thicker than those of present commercial varieties, and the nodes usually are swollen. The self-cleaning character of the plants is much more pronounced in the New Guinea *impatiens* than in commercial varieties. Both leaves and branches will abscise during prolonged dry weather.

Taxonomic identification of the collections has proven difficult. Previous scientific study of New Guinea *impatiens* probably has been scant, because it is difficult to prepare adequate specimens from the deliquescent plants. Our collections are being studied by taxonomists both in the United States and in England.

Several of the collections (P.I. 354251-253) are identified tentatively as *I. hawkeri* W. Bull. We call them 'New Guinea Giants' also. Eventually they may prove to be *I. mooreana*, but the available literature is vague. We collected most of this group as seeds from various locations in the Eastern and Central Highlands. They are characterized by white and lovely soft pastel colors of flowers, vigorous plants, and large green leaves. Stems of some seedlings are marked with red, but this group shows much less of it than our other New Guinea collections.

One collection (P.I. 349584), obtained as seeds from the Daulo Pass (elevation 2,438 m.-8,000 ft.) between Goroka and Kundiawa, has been tentatively identified as *I. herzogii* K. Schum. The low-growing, well-branched plants bear pale bronze-green foliage and white-eyed orange flowers that measure 3.5 cm. in diameter. Possibly because of its origin at a high elevation, this collection shows little tolerance for our summer heat.

In the three collections of *I. linearifolia* Warb., the whorled 12 cm.-long leaves are only 1 cm. wide. In P.I. 354266-267, the leaves are beautifully variegated with yellow and the flowers are completely round in outline and of pale salmon-pink color. Plants of P.I. 354263 have narrow-petaled, pale pink flowers and reddish green leaves in whorls along the reddish stems. Leaf variegations may almost disappear on young vegetative propagations, but again become prominent as the plants approach flowering.

Another group with dwarf or semi-dwarf plants appears to be *I. schlechteri* Warb. (P.I. 354258-259, 354262). All have fleshy red stems and pink or

Impatiens linearifolia with variegated foliage.



In *Impatiens* 'Mt. Kum' the flowers and leaves remain permanently cupped.

red petioles and veining of the green leaves. In these plants, the small to medium-sized leaves are whorled at the nodes, and flowers are in shades of red to vermilion. P.I. 354255 and P.I. 354258 are excellent examples. In other collections, the juvenile leaves may be green, but the mature foliage is variegated with yellow or red along the midrib or toward the base. The collection we named 'Mt. Hagen' (P.I. 354261) bears glossy leaves with a segment of yellow at the base. It is a shy bloomer, but doesn't need flowers to be attractive. The best flowering can be expected in the greenhouse on large plants during the short cool days of winter and continuing into the spring. Another introduction bears reddish-green leaves to 20 cm. long, with irregular blotches of white (P.I. 354265). We call this one 'Plaua Misis' after Andree Millar, former Curator, Botanical Garden, Lae, who aided us in many ways. Its pale salmon flowers sometimes attain 7.5 cm. in diameter.

A collection (P.I. 349588) called 'Mindik', a remote area of the Huon Peninsula where it was collected, may prove to be *I. mooreana* or *I. nivea* Schlechter. The rather large green leaves are whorled at the nodes. Flowers are white or pale pink. All of the plants grown from this seed are entirely devoid of pubescence, a common character on at least young stems and leaves in most others. Also, the glandular processes that appear on the stems at the leaf bases are bulbous, rather than awl-shaped as in most other collections. Four additional collections may eventually be referred to the same species when they are studied taxonomically.

This leaves ten or more collections that do not fit well any of the above-mentioned species. Some probably are hybrids that have arisen naturally because of the parents having grown in close proximity in the wild New Guinea Highlands. They probably differ more in plant and foliage characters than in the flowers.

I call a special favorite of these 'Kundiawa' (P.I. 354254) after that town in the Central Highlands. It bears green leaves and flowers of an intense velvety orange-vermilion shade that is difficult to imagine. Red to maroon-colored foliage also is common among this group. In the cultivar 'Korn Farm' (P.I. 354256, 354260), the stems, petioles, and lower leaf surfaces are dark metallic reddish-green. The long lasting flowers, 6.4 cm. in diameter, are light vermilion in color, with a violet zone at the center. The dark-red spur in this

Flowers of *Impatiens* 'Pikinini' are moth-shaped.



Impatiens 'Mt. Hagen' flowers sparingly, but the variegation is ornamental enough.

collection sometimes attains 7 cm. in length. It is named for the Korn Farm Tree Nursery of the Department of Forests.

A brief visit to Java, while returning from New Guinea, yielded only one *Impatiens* collection. It is P.I. 349629, *Impatiens platypetala* Lindl. and is of great interest to the plant breeders because it forms sterile hybrids with the New Guinea collections. Dr. Toru Arisumi, working at Beltsville, Maryland, found that it has sixteen chromosomes, the same number as in commercial varieties. Several plant breeders have found complete incompatibility between the Java collection and commercial varieties, however.

Our New Guinea collections, also, are being studied cytologically and taxonomically. Arisumi reported thirty-two chromosomes for all but one. This collection has sixty-four chromosomes. Jones and Smith, Royal Botanic Garden, Kew, England, previously had reported thirty-two chromosomes for

Impatiens 'Plau Misis' bears the largest leaves and flowers of all the collections.



Impatiens 'Kundiawa' produces many brilliant flowers.

five unidentified collections of *Impatiens* from New Guinea and sixty-six chromosomes for one collection of *I. mooreana* Schlechter.

Arisumi's report contains considerable information about the breeding behavior of the individual collections. He, as well as several other plant breeders, has informed me that the New Guinea collections, also, are incompatible in crosses with presently available commercial varieties. Even so, the collections contain sufficient genetic variability to serve as the basis for a new series of varieties.

Dr. Robert J. Armstrong, Geneticist, Longwood Gardens, Kennett Square, Pennsylvania, is breeding new varieties with ornamental leaves. Such varieties can be maintained by asexual propagation. The main use would be outdoors for bedding plants during the summer. He hopes, also, to select flowering varieties that are immune to day-length stimuli.

Mr. Wiley Hinson, Norfolk Botanical Garden, has had one summer's experience with seedlings planted outdoors beneath tall pine trees. He estimates that the trees reduce the light intensity by about one-fourth. Under such conditions, most of the seedlings bloomed well throughout the summer. The landscape effect was spectacular.

The collection presently is being studied by Dr. H. M. Cathey, U.S.D.A., Beltsville, Maryland, for growth and flowering responses to different conditions of day length and temperature. Response to date indicates great differences between the collections in response. About half the collection is day-length-neutral.

In selecting new varieties from the New Guinea collections for release, the breeder should give special consideration to testing for summer flowering and heat tolerance. Experience in growing the New Guinea *Impatiens* collections outdoors during the summer has shown more tolerance to sun than in the commercial varieties. However, some of the collections do not flower until the asexual propagations are well established. We recommend that propagations be of flowering size then they are set out. With full sun, all will flower in the greenhouse during winter and spring. The full potential of the introductions will not be realized for several years but, no doubt, lovely varieties will result that are well suited to the home garden. ❖

Impatiens 'Korn Farm' flowers bear very long spurs.



Magenta-colored *Impatiens* from Tjibodas, Java.



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New Ornamental Gourds from Africa



Cucumis myriocarpus

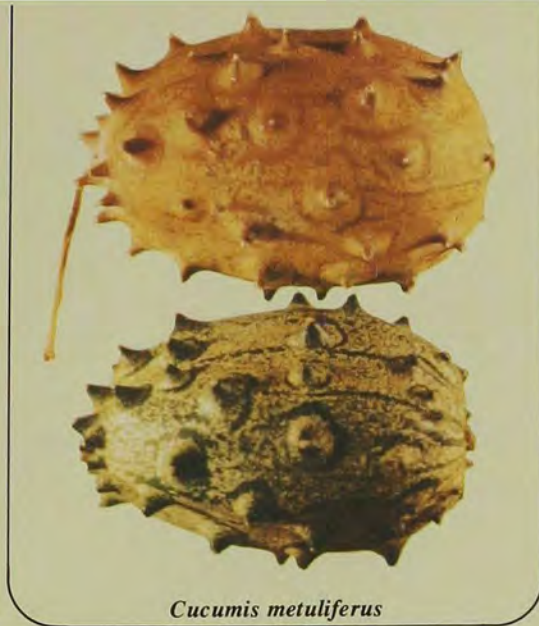


Cucumis africanus

Gourds are one of man's oldest cultivated plants. The gourd family *Cucurbitae*, encompasses many genera which are grown for food, ornament, utensils, or curiosity. True gourds have hard, durable shells and they are properly classified as the white-flowered gourd, *Lagenaria siceraria* or the yellow-flowered gourd, *Cucurbita pepo* var. *ovifera*. The group of white-flowered gourds contains the large-fruited types used mainly for utilitarian purposes. The yellow-flowered group is characterized by the cultivars which have small, highly ornamental fruits. They may be furrowed, warted, multi-colored, or curiously shaped. Other genera, inaptly called gourds since their fruits have soft flesh and non-durable rinds, include the dishrag-gourd, *Luffa*; pumpkins and squash, various *Cucurbita* species.; wax-gourd, *Benincasa*; balsam-apple and balsam-pear, *Momordica*; and serpent-gourd, *Tricosanthes*. Three relatives of muskmelon and cucumber also are included in this group: the teasel or hedgehog-gourd, *Cucumis dipsaceus*, the pomegranate melon known also as Queen Ann's pocket melon, *Cucumis melo* var. *dudaim*, and the horned-cucumber, *Cucumis metuliferus*.

Description

A large collection of muskmelon plant introductions are maintained at this station. Included in the collection are relatives of muskmelon collected in Ethiopia, South Africa, and Nigeria. These were collected for their possible use in improving cultivated muskmelon varieties. Twelve species of *Cucumis* have been grown for preliminary evaluation and seed increase. In this group *C. metuliferus*, horned-cucumber; *C. dipsaceus*, hedgehog-gourd; *C. myriocarpus*, gooseberry-gourd; and *C. africanus*, have good ornamental characteristics for supplementing the *Cucurbita pepo* var. *ovifera* types of small, decorative gourds. These four species are easily distinguished by their fruits. Horned-cucumbers have a long-oval shape, thick spines, and measure approximately five by three inches. The dark greenish gray fruits turn orange-red at maturity. Reportedly,



Cucumis metuliferus

W. L. Corley*

the fruits are eaten in Africa. Hedgehog-gourd fruits are densely spined, long-oval, and measure about three by two inches. The light green fruits turn yellow when mature. Gooseberry-gourds are round-oval and measure about one inch in length and diameter. Spines are dense and the fruits have distinct ivory and brownish green stripes. *C. africanus* fruits are bluntly long-oval and have stout, short spines. The three by two-inch fruits are striped with brownish green and ivory stripes, but fade to yellow at maturity. Smaller fruited, poisonous forms occur in southern Africa.

Using cultural practices recommended for muskmelon and cucumber, mature fruits are produced on hedgehog-gourd plants in approximately 100 days after planting. The other species require about three weeks longer. Although these species have soft flesh and non-durable rinds, the decorative fruits can be stored at room temperature for several months. Tests indicate that spraying fruits with paint or varnish reduces storage life considerably. Fruits should be harvested in the mature green stage before the mature fruit color develops. Other than occasional light pickleworm damage to horned-cucumbers, no serious insect pests or foliar diseases have been observed at this location. In our plantings these species have not persisted from year to year, but they may become spontaneous in more southerly regions. ☒

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Cucumis dipsaceus

Photos by author.

Culture

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Western Manzanitas

Marjorie G. Schmidt*

Members of the genus *Arctostaphylos* are indigenous to the western states except for one circumpolar species, *A. uvi-ursi*. Of the fifty or more species, most are concentrated in California, with many distinct varieties and natural hybrids where several species overlap. Horticulturists have already selected superior types from these natural hybrids, and the possibilities for even more horticultural forms is an ever present, tantalizing prospect.

The generic name is derived from two Greek words—*arktos* meaning bear, and *staphule*, a grape. The common name, manzanita, is Spanish for "little apple" from the resemblance of the berry to that fruit. Aside from providing food for bears and many kinds of birds, manzanita was highly important to aborigine populations and early settlers. Medicine, food, and beverages, all were provided from the fruits, and an infusion of the leaves was said to soothe the rash of poison oak. Bees produce a delicate honey from the flowers, and country housewives still make a clear jelly from the half-ripe fruits. The hard, bony wood was used for pipe bowls, spoons and other implements, and by pioneers for pegs in place of nails.

Manzanitas are evergreen, woody shrubs of fine form and bearing, in sizes ranging from

low, trailing sorts to a few which approach tree-size. The majority fall in between, being rounded or vase-shaped shrubs of two to five feet, with the tallest reaching twenty feet or more. Manzanitas occur naturally on many types of terrain and at almost every altitude from sea bluffs to 10,000 feet elevation, about the upper limits of pinemat manzanita, *Arctostaphylos nevadensis*. Most are foothill inhabitants scattered among contoured hills, light woodlands, or in the chaparral where they often occur in sweeping, almost unbroken masses. Admirers of the genus agree that manzanitas have an architectural quality; whether formally symmetrical or irregular and craggy in outline, they are always of pleasing form.

Manzanitas have certain features in common, although they vary in size and general appearance. Most striking is the smooth, satiny bark in rich shades of brown, mahogany, dark crimson, and a purplish color. The bark is thin with a crisp texture, and during the summer it flakes off in squarish or oblong pieces to reveal the new bark of tender green or pale beige. In spite of their reputation for having crooked branches, many manzanitas have straight, erect stems, sometimes curved or angular, and often becoming knobby in old specimens. Most have a uniform growth habit branching toward the top for a rounded, dome-like appearance,

but free of limbs below to show off the sturdy, colorful trunks. Foliage is of firm, frequently leathery, substance, varying from pale, almost white-green to deeper shades. New leaves often provide a delightful contrast, some of pale green, downy from fuzzy hairs, while others may be red, crimson or bronze. Flowers are bell or urn-shaped, revealing their relationship to the heath family. Flower texture is thick and waxy, often pearly in appearance, white, light pink, rose or pale purple, sometimes white and tinted with pink or rose. The berry-like fruit is globose and depressed on the stem end, tinted reddish or russet in the early stages, ripening to mahogany, brown or red. The fruit is firm but becomes mealy when ripe, enclosing one or several hard nutlets, which in a few cases are fused into a solid stone.

Fires periodically sweep regions where manzanitas abound and the species can almost be identified as to whether they are killed or survive. Some recover by new shoots and are called stump sprouters. After many fires, these eventually develop a large basal stump. Other sorts are destroyed but soon many volunteers appear, induced to germination by the action of fire on hard seed coats. Dwellers in manzanita country find bird-sown seedlings appearing in their gardens.

Full justice cannot be done to the manzanitas beyond de-

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Arctostaphylos canescens blossoms from plants collected in the Platina area.

Color photos by author.

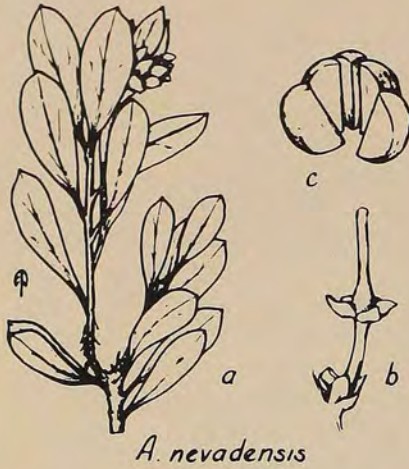
Arctostaphylos patula in fruit. Another native deserving of further attention.



scribing some of the cultivated forms. A whole volume could be devoted to their natural appearance, habitat, and distribution; it will suffice to say that some are widely distributed, while others are rare and restricted to specialized habitats. Some already rare in nature have been further threatened by encroachments, and a number have been rescued as when the last tendrils of *A. franciscana* were dramatically snatched from their homeland in the old Laurel Hill Cemetery in San Francisco. Of their distribution the perceptive Lester Rowntree has this to say in her *Flowering Shrubs of California*. "Mile after mile, zone after zone, we pass them, one species after another; green-leaved manzanitas and gray-leaved ones; tall as trees or low as moss; on sand dunes and in chaparral; helping mountains to hold their sides and keeping coastal slopes from slipping into the sea. Nowhere in the world is there a place so enriched by manzanitas as California—here the genus *Arctostaphylos* reaches its greatest development in variety and number"

Manzanitas, being an integral part of the California countryside, were taken for granted until recently when a few discerning plantsmen began selecting natural hybrids from seedlings where several species overlapped. These exhibited fine traits such as vigor, good growth habit, and an abundance of flowers, along with acceptance of garden culture. Selections were tested by various institutions, especially the Saratoga Horticultural Foundation, and subsequently cultivars were made available to the public. Presently there are thirty or more kinds which give satisfactory garden performance, including selected natural hybrids and amenable species.

One of the regions of overlapping species is among the low hills of Sonoma County, north of



Arctostaphylos nevadensis, a species once used as a tobacco substitute. (a) Branch showing obovate leaves. (b) Dissected blossom showing the pistil on the pedicel. (c) Nutlet cluster from a single fruit.

Drawings furnished by author.

Arctostaphylos franciscana, a rare Bay Area native, thriving in cultivation.



San Francisco, where the endemic *A. densiflora* grows in company with *A. stanfordiana* and *A. manzanita*. Even though of restricted distribution, *A. densiflora* has imparted fine qualities to several natural hybrids chosen by horticulturists who have long studied plants of the area. *A. densiflora* 'Howard McMinn' has attained great popularity as a spreading, facer shrub especially. It forms a dark green mound, two to three feet in height with an abundance of rose-pink flowers in early spring. Another selection is *A. densiflora* 'James West', a two-foot spreading shrublet of great charm, resplendent in January and February with deep pink flowers. It is densely branched, and out of flower becomes a neat mound from the abundance of light green, ovate leaves. *A. densiflora* 'Harmony' is similar to 'Howard McMinn', but slightly larger, and bears a profusion of rose-pink flowers in March and April.

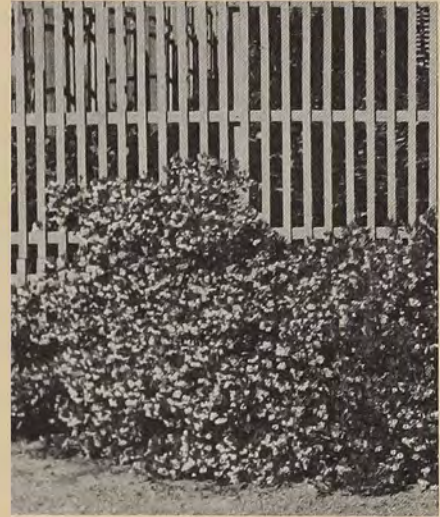
Several natural forms appear to be more closely related to *A. stanfordiana*, such as 'Sentinel', an upright shrub up to six feet at maturity. It is relatively slow growing, but when the many clusters of rose-pink flowers bloom in February and March, it is spectacular. A similar form is *A. stanfordiana* 'Trinity' whose reddish-purple flowers are especially attractive against the glossy green leaves. A variant seedling has been named *A. stanfordiana* 'Fred Oehler', a bushy, spreading shrub of four to five feet, having glossy green leaves and pink flowers in February and March. This one is said to have a sensitive root system so well drained soil must be assured.

Several useful and popular garden subjects have been derived from *A. hookeri*, a species native to the sand dunes of Monterey County, a carpeting type with bright green leaves and white, pink-tinted flowers. A selected form is called *A. hookeri* 'Monterey Carpet', a compact plant of less than a foot in height, and spreading as much as twelve feet. Another is *A. hookeri* 'Way-side', a compact, mounting shrub with glossy green leaves setting off the white flowers which bloom from late winter into spring. These two selections tend to be sun and wind tolerant, and both accept moderate amounts of summer water.

Among all of the carpeting manzanitas *A. uvi-ursi* seems to me the most handsome, and from this widely distributed species several attractive cultivars have been chosen. Perhaps the most popular is *A. uvi-ursi* 'Radiant', well named for its persistent and abundant crops of bright red berries. Originally from the mountains of Oregon, it was chosen by a discerning lady from a truck load of plants being offered by a peddler. It is fortunate for gardeners that this outstanding form was thus rescued and subse-



Arctostaphylos densiflora, a superior cultivar named 'Howard McMinn'.



Arctostaphylos densiflora 'Harmony'.

quently propagated by the Saratoga Horticultural Foundation, Saratoga, California. Manzanita 'Radiant' forms a wide spreading, loose carpet of bright green, eventually reaching almost any desired dimension as it roots readily along the way. Narrow, rounded leaves are glossy, and mats have a luxuriant appearance from the abundance of neat foliage. Waxy white flowers bloom in February and March, each perfect little urn edged with rose. North or east exposure, or high tree shade, and moist soil are its requirements, although it will grow in sun, but at a much slower pace. Another selection from the coast north of San Francisco is *A. uvi-ursi* 'Point Reyes' with dark green, leathery leaves closely spaced along the stems, and dark red berries.

One of my favorites is the huckleberry manzanita, *A. cushioniana* forma *repens*, surprisingly cold tolerant, since it comes from Marin County north of San Francisco. Chosen by an alert plantsman, it was among a veritable swarm of dwarf natural hybrids found on a high ridge. In spite of this specialized habitat, it is amenable to garden culture, clipping and training to form a dense, mounding plant. Seldom more than a foot high, it may spread four to six feet or more, and has a



Arctostaphylos densiflora 'Sentinal'.

Black and white photos courtesy of Saratoga Horticultural Foundation.

tendency to form short tip branchlets. White flowers occur in February and March, followed by an abundant crop of cinnamon-brown berries. Huckleberry manzanita is excellent for edging a massed shrub planting, or to fill an open space between cultivated borders and paved areas.

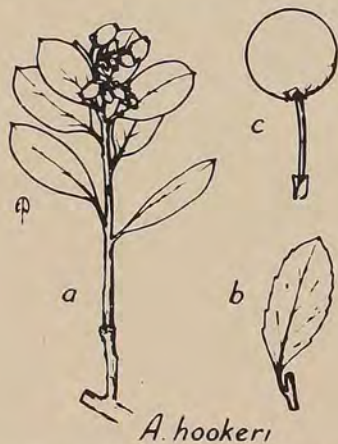
Up to the minute experiments with manzanitas include further testing and evaluation of forms which have refined traits, and show promise of satisfactory garden performance. At the Saratoga Horticultural Foundation a

pretty little selection of *A. nummularia* is getting close attention. This diminutive natural hybrid has dark green, rounded leaves, closely spaced for a tight carpet. It may eventually become a fine rock garden subject.

At Rancho Santa Ana Botanic Garden variant seedlings, or forms of those already in cultivation are undergoing intensive study. One is called *A. 'Emerald Carpet'* from *A. nummularia* × *A. uvi-ursi*, a ground cover type with rich green foliage and flush pink flowers. Another simply bears a number and is described as a low,



Arctostaphylos hookeri 'Wayside', a plant from near Watsonville, Calif., in use in a breeding program at the Saratoga Horticultural Foundation.



Arctostaphylos hookeri, a prostrate species. (a) Flowering branch. (b) Detail of leaf. (c) Typical fruit.

compact plant of less than two feet, the bright green foliage almost hidden by the abundance of pale pink flowers in early spring. Deep red winter foliage, followed by the flowers, and then bright red fruits gives this particular form year around attraction. A hybrid of *A. edmundsii* is being studied for its extraordinary compact growth habit, resulting in a dome-shaped plant useful for formal landscaping.

A California nurseryman with an abiding interest in native woody plants has chosen eleven manzanitas for further study. Some are seedlings of selected clones, while others are species which have shown adaptability and garden merit. Future testing includes response to various garden situations, soil composition, and methods of handling seedlings.

Several manzanita species have had some history as cultivated subjects principally in botanic gardens where the performance of a few is being given further attention. Among them is the heartleaf manzanita, *A. andersonii*, a large, full shrub of ten feet or more, which may have a distinct trunk but is more generally well branched, bearing an abundance of auriculate, pale green leaves. Rosy flowers bloom from January to March followed by reddish-brown fruits which are conspicuous against the pale foliage. Heartleaf manzanita has persisted for many years under eucalyptus trees, a setting in which most exotic plants would not long endure. Dune manzanita, *Arctostaphylos pumila*, is a tight carpet which has been used at Rancho Santa Ana Botanic Garden for interplanting among trees and shrubs, and for bordering corners. Small, obovate leaves have a grayish cast from light pubescence, and flowers of white or pink are borne in short racemes. *A. pajaroensis* is an erect, spreading shrub with a

dense crown, sometimes recommended for use as an unclipped hedge. Medium green leaves are ovate-triangular, and auriculate at the base; the new foliage is noted for a handsome bronzy color. One alert grower has collected a low, spreading form sufficiently interesting to preserve through asexual propagation. *A. insularis* is a distinct species of Santa Cruz, Santa Rosa, and Santa Catalina Islands off the coast of southern California. It is a large, branched shrub up to ten feet or more, with a tendency to flower sporadically throughout the year. White flowers are borne in large panicles, followed by deep reddish-brown berries which remain intact for long periods.

A. nummularia, glossyleaf manzanita, is a charming dwarf of specialized habitat along the north coast of California. *A. nummularia* 'Sensitiva' known as littleberry manzanita, is taller, a densely branched shrub with bright green, ovate leaves slightly less than one inch. This cultivar has been recommended for a low hedge or divider because of the glossy, box-like leaves. Neither, however, has proven very adaptable to garden conditions, and no doubt selected natural crosses will be of more garden value. For many years I cultivated littleleaf manzanita under a coast redwood where it grew into a three-foot, loosely branched shrub. Perhaps the redwood tree provided acid soil which both require.

Few trailing plants can match the dense, dark green carpets of *A. franciscana*, endemic to serpentine soils in the city of San Francisco. It is especially fine for rock gardens, or to spill over a rock wall.

A. glauca, bigberry manzanita, is generally a chaparral subject, a large, compact shrub of six to ten feet which often becomes tree-like (to twenty feet) in height. Foliage, flowers and fruits are all

larger than most manzanitas, and the clusters of globose berries are especially attractive as they ripen from bright green to light brown. Although common in nature, big-berry manzanita is being studied for its adaptability for garden planting.

Manzanitas may be propagated both by seeds and by cuttings, the latter being the most popular method. Seeds of most species resist germination making this method slow and difficult, even when special treatment is given beforehand. Such treatment includes soaking seed in sulphuric acid, burning pine needles over the flat after planting seed, or soaking in hot water. Even with these methods germination requires two or more months, and is apt to continue sporadically over a long period. Horticulturists suggest that the seed flat be set aside and exposed to the weather during winter, causing more seed to germinate.

Most manzanitas grow readily from tip, heel, or subnodal cuttings taken from healthy stock during the winter months. A mixture of sponge rock and vermiculite is favored, and this may be used in pots or in plastic bags by home gardeners who are propagating only a few cuttings. When well-rooted, plants should be potted and kept moist, but never over-watered. If growing vigorously they may be shifted to large pots, and planted into permanent quarters during autumn months. There may be losses during transplanting. To combat this, rooted cuttings sometimes are put into peat pots which are kept intact when transplanting, except for removal of the bottom. Practically all of the trailing forms make rooted layers, especially along the outer branches. Large scale commercial propagating is done in greenhouses with intermittent mist spray.

Being native to foothills, chaparral, and relatively dry for-



TOP: *Arctostaphylos* in the landscape. *A. uvi-ursi* growing under a young incense cedar.

ABOVE: Typical form of *Arctostaphylos cushioniana* forma *repens*.

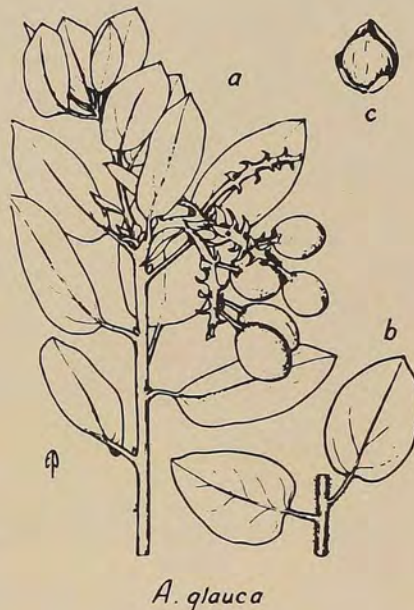
RIGHT: The cultivar of *A. cushioniana* forma *repens* named 'Peanut'.



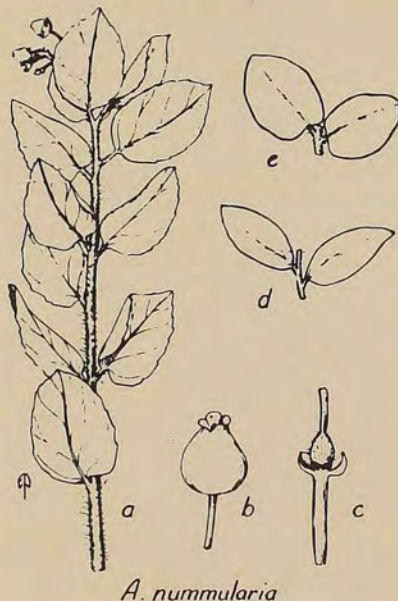


Immature fruit of *Arctostaphylos glauca*.

Arctostaphylos glauca, a large-growing, gray-leaved form. (a) Fruiting branch. (b) Portion of a stem showing pubescence. (c) Fruit section, showing stone-like nutlet.



Arctostaphylos nummularia, a low-growing species. (a) Pubescent branch. (b) Flower. (c) Dissected blossom showing the pistil on the pedicel. (d & e) Details of leaves.



ested areas, manzanitas tend to be drouth tolerant, although many will accept garden watering. Newly set out plants should be watered until they are thoroughly established. Most should have full sun with sandy to clay soils according to their natural habitat, while others seem indifferent to soil composition. The suitability of many to specific garden situations has already been suggested, and more testing may be needed before this can be determined for others.

The genus *Arctostaphylos* has much to offer the gardener, but according to most horticulturists, full utilization of the possibilities may be far in the future. Because of widely varying characteristics within certain species, it could take a lifetime to select clones for specific use. Aside from seeking those with ornamental traits, horticulturists wish to learn more about growth habit, cold and drouth tolerance, soil preferences, and adaptability to cultivation. Discovering sorts with further merit is a continuing and exciting project, and gradually these handsome evergreen shrubs will take their place in the horticultural scheme, adding distinctive materials for the enrichment of western landscaping. ☞

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A deluxe parking lot design featuring original trees, newly planted shade and ornamental trees, ground covers, and drainage areas.

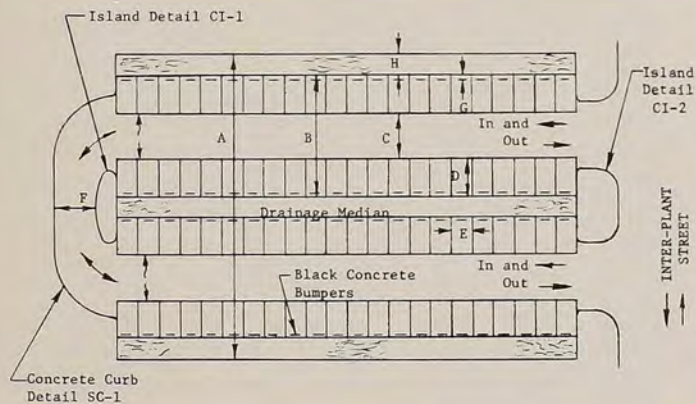
All photos and plans by Miles Laboratories.

PARKING LOTS

... a plan for conservation and environmental improvement

PERPENDICULAR PARKING

HEAD IN ONLY



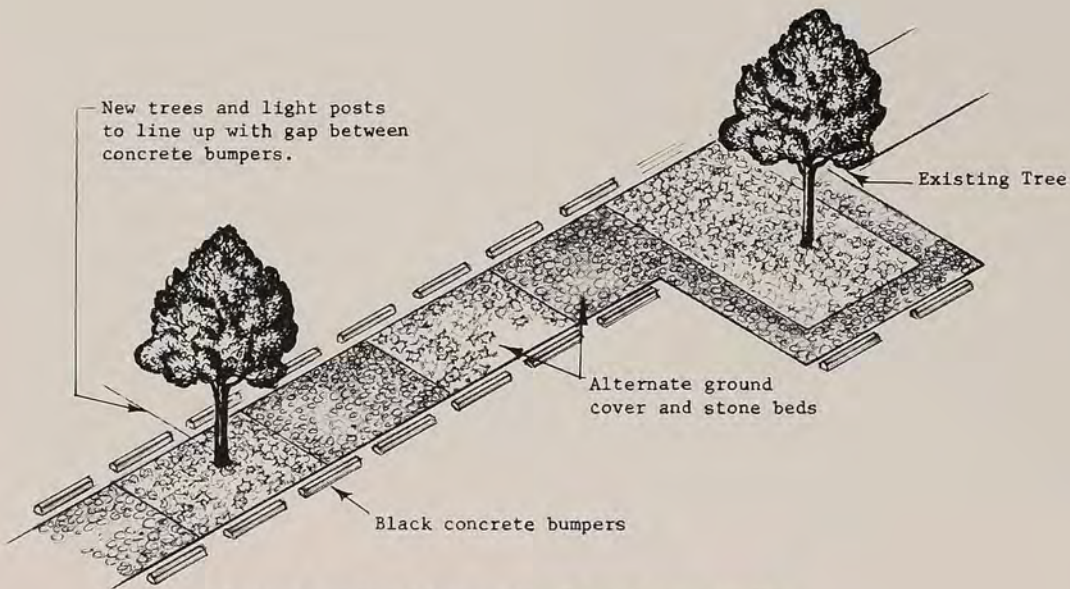
KEY	DESCRIPTION	MINIMUM	NORMAL	OPTIMUM
A	Overall lot width	136'	146'	158'
B	Parking bay width	56'	58'	64'
C	Drive width	20'	22'	26'
D	Parking space length	18'	18'	19'
E	Parking space width	9'	10'	10'
F	End drive width	12'	20'	20'
G	Pavement edge to bumper centerline	1'	1'	1'
H	Median width	8'	10'	10'

Parking Lot Type I Deluxe. Ground plan layout.

Mobility is a fact of modern life, and the car, in its ever increasing numbers, creates further environmental imbalances because of the ever increasing requirements for parking.

Vast areas paved over for parking are one of the least recognized damaging effects of the car on our environment. As long as the automobile is the major form of transportation, especially locally, the need for parking areas near places of manufacturing, business institutions, and recreation will continue. The parking problem cannot be ignored, and unless there is better planning of parking lots with a view toward environmental preservation and conservation, serious harm will be done by elimination of trees, shrubs, and ground cover and the sealing off of large areas needed for percolation and seepage to maintain the underground watertable.

Lately more thought has been given to the aesthetic quality of building design. More and more manufacturers, builders, developers, and architects are considering the appearance of the structure in relation to its neighbors and to the terrain on which it is to be placed. What appears on the architect's drawing is a pleasing, attractive facility that would be an asset in any locality.



Parking Lot Type I Deluxe. Median strip construction.



Close-up of the median strip of the deluxe lot showing drainage area, mulches, and ground cover beds under trees. Note concrete bumpers.

What sometimes does *not* appear on the drawing is the vast paved desert covered with nothing but cars. Improvements in provision for parking should be a major part of this consideration because frequently more area is required for parking than for the building itself.

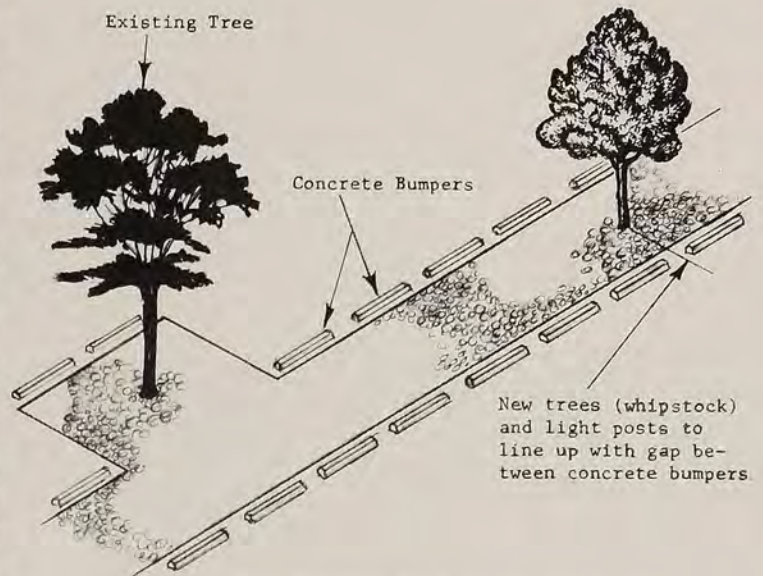
Besides being an eyesore, unplanned and unlandscaped parking areas damage the underground water reservoir, cause erosion, and overload streams and sewage systems. As more and more trees are bulldozed and shrubs and ground cover are stripped away to seal off vast areas for parking, the community and the environment suffer.

As far back as 1961, even before the late Rachel Carson sounded her alarm about environmental pollution in *Silent Spring*, and prior to the present near-hysteria over pollution in general, Miles Laboratories began planning and experimenting with various designs and techniques to provide employee parking and to compensate for the area covered by the building and its roof without disturbing the balance of nature. *This was a natural follow-up to the effort since 1938 to as nearly as possible return to the ground all rain and snowfall as well as all water pumped from the ground through a system of natural ponds and drainage systems.*

Miles administrators recognized that vast unrelieved areas of paved parking would contribute to the deterioration of the environment. The decision to



Close-up of the median strip of a utility parking lot showing gravel mulch in the median strip under recently planted trees.



Parking Lot Type II Utility. Median strip construction.

develop and construct landscaped and ground water return parking lots was based on intangibles, such as beauty, good citizenship, environment preservation, and water conservation. Because Miles management recognized the necessity of maintaining a healthy environment around its plants, it set out to develop a plan for parking that would help maintain nature's balance, contribute to the beauty and cleanliness of the surroundings, and be applicable to the many areas around the world in which Miles has production facilities.

During the past nine years Miles has developed certain techniques and designs that allow specialized parking lot construction on many types of soil and using a large variety of native trees and plants. The main feature of this design is that it contributes to environmental betterment without too much increase in cost over the ordinary parking area. In addition to the aesthetic value of a landscaped parking area, the Miles lot should provide cleaner air and conserve underground water.

By use of existing trees, well-designed drainage, and with the addition of new trees, shrubs, and ground cover plantings, the parking area provides many benefits. Trees, shrubs, and ground covers play a part in absorbing carbon dioxide from the air and then returning oxygen to the atmosphere. In the summer, a planting acts as a natural air-conditioner; in the fall, air

contaminants trapped on the leaves are easily and safely eliminated; and in the winter it reduces the effects of wind and snow. A planned parking area reduces water runoff to a minimum and instead returns water to the ground. It also reduces air turbulence and dust; it traps snow and supports bird life—to say nothing of the relief it offers to the eye.

The goal is a permanent parking lot that not only is well-designed functionally, but which is aesthetically pleasing as well. The basic idea is a parking lot that provides beauty, shade, drainage, and conservation of existing trees and ground water. To implement this new concept the Miles design utilizes gravel drainage strips on permeable soil with paved areas for cars pitched so drainage is toward the graveled area. Cars are parked at right angles to each side of these strips which are planted with hardwood trees wherever existing trees are insufficient.

Since that first landscaped parking area was completed in the latter part of 1961, several modifications have been developed. These range from those providing maximum environmental benefits to those which offer simple conservation advantages. Median strips are graveled areas between adjacent parking bays; their purpose is to provide drainage to serve as planting areas and to afford a protected area for light standards. Backing into parking spaces is discouraged because of the longer rear overhang, and it has been found that



A church parking lot constructed from the Miles Deluxe design.



Part of the Miles Deluxe design lot in use at the West Haven, Connecticut plant before mulching was completed.

engine exhaust and salt dropped from the undercarriage is detrimental to plants in the median strips.

In the first design the native soil of the median strips and islands is replaced with a superior soil mix and is mulched with large gravel and rocks. All possible existing trees are retained and additional trees and ground cover plantings are added. Lighting is provided by boulevard type, color corrected, mercury vapor lamps. Parking spaces are denoted by dyed concrete bumpers which eliminates the need for painted lines thus saving that recurring maintenance cost. Landscape plantings consist of existing trees and additional hardwoods or evergreens or flowering trees in the median strips. So far more than one hundred varieties of trees and plants have been tested. Most of them thrive as well as if not better than those planted in the garden. Selected areas in islands and median strips are planted with ground covers such as myrtle, English ivy, pachysandra, ajuga and wintercreeper euonymus.

A second, and more utility type of lot, is similar in basic design but includes less landscaping. While hardwood and flowering trees are planted in the medians and every effort is made to utilize existing trees, the material is whipstock instead of specimen size. Ground cover plantings rarely are used and in the median strip a two-foot deep trench of #5 coarse aggregate provides the drainage, or if the native soil is porous, no aggregate or gravel is used. In all cases it has been found advantageous to use a cored hole for tree roots.

Good drainage is essential for satisfactory parking lot construction. For parking areas, water (and melting snow) should drain in two directions from the center. A slope of 3/16-inch per foot is desirable. Pavement slopes greater than six per cent should be avoided to eliminate gasoline spillage from full tanks and slippage on ice. The use of precast concrete bumper blocks insures orderly parking, protection for the landscaping, and assures drain-through to the median strips.

Four lots constructed by Miles (with space for 965 cars) stay relatively dry and clean and dry up more rapidly both winter and summer since all surface runoff is directed into the gravel. Dust and dirt is carried away automatically with each rain and the median strips provide a handy storage area for snow. This speeds up snow removal and as the snow melts it is fed directly into the gravel drain areas. If dark paving is used, such as asphalt or dyed concrete, snow melts more rapidly.

An additional feature may be a field tile drainage system installed before hard surfacing. Into this is fed secondary water from condensers, water jackets, and so on; because of high water volume and elevated water temperature, the tilefield acts as a most efficient snow melter and returns still more water to the ground. Details and specifications of all the above are freely available from Miles Laboratories Corporate Headquarters, Elkhart, Indiana 46514, and requests are invited. ☞



Plexiglass window with shelves placed to get all possible light. Many odd pots and flat bonsai containers can be used to advantage in a window like this. Note ventilator on top.

Plant Windows

C. R. Boutard*

Surely the wish of every dedicated plant lover must be to grow a large and varied assortment of healthy, good-looking plants right in the home without too much inconvenience.

Gardeners are lucky who possess a deep, light, bay window, for with pebble trays and a few pendent plants in attractive containers, it is possible to create a delightful garden setting.

Not everybody has the bay window. To help the frustrated northern grower who has to stay out of the garden for five months of the year seed firms have come up with many gadgets for raising plants in dark places. There are flower carts, plant lamps, sun bowls and table lights. These

are fine for raising seedlings, for cuttings, and for starting off tubers for planting outdoors. Unfortunately the light source has to be so close that plants often look cramped, all lined up on drip trays. You do not get the full beauty of the plant. If you have tried this and you are not entirely satisfied, and if your house has plenty of windows, switch to a plant window.

What is a Plant Window?

A plant window is a box-like unit made with glass or other transparent material protruding from or taking the place of a regular window. Plants get light from four sides instead of one. You can produce

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All black and white photos by Anthony Boutard.

your own microclimate in a plant window to suit almost any commonly cultivated plant.

We started with our first plant window (or window greenhouse if you like to call it that) some six or seven years ago and since then we have constructed over sixty more of them, all slightly different. (Not all in our house!) The Berkshire Garden Center has influenced hundreds of people, for during spring, summer and fall we have displays of these. All but our one commercial plant window are recessed about one inch into the window frame. This makes a tight fit and provides more support than if the window were clamped outside.

With our first plant windows we left the two push-type sash in place. The lower one was raised to look into the window and to tend it, but after a while we removed this one and later both of them. It



Lush growth readily obtained under the almost ideal conditions in a plant window. The large plant is *Ficus decora* which soon will become overpowering with its large leaves. The finger aralia with its graceful foliage is a more suitable tree. Variegated impatiens, vinca, white-edged Swedish ivy, iresine, and maranta give color to the window. This window obviously is due for an overhaul.

was easier to look after plants in the window, it made the window part of the room, and it allowed better circulation of air into the window. Store removed sash carefully, for if you move you can return the house to its original state and take the plant window with you.

Starting at the Bottom

Our first plant window had a base of exterior plywood but as our temperature in the Berkshires may go to -25° F. we needed insulation. For winter use later windows were built with a hollow bottom with at least a two-inch thick insulation of perlite, vermiculite or polystyrene. We finally settled for fiberglass insulation and have stuck with that ever since. The insulation must be kept completely dry, for once it becomes wet it is useless. Good insulation directs heat from a heating cable upward toward the plants. To prevent water seeping through the inner plywood base, use thin sheet metal, lexan or fiberglass, or seal it with paint.

Plant windows can be square or rectangular; some of our most popular ones are triangular. We made our first window a bit too deep (three feet), although as I look at it now planted up with baby's tears trailing over the dark feather rocks with a small eyelash begonia, a rabbit's foot fern, and a tall *Begonia richmondensis* in the background, it has good perspective. On the side is a climbing *Clerodendron thompsonii* which flowers beautifully every year, and wrought iron brackets support two trailing types of "tradesantias"—one of them the delightful, tiny white-flowering *Tripogandra multiflora*. For easy maintenance a plant window should not protrude more than about twenty-five or thirty inches; we have some only eighteen inches deep. The deeper the window the harder it is to circulate heat from the room, and a deep window pulls on the window frame with its heavy weight. A very deep window looks clumsy from the outside.

The Sides

For the three exposed "sides" we have used six-pane and four-pane sash, small windows out of old houses, and even large single panes of heavy plate glass. In some cases we have used small panes of

glass on the sides and a large pane of glass facing the view of the garden. Match the sashes or the window will look like a badly tailored suit. If the window is going to be used for growing plants in pots it may be glazed all the way down. If it is intended for a terrarium sort of setting with stones on a "hillside", or with a log imbedded in moss, or with pots plunged into peat, build a box about twelve inches high. If you wish to grow a few tall plants or to create a waterfall with a pool, this box may be placed beneath the level of the window sill. Our sunken windows are very successful, but need heavy insulation to keep the frost out, as the heat from the room will not go down to keep them frost free.

We have put in double glazing on our recent windows. The extra pane fits inside with a patch of glue, a glass tack, or neat-est of all, with a strip of batten. Do not make the two panes airtight because trapped moisture fogs up the window. We doubled one window by screwing an extra sash to the outside and although this window is nine feet away from the nearest radiator, it has grown beautiful begonias, ivies, and peperomias without the aid of a heating cable during several Berkshire winters.

The Top

For the top we combine two basement windows as they have no pieces of wood running crosswise and therefore let rain and snow slide off better.

The uppermost window is nailed down, but the lower one is fixed on a piano hinge so that it can be opened on warm days. We have also made tops in one piece.

A flexible piece of thin plexiglass or Lexan prevents both drip and damage from falling icicles. In an unbreakable window made entirely of plexiglass the top is glued on and the ventilator is put on the front. An advantage of the plexiglass window is that you can glue on shelves wherever you wish, and transparent construction lets in every bit of light.

During the winter when there is little need for ventilation the ventilating sash should be closed permanently with a hook and eye for much damage can be done if it blows open. On our older plant window models we have wrapped six mil clear



A collection of tropical economic plants were inaccessible to school groups; we built this addition for them. The plants grown in pots are imbedded in peat, so they are easy to take out for discussion. Heat circulates from three open windows in the building. For ventilation the plant windows can be opened. Glass-O-Net shades the sunny side.



A sunken plant window with a pool. Around the edge grow leopard plant, green taro, sweet flag, and *Scirpus cernuus*, all plants from bog habitats. At the back is a devil's ivy. Parsley-leaved English ivy trails down from a pot fixed on a wall bracket.

polyethelene right around them. If the plastic wrapping is placed so that there is a cushion of air between the plastic and the glass it is most efficient.

Heating the Window

We have found the best way to heat a window is with an insulated soil heating

cable. Some cables come with a built-in thermostat set at 70° F. and sell for as low as six dollars. There also are cables intended to prevent frozen pipes, with a thermostat setting of 34° F.

If these are used, the element should be placed outside in the shade and this will then prevent the window from freezing—only going on when exterior temperatures drop. This makes a good cool window for native plants. If you have a good quality vinyl armoured cable with a separate adjustable thermostat it is possible to control the heat much better, for most plants like a drop in temperature at night. In order to bloom, many plants need this change. Probably the most durable cable is the traditional lead hotbed unit; use it with an adjustable thermostat supplied with a soil probe. For tropical plants staple the cable along the sides as well as the bottom. Electrical staples are safer to use than the staple gun, for once a cable is pierced it may be useless. We like to bed the cable in a thin layer of perlite and place screen mesh on top, so that it does not become disarranged when planting. Part of the cable can be laid in water to increase evaporation for high humidity plants. Another heating method is to place a small fan controlled by a thermostat in the coolest end of the plant window which will blow warm room air into the window when the temperature drops.

Forced air heaters dry out plants too much. Electrical mats used for raising seedlings may be excellent, but we have not been able to find the right size for our windows, probably because our windows are not very standard.

Lighting

Plenty of day light reaches a well placed plant window for growth but lighting makes the plant window attractive at night when it may give the owner most pleasure. The light fixture is best concealed behind a strip of wood in the upper end of the window. If a fluorescent Gro-Lux light is used some plants will exhibit strange, glamorous colors. A Gro-Lux tube combined with a white tube gives better light. But we like incandescent light best of all. Three separate fixtures with two white bulbs and one pink bulb give a pleasant light and bring out true plant



A small window with succulents. A small heating cable placed beneath the marble chips keeps the window warm. A few pieces of driftwood help to decorate this plant window.

colors. If they are placed on swivels they can be adjusted to highlight certain plants. To service lights, cables, and perhaps a recirculating pump or an aquarium, install a fused receptacle box. This prevents unsightly wires dangling at the base of the window.

Painting and Caulking

It is much easier to paint plant window parts separately before they are assembled. We use flat white paint as it looks clean, reflects light, and also sets off the plants. Any holes or cracks should be caulked with a caulking gun before painting. The only place to leave a gap may be at the bottom so that surplus water can drain away, although with careful watering this should not be necessary.

Summer Care

During the summer some shading will be necessary, especially if the window faces south and there is no shade from deciduous trees. We have used some plastic material called glass-o-net, largely because the green or white webbing looks

good and is easy to staple on. During summer the plant window can be replaced with a square "window" made out of framed window screen with a slightly sloping top of plexiglass. One inch lath should be nailed on outside to supply shade. How closely you space the laths depends on the light requirements of your plants. In order to prevent draughts through the house it may be worth leaving the existing window in.

Other Hints on Construction

We have used a slender threaded metal rod across some of the windows to tie the sides together. This helps during construction and later comes in handy for hanging

A commercially manufactured plant window in the home of Landscape Architect Frederick C. Markham.



plants. If a plant window is placed high up, start with a sturdy platform and put the rest up in sections. For large, sunken plant windows and windows with a pool or aquarium, additional support will be needed. Large "windows" can be made up where a door is not being used during the winter.

For a bathroom window, where fresh air is essential at times, slot a piece of glass or plastic material in a level position below the ventilator sash. This will prevent cold air blowing down on the plants.

Endless Possibilities

The best exposure for a plant window is east-facing but with auxiliary additional light it is possible to grow a great selection of plants in a completely sunless window.

One of our most popular windows last year included a small waterfall hollowed out in feather rock, with a pool at the bottom. A Little Giant pump recirculated the water. We used a few native ferns, mosses, liverworts and lichens to make a very simple arrangement. The waterfall created a lively effect. A tank with tropical fish also gives life, but you cannot use insecticide sprays on the plants. Many beautiful water plants can be grown especially if goldfish are not included as these seem to concentrate on chewing the plants.

A window with all succulents, some of them hanging, makes a good display. If you turn the thermostat down about 10° F. every night they will grow better and may bloom if they get plenty of sun.

Another very popular window is a shady one with tropical ferns grown in pots, but inbedded in moss, and with old logs added for decoration. If it is necessary for privacy, the glass window can be replaced with frosted Lexan, which is absolutely breakproof.

One of the greatest problems with plant windows is vigorous growth of plants in this ideal environment. It pays to select miniature species and cultivars, e.g., if you use *Pilea cadierei*, buy the cultivar 'Minima.' There is a small *Plectranthus*, small, slow-growing peperomias, and miniature African-violets. The latter are best grown in a window by themselves as they do not like the temperature drop other plants enjoy.

A window for the kitchen will grow



The Markham's plant window from the outside. These units are available in various sizes and designs.

herbs which never have been the best of house plants. Parsley, chives, chervil, bay-leaf, mint and even rosemary often deteriorate in the typical hot, dry room. In a plant window it is possible to keep the humidity high.

Your gift azalea, poinsettia, kalanchoe or Christmas begonia will last much longer in a plant window than in the living room; add a few forced bulbs for a fine effect.

Arrangements of Plants

A plant window is a living landscape and you are the designer. You may wish to include the outside view and use your

plants to frame and enhance the scene. If the view is not worth it, and if you wish to have privacy (drapes are not easy to fit across a plant window) use frosted glass and fill up your window to make it a real jungle. As many of our plants come from the jungle, they enjoy being crowded. Some plants, however, are impossible to use as they are out of scale or they become domineering. A fierce-growing *Sparmannia* will smother everything else. The fiddle-leaved fig will obviously look uncomfortable trying to spread its eighteen inch leaves in a window enclosure. One large leaf of a *Philodendron selloum* will fill a window; so I come back to my earlier remark. Go in for the petite and slow growing. Among exceptions are the flowering and foliage begonias, which can be pruned and thinned out to fit the windows without spoiling their appearance.

Whether you create a landscape or grow a collection plants in pots is up to you. Growing them in pots is easier, as you can move them around, clean them, and change the picture from time to time. To elevate plants use inverted flower pots, glass bricks, or chunks of log. Growing plants in pots allows you to take out a plant infested with mealy-bugs for a trip to the kitchen where it can be cleaned up and then placed in the "isolation ward" for observation for a few days. If a plant looks yellow give it a dose of soluble fertilizer. Either replace the soil entirely in a landscape planting or at least refresh it with some new soil during the spring and fall cleanup.

At least twice a year plan to reshuffle, prune, and maybe remove some of the plants to give the remainder more space and air.

Volcanic feather rock is handy for plant windows because its weight is about one-fifth that of ordinary rock. Holes can be drilled and plants grown right in the feather rock.

To conclude, the next time you hear of a building which is to be demolished, get there before the wrecker and gather as many windows, skylights and glass doors as you can carry away. With a saw, a screwdriver, a can of paint and plenty of ingenuity your salvage can be re-cycled into plant windows. Plant windows to give you or someone else untold pleasure. ☼

#1

TV Home features

BOTTLE GARDENING

Prepared by Dr. Henry M. Cathey, Leader, Ornamentals Research Laboratory, U.S.D.A., Beltsville, Maryland. Made available upon request to television stations.

House plants help to recycle our environment as well as add touches of live color in the home. If you hesitate to grow plants indoors because you can't locate good soil, or do not want water to drip on furnishings, or you don't have the time to spare for growing flowers, *BOTTLE GARDENING* may be your answer. All you need is an empty bottle, cut branches from plants and tap water.

#2



BOTTLES

Any waterproof container will do for a bottle garden . . . old canning jars, aquariums, beverage bottles, vases, anything.

#3



WASHING CONTAINERS

The containers must be clean. Wash them with kitchen detergents and hot water . . . rinse and drain. Then fill with water out of the tap.

#4



SPLITTING STEM

Select cut branches from plants such as myrtle, geranium, oleander, wax begonia, fuchsia, coleus, hibiscus, ivy, philodendron. Any plant that grows from a fairly sturdy stem will do. When removing the stem, make a sharp cut with no ragged edges. Put the stem in the container, making sure *no* leaves are below the water line.

#5



ARRANGING LEAVES IN BOTTLE

Arrange the branches to create a natural effect. The branches will eventually turn and fit together to create a pleasing composition.

#6



FOUR ARRANGEMENTS IN BOTTLES

Add fresh tap water at frequent intervals since water is lost by evaporation. Turn plants in the window at least weekly to keep them developing on all sides.

Once a month empty the bottles again and wash them with hot water and a detergent to kill algae and molds. Scrub the stems with a soft brush to remove algae.

BOOKS

Frequently publishers send copies of recently published books to the American Horticultural Society office. Members of A. H. S. may borrow books from the collection, as from a lending library. The following publications have been received in the past few months.

Greenhouse Gardening (2d Edition). Henry T. and Rebecca T. Northern. The Ronald Press Co., New York, 1973. 388 pp.

Organogenesis of Flowers. A Photographic Text-atlas; Rolf Sittler, University of Toronto Press, 1973. 207 pp.

The Vegetable Book—an unnatural history. Yann Lovelock. St. Martin's Press, New York, 1973. 383 pp.

Gardening for Good Eating. Helen M. Fox. Collier Books, New York, 1973. 262 pp.

The Years in My Herb Garden. Helen M. Fox. Collier Books, New York, 1973. 271 pp.

A Perfect Lawn the Easiest Way. Robert W. Schery. The MacMillan Company, New York, 1973. 294 pp.

Potpourri, Incense and Other Fragrant Concoctions. Ann Tucker. Workman Publishing Co., New York, 1972. 96 pp.

The Italian Garden. David R. Coffin, editor. Dumbarton Oaks—Trustees for Harvard University, 1972. 114 pp.

Woody Plants of the Morton Arboretum, A Handlist of Plants Established or Tried, compiled by W. Eickhorst, R. Schulenberg, F. Swink. Morton Arboretum, Lisle, Illinois, 1972. 250 pp.

Gardening Under Glass. Jerome A. Eaton. The MacMillan Co., New York, 1973. 306 pp.

Your City Garden—Planning and Plants. Jack Kramer. Charles Scribner's Sons, New York, 1973. 120 pp.

128 Houseplants You Can Grow. Bob Herwig. Collier Books, New York, 1972. 60 pp. Translated from German.

Exotic Plants. Julia F. Morton. Golden Press, New York, 1971. 160 pages.

Cucumbers in a Flower Pot—How to Grow Fruits and Vegetables in and around Your Home. Alice Skelsey. Workman Publishing Co., 1972. 87 pp.

Gardener's Diary—For recording the growth of your garden, with timely observations. Joan Lee Faust. Workman Publishing Co., New York, 1973. 127 pp.

How to Grow Roses. Sunset Books. Lane Books, Menlo Park, Cal., 1973. 80 pp.

Space and Illusion in the Japanese Garden. Itoh Teiji. John Weatherhill, Inc., New York, Tokyo, 1973. 229 pp. Translated and adapted from the Japanese.

Tropical Flower Arranging—A Practical Guide. Nancy Aldrich Inman. Charles E. Tuttle, Rutland, Vt., 1973. 116 pp.

The Complete A-Z of Gardening—Plants and Shrubs. Douglas Close, F.R.H.S. Lyle Publications, Liverpool Terrace, Worthing, Sussex, 1973. 319 pp.

Ferns and Palms for Interior Decoration. Jack Kramer. Charles Scribner's Sons, New York, 1972. 113 pp.

Dried Flowers from Antiquity to the Present; A History and Practical Guide to Flower Drying. Leonard Karel. Scarecrow Press, Inc., Metuchen, N.J., 1973. 184 pp.

Of Men and Plants. Maurice Messegue. The MacMillan Co., New York, 1973. 327 pp.

Weeds. Alexander C. Martin. Golden Press, Western Publishing Co., 1973. 160 pp.

Trees & Shrubs Hardy in the British Isles—8th ed. rev. Vol. II—D-M. W. J. Bean. John Murray, London, 1973. 784 pp.

The Herbalist. Publication of the Herb Society of America, 1973. 96 pp.

All About Vegetables (South edition). Edited by Walter L. Doty. Chevron Chemical Co., 1972. 112 pp.

Third Symposium on Peat in Horticulture, ACTA Horticulturae, No. 26. Chairman: Prof. Dr. F. Penningsfeld. 1972. 198 pp.

The Indoor Light Gardening Book. George A. Elbert. Crown Publishers, New York, 1973. 250 pp.

The Floriculturist's Vade-Mecum of Exotic and Recondite Plants, Shrubs and Grasses, and One Malignant Parasite. Luis d'Antin Van Rooten. Doubleday & Co., Inc., New York, 1973.

A History of the Orchid. Merle A. Reinikka. University of Miami Press, Fla., 1972. 316 pp.

Traveler in a Vanished Landscape—The Life and Times of David Douglas. William Morwood. Clarkson N. Potter, New York, 1973. 244 pp.

Helen Van Pelt Wilson's Own Garden and Landscape Book. Helen Van Pelt Wilson. Doubleday & Co., New York, 1973. 238 pp.

The Complete Book of Garden Bulbs. Marc Reynolds and William L. Meachen. Funk & Wagnalls, New York, 1971. 373 pages.

Environment—A Challenge to Modern Society. Lynton Keith Caldwell. Doubleday, New York, 1972. 301 pages.

Pressed Flower Collages and Other Ideas. Pamela McDowall. Charles Scribner's Sons, New York, 1972. 112 pages.

Regulations and Rules of Practice—Effective November 27, 1972. United States Plant Variety Protection Act of December 24, 1970 (84 Stat. 1542) (7 U.S.C. 2321 et Seq.) Issued by the U. S. D. A., Agricultural Marketing Service, 1973.

Gardener's Gazette

G.C.A. Awards

The Garden Club of America, at its 60th Annual Meeting, presented medals for outstanding accomplishments in the field of horticulture, conservation, and civic beautification. Recipients include:

Dr. and Mrs. John Howland Gibbs Pell, awarded the G.C.A. Medal for Historic Restoration and/or Preservation.

Mrs. William P. Roth, awarded the Distinguished Service Medal for meritorious accomplishment in the field of horticulture.

Mrs. Edith Foster Farwell, awarded the G.C.A. Achievement Medal in recognition of noteworthy achievements, for creative vision concerning the interpretation, advancement, and exemplification of the objectives of G.C.A.

Mr. W. W. Goodale Moir, awarded the Florens de Bevoise Medal for horticultural achievements in the field of hybridizing, collecting, or nurturing, with preference to plant material for rock gardens.

Mrs. Walt Thomas, awarded the Katharine Thomas Cary Medal for outstanding achievement in the field of flower arrangement education.

Mrs. Frances Perry (of Enfield, England), awarded the Sarah Chapman Francis Medal for outstanding literary achievement relating to any aspect of G.C.A. interests.

Mrs. Elizabeth P. King Miller, awarded the Margaret Douglas Medal for notable service to the cause of conservation education.

Miss Anne Bruce Haldeman, awarded the Mrs. Oakleigh Thorne Medal recognizing outstanding achievement in garden design.

Dr. Dixy Lee Ray, awarded the Frances K. Hutchinson Medal for service in conservation.

Apples From The Good Old Days

The disappearance of old apple cultivars came to the attention of the Worcester (Massachusetts) County Horticultural Society during the depression years. Mr. S. Lothrop Davenport, then secretary of the Society, as-

sumed responsibility for searching out old apple varieties in America and Europe, and for assembling them in an orchard on his property near North Grafton. By 1953 nearly fifty kinds of old apples were established in the orchard.

In 1967 the Davenport property was sold and plans had to be made to remove the collection. The Worcester County Horticultural Society asked assistance from nearby Old Sturbridge Village, and the museum happily considered the preservation of the old apple varieties a natural extension of its historical conservation program. Plans were made for a jointly-sponsored Preservation Orchard to be planted on village property.

Preparations for the new orchard were begun immediately. Scions were taken from the old cultivars and budding began on semi-dwarf root stock, East Malling VII. Budding work will continue so long as old apple varieties can be located. James Mistark of Grafton, Neil Malchisky, director of historical horticulture at the Village, and Miller Brothers Nurseries, Inc. of Canandaigua, N.Y., have cooperated in the propagation project.

Spring of 1973 saw the first young trees, nearly 130 of them, planted in the new Preservation Orchard. Further plantings are scheduled for 1974 and 1975. When the project is completed the orchard will contain two trees each of 125 old cultivars.

Presently experts at Old Sturbridge Village are preparing a manuscript on the old apples and their stories for future publication in the *American Horticulturist*.

Small Fruit Reports from Germany

Horticultural Research Reports published by the West German Rheinland State Department of Agriculture in 1972 and 1973 deal with small fruit propagation, growing techniques, harvesting, forcing, picking, processing, and marketing. European markets demand first quality, highly palatable fruits for table use. Because distances are short and markets are nearby, breeders work toward quality in taste and texture, with shipability

and tolerance of storage as minor concerns. The result is delicious fresh fruit for home consumption.

But due to ever-diminishing acreage for small fruit production, higher land taxes, higher agricultural wages and similar factors, small fruit production has been forced to become a modernized operation. Booklets reviewing the current status of research, field methods, marketing techniques and so on have been prepared by the Rheinland Department of Agriculture for local growers, the Rheinland being a major production area for small fruits. Entitled, in each case, *Horticultural Research Report, Suggestions for Production and Marketing*, Volume 1 deals with Raspberries, Volume 2 with Blackberries, and the latest, Volume 3, with Strawberries. All are available only in the German language. Persons interested in the reports should write to Herr B. Weiss, Landwirtschaftskammer Rheinland, 53 BONN, Postfach 3, West Germany.

Scottish Rock Garden Club Slides and Lectures

Slides and tapes, including typed copies (copyright by the S.R.G.C.) are now available for rental in America. Elinor Clarke of Bear Swamp Gardens, Ashfield, Mass. 01330, is acting as Curator for the S.R.G.C. programs in America.

Presently three programs are offered, as follows:

Early and Late Flowers for the Rock Garden, by Major-General D. M. Murray-Lyon, D.S.O., M.C.

Ericaceae, by Mr. Alfred Evans, Royal Botanic Garden, Edinburgh.

Adaptation to Environment, by Mrs. L. C. Boyd-Harvey.

For information on conditions of program rental, fees, and so on write to Mrs. Clarke. American garden clubs and plant societies will be stimulated by these excellent programs which reveal the depth of study and the intensive home garden research carried on by European amateur gardeners.

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"HUMMINGBIRDS—ATTRACT & FEED" booklet. Photo illustrated. 35c includes Hummingbirding News—Brochure. WOODS-WORLD, 600A15 Olive Springs, Santa Cruz, Calif. 95060

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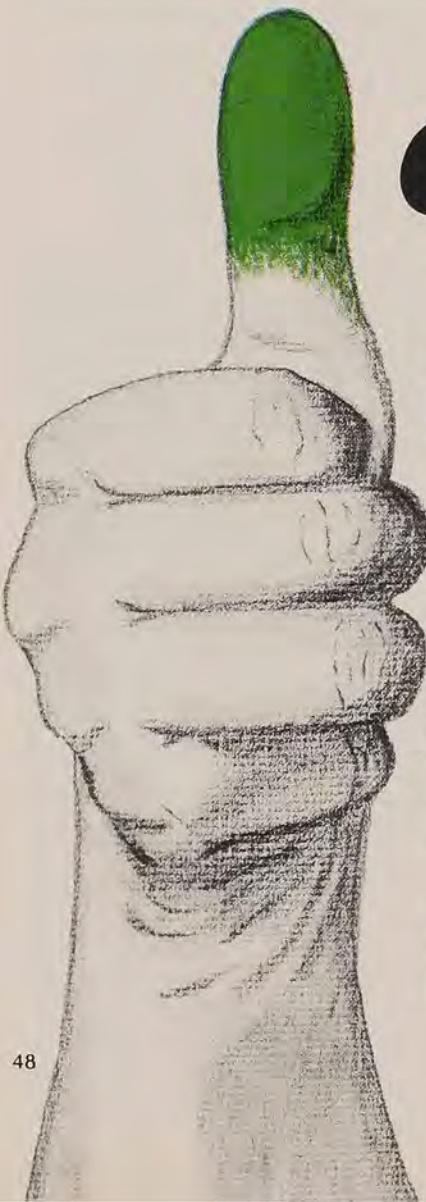
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