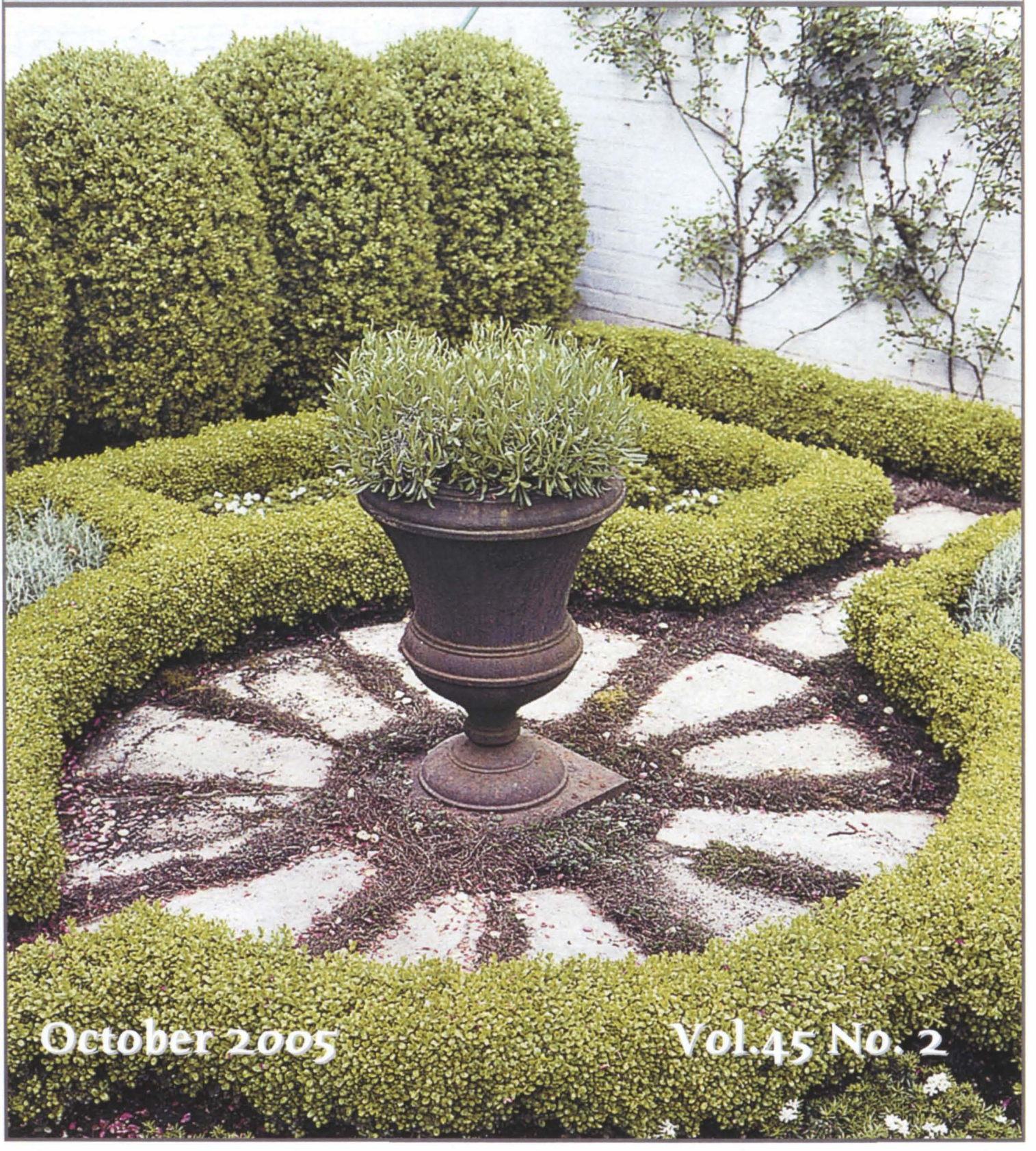
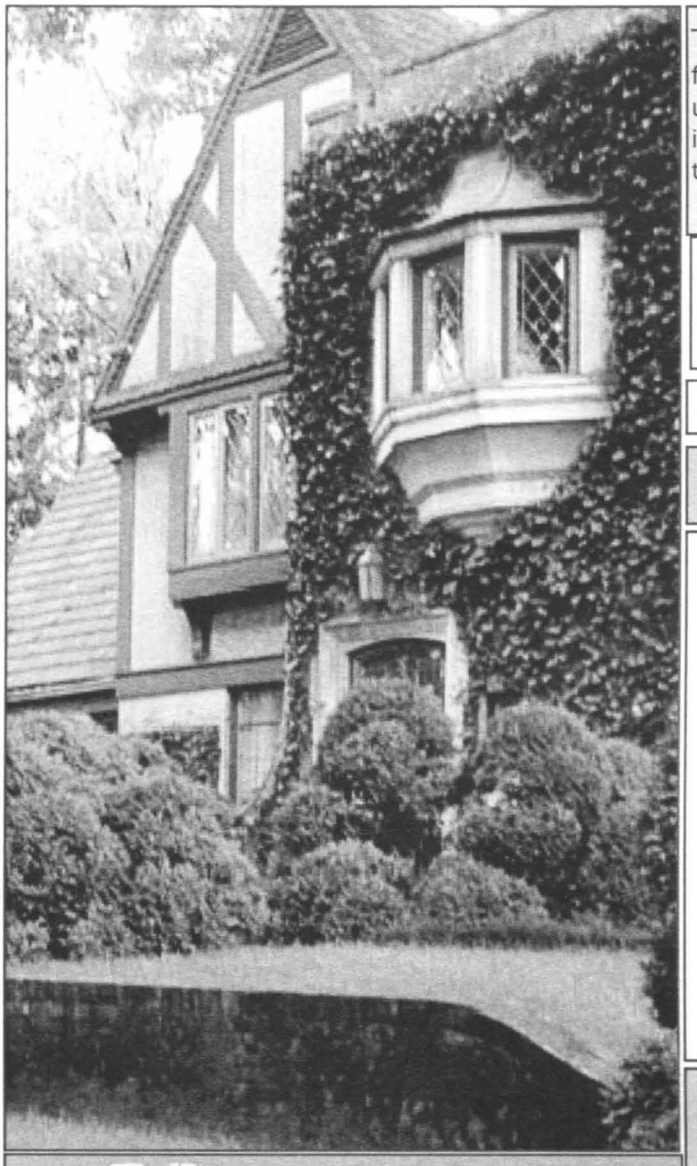
The Boxwood Bulletin

A quarterly of the American Boxwood Society devoted to our oldest garden ornamental



October 2005 Vol.45 No. 2



MEMPHIS

SAVE THIS DATE ON YOUR CALENDAR
ANNUAL MEETING AND SYMPOSIUM
MEMPHIS, TENNESSEE
MAY 10-12, 2006

Lynn Batdorf's new and revised **Boxwood Handbook** will be out in time for holiday giving! Note new price of $22 and $3 shipping and handling.

The American Boxwood Society is a not-for-profit organization founded in 1961 and devoted to the appreciation, scientific understanding and propagation of the genus *Buxus L.* For any information about boxwood and the Society, please don't hesitate to contact us at:
American Boxwood Society, PO Box 85, Boyce, VA 22620-0085

Table of Contents

October 2005 | Vol. 45, No. 2
www.boxwoodsociety.org | ISSN 0006 8535

Notices

Hi. We have several large, mature English boxwood. We are relandscaping and ready for a change. We hate to cut these beauties down. NO reasonable offer refused. Buyer must extract from our yard and transport. Please help, we hate to put them in the landfill or worse. Thank you for helping!!!

Pat and Otis Williams
804-264-6956 Richmond, VA

Cover photo from *Homescaping* by Anne Halpin, reprinted with permission.

TWO CENTS

As a member of the American Boxwood Society, I know the kinds of things that interest me about boxwood. What I don't know is what interests you about boxwood and I hope you will share that with me very soon. As a new editor, I'm looking for all the different ways and topics that will make this a useful, interesting, stand-out publication, read cover-to-cover by all members!.

In this issue, we are introduced to the Dawes Arboretum, learn about an old print and find out about insects and diseases affecting boxwood. A membership contest is underway and some fascinating books have been reviewed.

There are many different ways to propagate boxwood; please tell me about them and we can present them all together for you to try in the future. Design issues are always of interest and new cultivars will be coming along to report. The plant hunters are out again this summer and we can look forward to accounts of their adventures.

There is another issue I would love to have folks weigh-in on. Some organizations provide both print and online versions of their journals. We could put the **Bulletin** on the website and you could read it online or download and print it. The beauty of this approach is that color pictures don't cost a premium online, so the entire **Bulletin** could be in color. Printing and postage costs could be reduced and the delay from publication to delivery at your mailbox could be reduced as well.

We know that all folks are not comfortable with computers and everyone is not online. I've enclosed a postage-paid postcard with my return address. I would be grateful if you would let me know what you think about this. You can also email me if that's easier for you. We would then be in a position to determine how many folks would prefer one method over another and how many copies of the **Bulletin** we would still need to print. Right now we can only speculate. I'd like to really know.

You are welcome to call, write or email me with articles, photos, ideas, accounts of your experience and that elusive boxwood humor. Maybe a few of you will make some great topiary art to enchant the rest of us. Perhaps we can talk about the sister and brother of boxwood, *Sarcococca* and *Pachysandra*. Please don't hesitate to let me know when I make a mistake or have something wrong. And I'll work to keep up with you.

Donna Williamson
Boxwood2005@aol.com
540-877-2002

CORRECTIONS

July, 2005 Issue

1. Email for Laurie Jamerson is incorrect on back cover. Correct email is: laurie@saundersbrothers.com

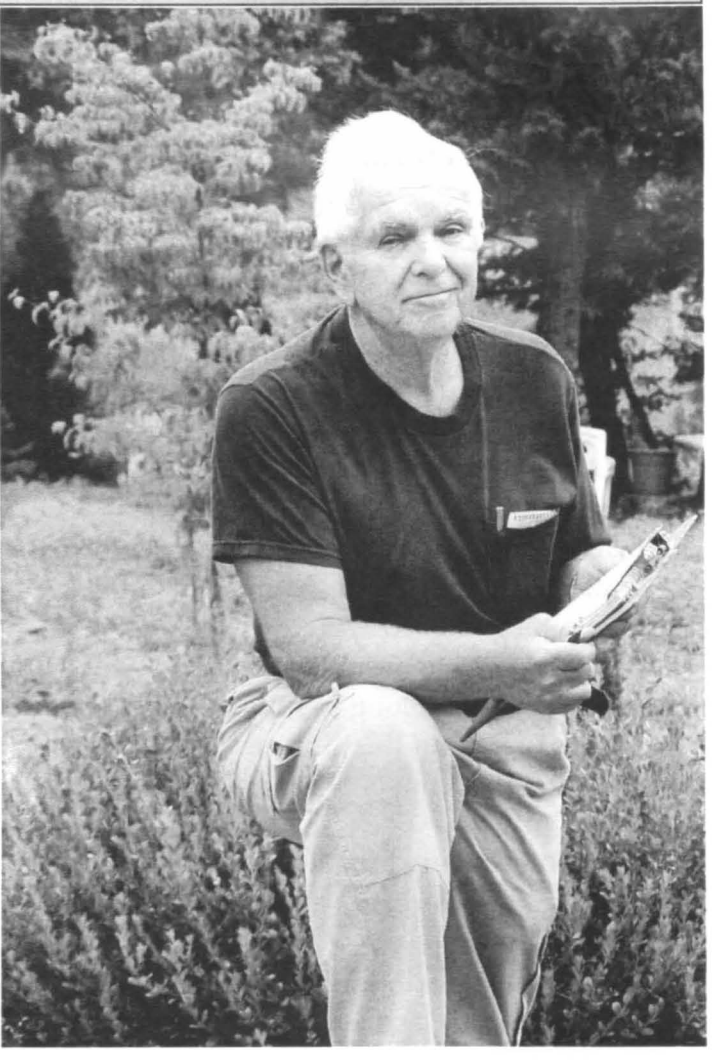
2. Area code for Board member Dr. Henry Frierson is **434.**

3. Captions on the story about the European Boxwood and Topiary Society incorrectly spelled the Braimbridge name. Apologies all, again!

4. The best phone number to contact President Clyde Weber is 724-258-8671.

The President's Message

by Clyde Weber



We are in the middle of a long hot summer and I drive my old Farmall cultivating tractor through my boxwood fields, keeping a dust mulch over the roots to conserve moisture. I marvel at the lush green hardiness of the plants in this drought. Rich Larson, propagator at Dawes Arboretum in Ohio, was right when he said to me "Clyde, in boxwood we have more than just a deer-proof plant, we also have a hardy and versatile drought-resistant plant". I might add that this applies to established boxwood more than to recently planted boxwood. Keep your non-established boxwood well-watered. Rich Larson will be one of our guest speakers at the 2006 annual meeting.

Speaking of the 2006 annual meeting in Memphis, we did have some difficulty in deciding on the actual date. After juggling various issues we were left with Thursday, Friday, and Saturday May 11, 12, and 13, which runs into Mother's Day weekend again. We extend our apologies to anyone adversely affected by this decision.

Chairperson Edna Hoffman reports that plans are coming together. She told me there will be a riverboat cruise with dinner and a speaker, Ben Page, the nationally-known garden designer. Edna has other delightful surprises planned for the meeting and as soon as they are finalized they will be published on our website.

We are well underway into a new era for the American Boxwood Society. As for **The Boxwood Bulletin**, I don't think that we have adequately thanked the Frackelton family and all those involved for getting the January issue published under trying conditions. The loss of long-time editor and member Decca Frackelton has been a blow to all of us. Decca certainly put in an extreme effort in getting the **Bulletin** out and doing all of the other work that she did for the Society. Thank you, Joan Butler, for doing the wonderful job on the April issue, also during the loss of your husband, Scot. Scot and Decca will be fondly remembered for their long-term contributions to the American Boxwood Society.

Another item that I don't want to forget at this time is renewal of membership for anyone that hasn't done so yet. You, the members, are the lifeblood of our society which has been kept going for more than four decades. We invite you to express your opinions, suggestions, and ideas. And let us hear of your boxwood interests and your garden. We would like to feature member's gardens as an integral part of **The Boxwood Bulletin.**

INTRODUCING THE BOXWOOD COLLECTION AT THE DAWES ARBORETUM

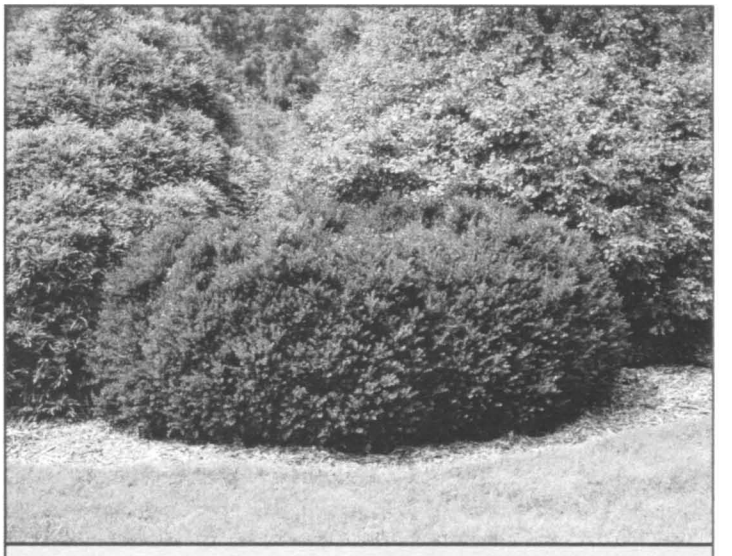
NEWARK, OHIO

RICH LARSON

This article's purpose is twofold: first, provide a brief historical overview of boxwood (*Buxus spp.*) cultivation at The Dawes Arboretum and, second, as a preface for a more substantive treatment of the genus to be printed in a later edition of **The Boxwood Bulletin**.

Boxwood have been a component of our woody plant collection since 1931, a mere two years after the founding of The Dawes Arboretum. These initial plantings consisted of common boxwood (*Buxus sempervirens*) planted on the north facing foundation of Daweswood House, which then served as a summer residence for founders Beman and Bertie Dawes. Of the 12 boxwood in this initial planting, ten still remain in good standing and give credence to the durability of boxwood in the landscape.

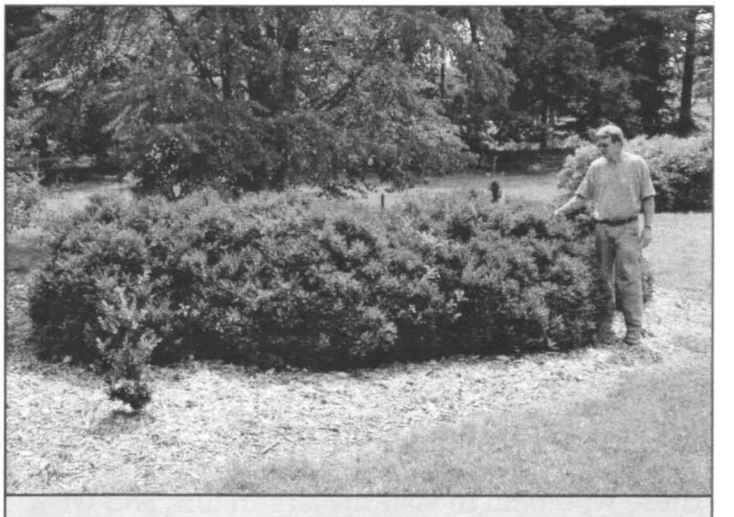
This common boxwood, *Buxus sempervirens*, was planted in 1931 outside of Daweswood House, the summer residence of our founders, Beman and Bertie Dawes.



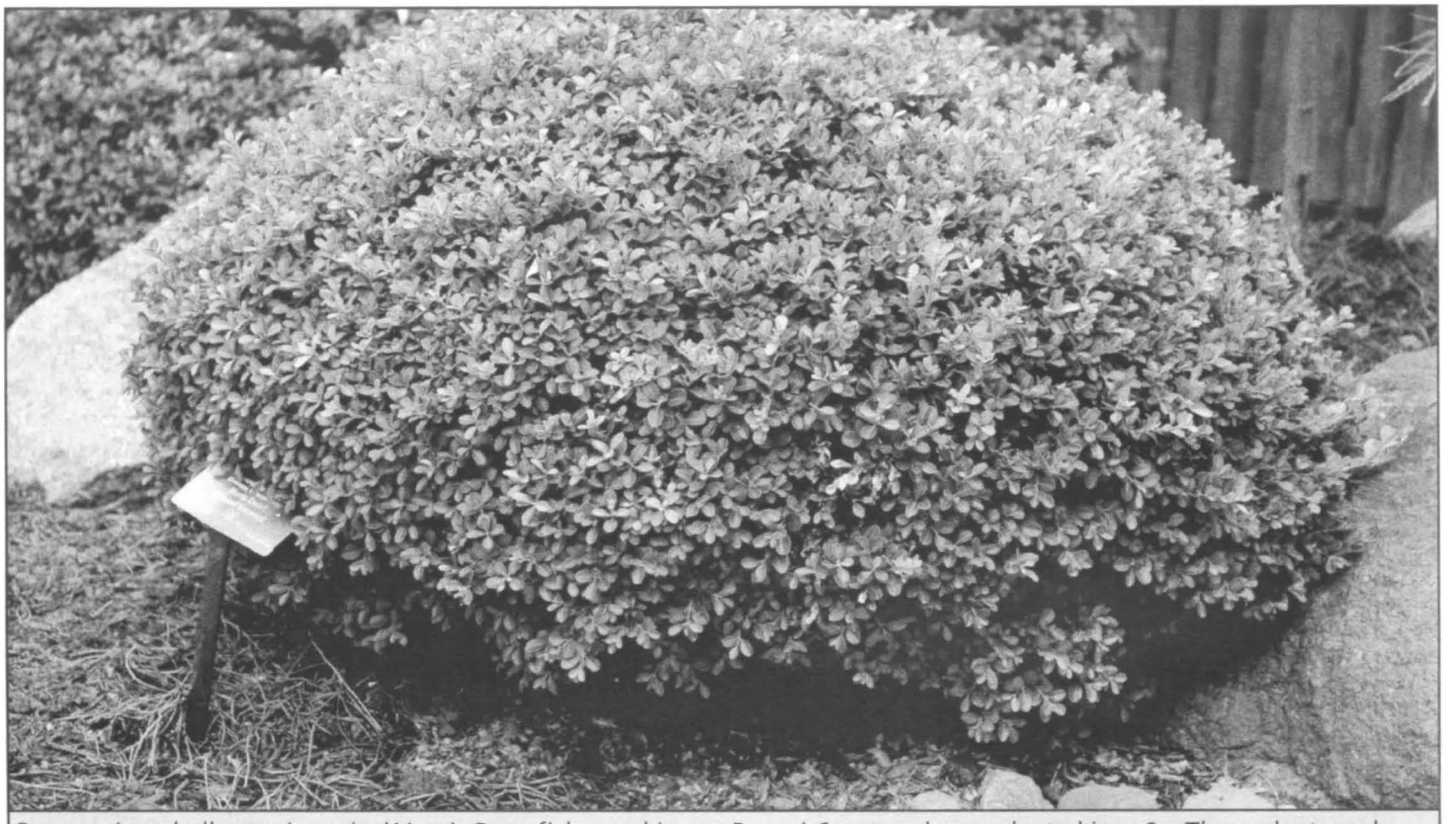
Buxus sempervirens 'Anderson 350-35'

Approximately 36 years elapsed before additional plantings were made. In 1967, the Arboretum received plants of common boxwood under the name 'Anderson-350-35' from Ohio State University. Our clone has proven to be hardy to USDA zone 5b and forms a beautiful low-growing, horizontal shrub with relatively large, glossy green leaves year round.

During the 1970s and '80s, two of the four named hybrid varieties, 'Green Gem' and 'Green Velvet', which originated from the Sheridan Nurseries in Canada, were planted on our Holly Hill garden. Both have lived up to their repute, demonstrating excellent hybrid vigor, resistance to frost damage and tolerance of full sun and winter winds.



Arguably one of the most popular Sheridan hybrids, this specimen of *Buxus* 'Green Velvet' dates back to the early 1980s.



Buxus microphylla var. *japonica* 'Morris Dwarf', located in our Bonsai Courtyard, was planted in 1987. These plants make nice specimens for bonsai because they retain their dwarf habit.

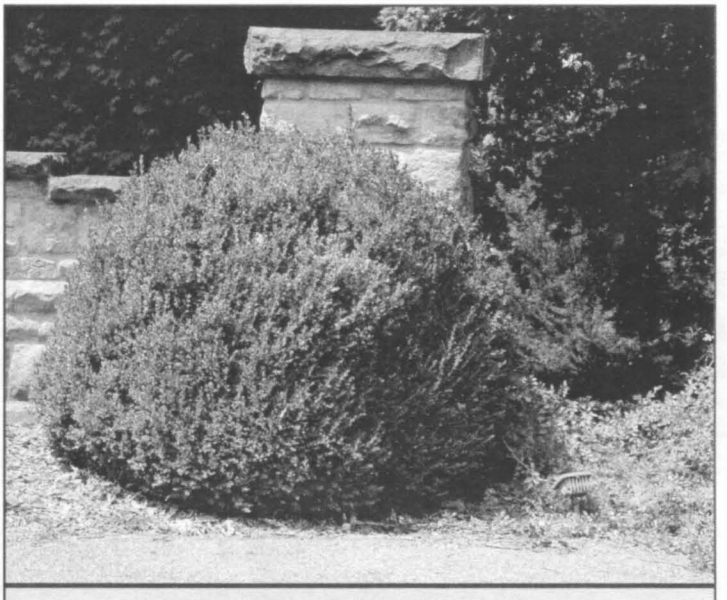
Three plants of a very handsome dwarf form, *Buxus microphylla* var. *japonica* 'Morris Dwarf', were also added during this period; they now form exceptionally picturesque dense mounds to around two feet tall and wide. Finally, in 1989, several plants of the popular cultivar 'Wintergreen' Korean boxwood (*B. sinica* var. *insularis* 'Wintergreen') were planted at Holly Hill where they now form large masses over six feet tall.

Since 1990, our boxwood collection has grown substantially with 54 of our 60 boxwood taxa planted during the last 15 years. We now possess one of the most comprehensive collections in the Midwest. Today our collections include 169 boxwood plants scattered throughout several gardens. We are committed to increasing this diversity. The Arboretum's nursery currently harbors 37 different boxwood that will likely be planted in the near future.

Those who plan to visit the Arboretum and wish to examine our boxwood collection should plan to spend most of their time on Holly Hill where two-thirds of our boxwood are sited. Boxwood share this garden with a number of other woody plant genera, and although evergreen and deciduous hollies constitute the bulk of the plantings, a considerable selection of weigelas and euonymus can also be observed.

Popular favorite *Buxus sinica* var. *insularis* 'Wintergreen' has reached unusually grand proportions situated in the upper portion of Holly Hill.

Holly Hill has a basic linear configuration encompassing 6.8 acres (3.48 hectares) and oriented east lowest portions lying in the east. We are fortunate to have mature woodlands buffering this area to the north and south providing a measure of protection from winter winds. Boxwood are planted throughout this area with the majority sited on south-to-southwest-facing slopes in the upper or western section of the collection. Quite a nummber of cultivars have been recently added to the lower areas of the garden and lie on east-facing slopes. The large American hollies (*Ilex opaca*) in this area generate some well-needed microclimates for our more tender broadleaf evergreens including some of the marginally-hardy boxwood selections.



In the 1980s, the Arboretum inherited this Sheridan hybrid *Buxus* 'Green Mountain'.

Our continued interest in boxwood is fundamentally related to two issues. First, I have found boxwood to be hardier and more culturally adaptable to the intense climactic fluctuations typical of the Midwest than perhaps any other group of broadleaf evergreens. More importantly, however, their virtual immunity to deer browse is an asset that must not be overlooked. If Ernest Wilson were alive, he may still leave boxwood off his list of plant aristocrats and, yet, he could not discount their toughness, disease and insect resistance, and longevity in our gardens.

More to follow later.

All Dawes Arboretum photographs by Laura Kaparof

Meet Rich Larson

Rich Larson and *Buxus sempervirens* 'Asheville'.

Academic credentials:

Bachelor of Arts, History, 1979
Bachelor of Science, Horticulture,1980
Master of Science Horticulture,1982
All degrees received from the University of Wisconsin-Madison

My post-academic career began in 1984 when I obtained a position with a bio-research firm located in Middleton, Wisconsin. My duties as a greenhouse and laboratory technician were to assist the scientific personnel in their recombinant-DNA research.

In 1988 I joined the staff of the Dawes Arboretum as the Arboretum's plant propagator and continue in this position to the present day. Along with my responsibilities as propagator and nursery manager, I am the curator for our azalea, witchhazel and holly collections. I also coordinate all woody plant trials and evaluations for the Arboretum including our evaluations of boxwood taxa.

My interests involve the propagation of rare and unusual species, numerous travels to remote areas for purposes of seed-collecting and acquisition of native germplasm. I enjoy reading professionally-related material, literature and philosophy.

My name might imply a lucrative status in its literal sense, but I assure you my wealth is merely metaphorical.

MARYLAND COOPERATIVE EXTENSION
UNIVERSITY OF MARYLAND
COLLEGE PARK • EASTERN SHORE

HOME & GARDEN

HOME AND GARDEN INFORMATION CENTER • 12005 HOMEWOOD ROAD • ELLICOTT CITY, MD 21042 • 1-800-342-2507

HG 52

Fact sheet on Integrated Pest Management

IPM Series: Boxwood

Symptoms:	Possible Causes:	Notes:
Leaf Yellowing	*Macrophoma* Leaf Spot	Tiny black spots on leaves
	Volutella (Canker)	Pink spores on leaves during moist conditions in spring
	Root Rot	Eventual dieback from the top of the plant
	Winter Damage	Leaves eventually turn brown;
	Meadow Vole	Larger branches die back; bark stripped from base of the plant
	Nematodes	Reduced root system
Leaf Stippling	Boxwood Mite	Fine stippling of leaves early in season, followed by general grayish, dingy, unhealthy appearance
Cupped leaves	Boxwood Psyllid	Damage appears on new terminal leaves in spring
Blistering of young leaves	Boxwood leafminer	Blotch mines, underside of leaves appear blistered from late summer through following spring
Branch Dieback	Oystershell Scale	Oystershell-shaped scale covers found on bark of affected branches
	Volutella Canker	Pink spores on leaves during moist conditions in spring
	Root Rot	Eventual dieback from the top of the plant
	Meadow Vole	Larger branches die back; bark stripped from base of the plant
	Nematodes	Reduced root system

Care of Boxwood

Boxwood grow well in full sun to partial shade. Sites exposed to full winter sun can cause foliage to "burn" and turn orange. Boxwood planted with a south or southwest exposure suffer winter burn more than plants with an east or north exposure due to increased sun exposure.

As with all evergreens normal leaf drop does occur, but leaves normally remain functional for three years. Boxwood are broad-leafed evergreen shrubs that are typically used as foundation plantings and backdrops for planting beds, topiaries, and formal gardens. There are many cultivars and species available, but the two most common are American boxwood (*Buxus sempervirens* 'Arborescens') and English boxwood (*B. sempervirens*. 'Suffruticosa').

Boxwood require adequate drainage, ample amounts of organic matter and grow best within a soil pH range of 6.5 to 7.2. Yellowing of older inner foliage or premature leaf drop may indicate a lack of nitrogen. Granular fertilizer with a 10-6-4 analysis applied at the rate of 1 lb. per 100 sq. feet, is sufficient in most situations. Broadcast the fertilizer around the base of the plant just beyond the drip line. The best time to apply fertilizer is in October or November.

Boxwood have shallow root systems and over-application of fertilizer may kill the roots, causing yellowing and browning of the leaves. Apply fertilizers when there is adequate soil moisture or water fertilizer in after application. (Do not cultivate deeply near the boxwood or shallow roots will be damaged.)

Boxwood require only light applications of mulch. Do not apply more than one inch of mulch over the root zone and keep it clear of the main stem. Excessive mulch may encourage vole activity and production of adventitious roots in the mulch layer which are very prone to desiccation (drying) damage.

The most appropriate pruning method for English boxwood is thinning. Thinning allows the center of the plant to receive adequate sunlight and air circulation. Properly-pruned boxwood will have leaves along the entire branch length. Dense foliage encourages fungal diseases such as *Macrophoma* leaf spot and *Volutella* canker. Shearing stresses plants and should only be used in boxwood topiaries. The best time to thin boxwood is from December through February.

Cultural Problems

Winter Injury

Winter injury may be confused with early stages of the fungal diseases *Phytophthora* root rot or *Volutella* blight. Leaves turn from bronze to reddish brown as a result of exposure to cold, dry winter winds. Tissue death is caused by the removal of water in the leaves faster than the plant can replace it through root uptake from

HGIC MCE

Tan, orange, brown leaves show winter damage.

frozen water in the soil. Bark splitting can be caused by a rapid temperature drop caused by a mid-winter thaw. Dead twigs and branches in the spring may be the result of ice and snow damage from the winter.

Prevention: Winter damage can be reduced by locating plants in partially shaded areas protected from winter winds. Physical barriers, placed about 18 inches from the plants on the windward side, made from materials such as burlap or plastic, can also lessen winter wind damage by reducing wind

velocity. Maintain adequate soil moisture in the fall to prevent winter desiccation. To avoid damage from falling snow and ice do not plant boxwood under roof eaves. For established boxwood, tie a string or twine at the base of the plant and spiral the twine up and down the plant to hold it together and gently brush snow off plants as soon as possible. This will help prevent damage from falling ice and snow. Inspect plants for winter damage in the spring and prune out affected areas.

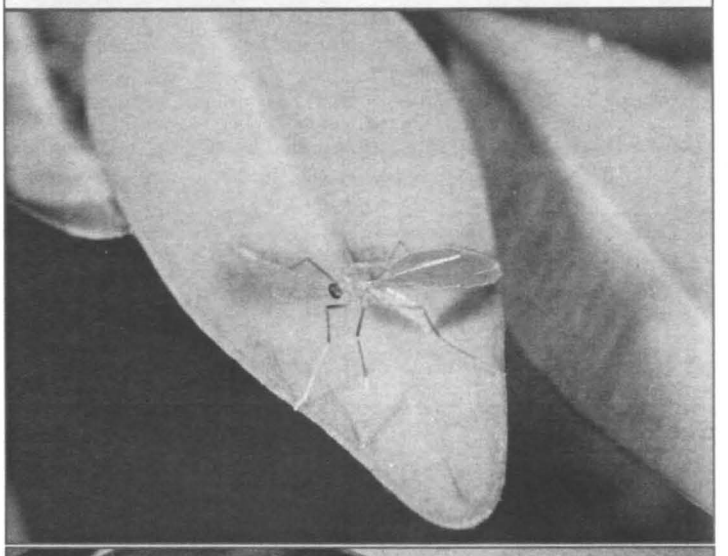
Animals

USDA

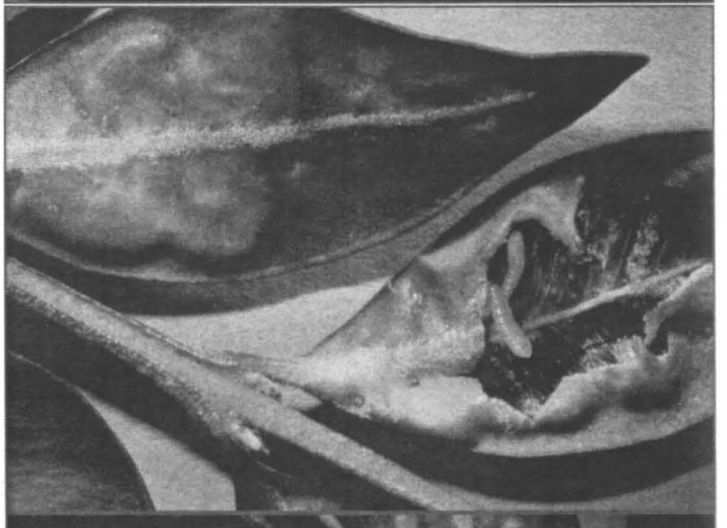
Meadow Vole (*Microtus pennsylvanicus*)
Older boxwood plantings that are neglected and overgrown with weeds are prime candidates for vole damage. Voles damage boxwood by girdling the base of the plant, feeding on roots, and tunneling through the root system. They cause plant damage primarily in fall and winter. Voles or meadow mice are found throughout Maryland. A vole is the same size as a house mouse, with small eyes and ears and a short tail. The color may vary between gray and brown. Voles are often confused with moles, but they are very different in their feeding habits and are not related to them. Moles live underground and feed on soil insects and earthworms. Voles are plant feeders and usually live on the surface but may travel in mole tunnels.

Control: Voles can be controlled by habitat modification and trapping. Use no more than one inch of mulch as deep mulch provides habitat for voles. Keep boxwood plantings free of weeds which provide protection for the voles. To reduce vole populations, mouse traps baited with apple slices or a peanut butter-oatmeal mixture should be placed across surface runways. Many predators prey on voles, including black rat snakes, owls, cats, etc.

Pests



J.A. Davidson



J.A. Davidson

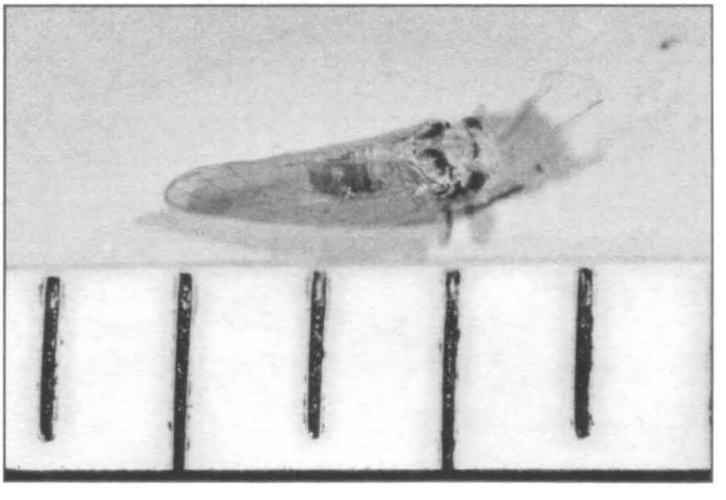
J.A. Davidson

Boxwood Leafminer (*Monarthropalpus buxi*)
The most destructive insect pest of boxwood is the boxwood leafminer, *Monarthropalpus buxi*. The larvae of this fly feed on the tissue between the outer

surfaces of the leaves. This feeding results in blotch-shaped mines in the boxwood leaves. The infested leaves appear blistered from late summer through the following spring. New leaves do not show signs of mining until late summer when the larvae are larger. By fall, or in early spring, premature leaf-drop may result from heavy infestation.

Adult leafminers emerge in late April or early May, depending on the weather. The adults are small (3mm), orange, mosquito-like flies. The adult flies emerge over a period of 10-14 days but each fly only lives about 24 hours. After mating each female inserts about 30 eggs in the surface of new boxwood leaves. The larvae hatch in about three weeks, and feed within the leaves from June through early fall. They spend the winter in the leaves, and pupate the following April. There is one generation each year. Many cultivars of *Buxus sempervirens* and *Buxus microphylla* var. *japonica*, are relatively resistant to this pest.

Control: If a large number of adults noticed in late April, spray a contact insecticide. If numerous mines are found in the summer, fall or March, use a foliar-absorbed pesticide or soil drench. Replace susceptible cultivars with resistant ones.

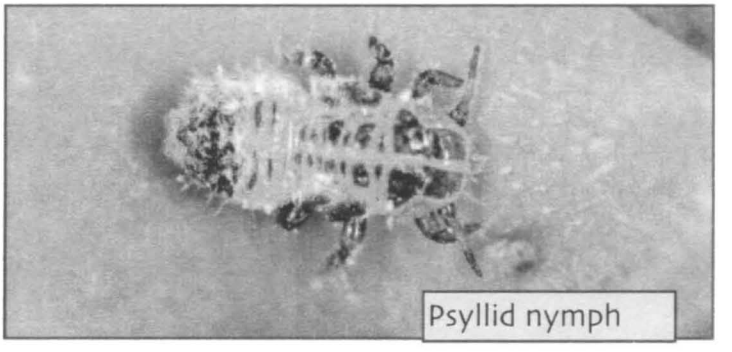


HGIC

Boxwood Psyllid (*Psylla buxi*)
The boxwood psyllid, *Psylla buxi*, causes a characteristic cupping of the leaves on the terminal and lateral buds of boxwood. This insect can overwinter as an egg, or as a first instar nymph under the bud scales. As the buds develop in the spring, the eggs hatch and nymphs emerge to infest the leaves. The feeding causes the leaves to curl and form a cup which encloses the greenish-colored nymphs. The nymphs produce a white, waxy secretion which may cover part of the body or small waxy pellets beside the nymphs. The greenish adults emerge late May into June, mate and lay eggs under the bud scales. Only one generation occurs each year. This pest causes aesthetic damage to American boxwood and English boxwood.

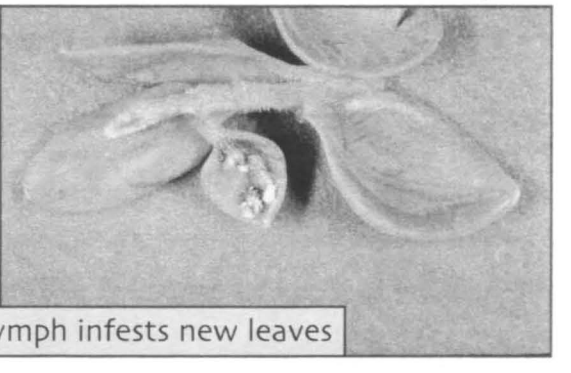
HGIC

Leaf cupping



J.A. Davidson

Psyllid nymph



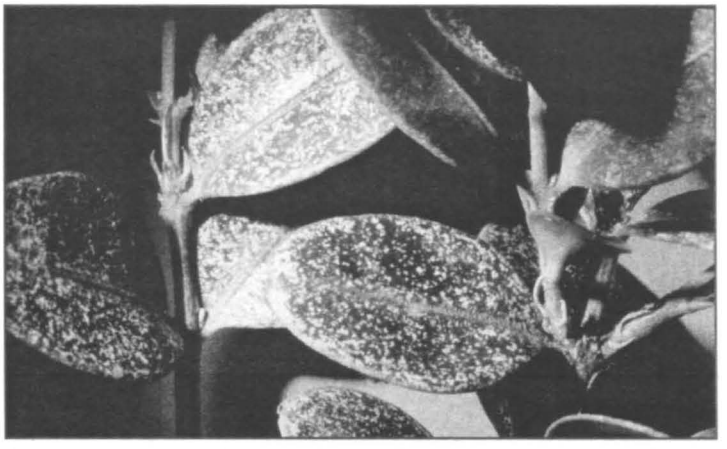
J.A. Davidson

Psyllid nymph infests new leaves

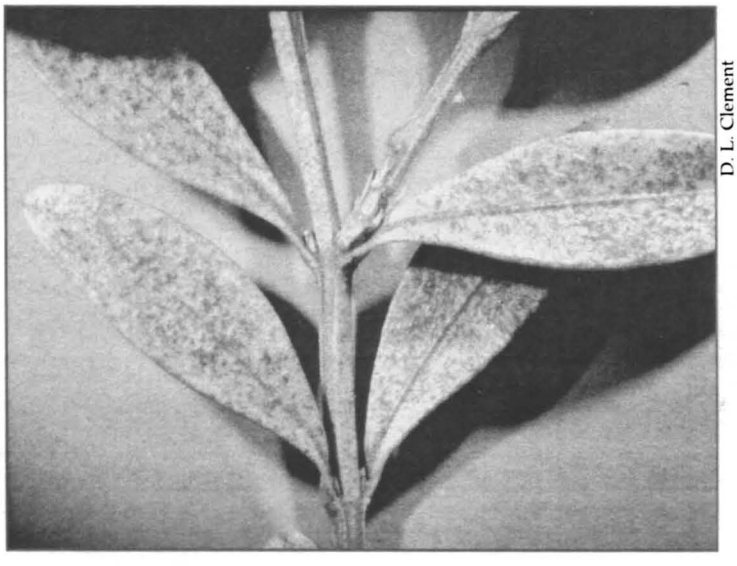
Control: Boxwood psyllid nymphs may be controlled with horticultural oil, or insecticidal soap sprays in April and May. Adults may be controlled by a registered residual insecticide in late May into June. Sprays are only necessary if infestations are heavy.

HGIC is the House and Garden Information Center of the University of Maryland. HG #52 is reprinted with their permission. Many thanks!

Boxwood Mite (*Eurytetranychus buxi*)
The boxwood mite, *Eurytetranychus buxi*, is most commonly found on *Buxus sempervirens* cultivars. The mites are yellowish-green or reddish, and are 0.5mm long. The yellow eggs overwinter on the


D. L. Clement

leaves and hatch in April. These spider mites breed rapidly and have five or six generations a summer. Injury shows as a fine stippling of the leaves early in the season, followed by a general grayish, dingy, unhealthy appearance. Japanese boxwood is less susceptible to the mites, but its cultivars are very susceptible.


D. L. Clement

Control: To control boxwood mite, apply a dormant rate of horticultural oil to the undersides of the leaves before new plant growth begins in the spring. Light, summer populations of mites may be controlled with a summer rate of horticultural oil or insecticidal soap sprays. Heavy infestations may require a residual miticide application. A biological control option for heavy mite infestations may be the release of *Phytoseiid* predatory mites that can be purchased from mail order sources.

Oystershell Scale (*Lepidosaphes ulmi*)
Heavy infestations of this armored scale will cause yellowing and wilting of leaves and eventual dieback of branches. Infested plants have an unthrifty appearance. To monitor for this pest look for tiny (3mm), oystershell-shaped, brown to gray, scale covers on the bark of wilting or dead branches. There may be one or two generations a year. Crawlers, newly hatched scale insects, are about the size of a pin head and light colored. Look for crawlers near the old scale covers in May.

Control: Prune out heavily-infested branches. A dormant oil (3-4%) spray may be applied in late winter. Be sure to thoroughly cover all of the branches. A summer spray (2%) of horticultural oil may be applied in late May.


D. L. Clement

Diseases

Root Rots (*Phytophthora* spp. and *Ganoderma lucidum*)
The fungi, *Phytophthora* spp. and *Ganoderma lucidum*, cause a root rot in both English boxwood, *Buxus sempervirens* 'Suffruticosa', and American boxwood, *B. sempervirens.* 'Arborescens'. Symptoms include poor growth, loss of healthy foliage color (leaves eventually turn light yellow), upward-turning and inward-rolling of leaf margins, dark brown discolored wood at the base of the stem for two or three inches above the soil line, and loosening and separation of the dead lower bark. As a result of the fungal infection, the root system is reduced and dark brown.

Control: Although there are no chemical cures for

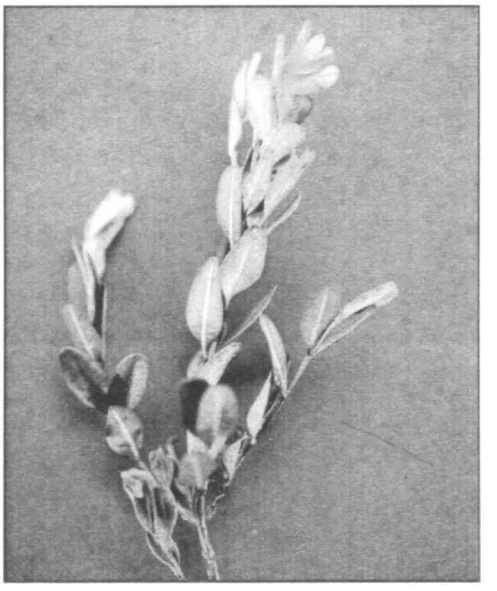
these diseases they can be prevented by proper planting. Avoid planting boxwood in poorly drained compacted soils or in low areas where water collects. Also avoid placing boxwood near downspouts. Construction of raised beds or grade changes may be needed to ensure proper drainage. Root diseases on older established plants can result from changes in water drainage patterns.

D. L. Clement

Volutella Stem Blight or Canker

(*Pseudonectria rouselliana*)

Both American and English boxwood are susceptible to this disease caused by the fungus, *Pseudonectria rouselliana*. The imperfect stage is *Volutella buxi*. Before new growth appears in the spring, leaves on the tips of infected branches turn red, then bronze and finally yellow. Infected branches die back. Examination of affected branches reveals loose bark and girdling at varying distances from the tips and discoloration of the wood. In moist weather the fungus produces salmon pink fruiting bodies on leaves and stems.

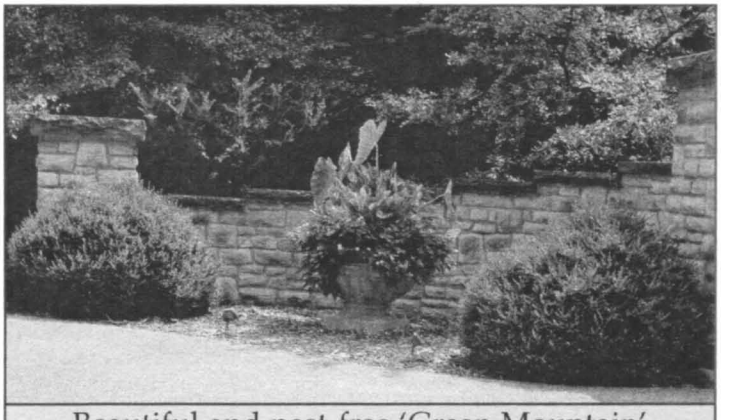


D. L. Clement

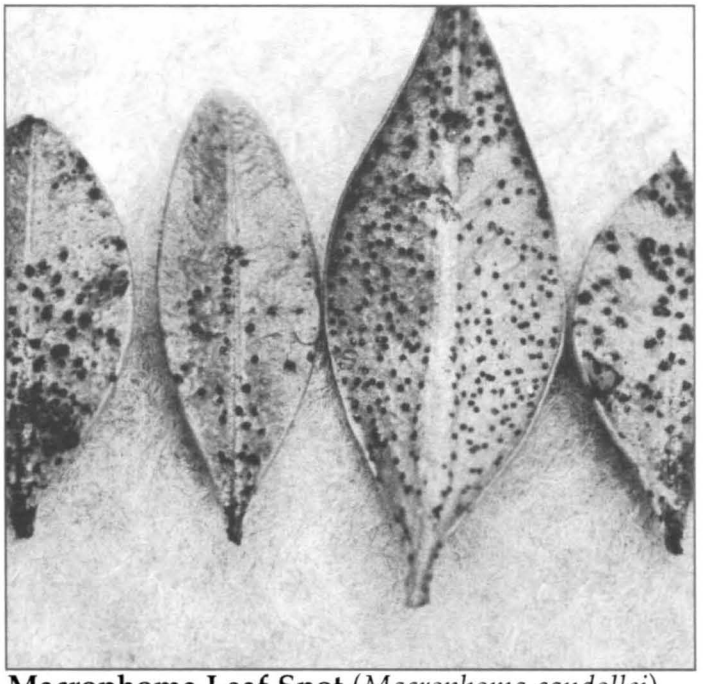
Control: Diseased branches should be pruned out and when the foliage is dry; plants should be thinned to improve air circulation and light penetration. Old fallen leaves and diseased leaves that have accumulated in the crotches of branches in the interior of the plant should be shaken out and removed. Properly timed applications of copper fungicides or lime sulfur applications can be used in severe infections. Sprays will not cure diseased branches. Spray applications should start just before new growth begins in the spring and continue until new growth is completed. Additional sprays may be needed in the fall to protect late summer growth during rainy seasons. Adequate spray coverage is essential for disease control and thick foliage will prevent spray penetration which will reduce the effectiveness of disease control.

Salmon pink fruiting bodies of *Volutella* on leaves.

D. LI Clement



Beautiful and pest-free 'Green Mountain' boxwood at Dawes Arboretum in Ohio.



D. L. Clement

Macrophoma Leaf Spot (*Macrophoma candollei*)
Both American and English boxwood are susceptible to infection by the weakly parasitic fungus, *Macrophoma candollei*. The most obvious symptoms are the many tiny black-raised fruiting bodies found on dying or dead straw-colored leaves.

Control: Generally no controls are needed for this disease.

Nematodes

Lesion Nematodes, *Pratylenchus* spp.
Spiral Nematodes, *Helicotylenchus* spp.
and *Rotylenchus* spp.
Several different nematodes can cause root damage on boxwood. Symptoms include stunted growth, leaf-yellowing and branch dieback and a reduced root system. Plants generally appear to be in decline and are smaller than normal. Infested roots are killed and continued invasion of new roots results in a dense proliferation of small undersized roots.

Control: There are no chemical pesticides available for nematode control. The only to way alleviate nematode damage symptoms is through proper cultural practices

Authors: Mary Kay Malinoski, David L. Clement, and Raymond V. Bosmans, Regional Specialists, Home & Garden Information Center, Ellicott City, MD. (Revised: 8/05)
Publication based in part on Malinoski, M.K. and J..A. Davidson. 1992. Pests of Boxwood. Home and Garden Mimeo #HG9.
The authors wish to acknowledge the following reviewers: Lynn Batdorf, Curator of the Boxwood Collection, National Arboretum, Washington D.C. and John A. Davidson, Professor Emeritus, Department of Entomology, University of Maryland, College Park, MD.

JOAN BUTLER

TIPS ON FALL AND WINTER CARE OF BOXWOOD

As the cooler weather arrives, gardeners feel renewed energy for fall's outdoor activities. Boxwood plants can be given some help to promote healthier, more vigorous growth next spring.

Drought: After an extremely dry summer in the eastern states, boxwood will need extra water to meet their weekly requirement of at least an inch of moisture. This is particularly important in late fall so that plants will go into winter with ample moisture to help them withstand frozen ground and drying winds. Boxwood that were planted or moved last spring will benefit from extra attention to help them flourish through the winter.

Mulching to conserve moisture: In addition to furnishing adequate moisture, mulching to a depth of one inch will conserve it and will keep the soil at a more constant temperature. Do not allow mulch to touch the central trunk or low branches. If possible, some shade will promote better color and protect foliage from bronzing, as will some protection from strong winds. Evergreen boughs around plants or straw scattered sparsely on the foliage can be useful. Mulching materials include wood chips, pine bark, pine needles, straw, leaves and compost. Two other materials have serious disadvantages: peat moss can dry and cake into a hard crust that will prevent any moisture from reaching the root area; and sawdust, if not very old and partially decomposed, may draw nitrogen away from the soil and starve the plants.

Fall Planting: In areas where some mild periods are normal during winter, fall planting gives boxwood a head start. Roots will continue to grow and will be better established when new spring growth begins. However, copious watering is necessary at planting time and during the following weeks and may also be needed during any winter warm spells. When the ground is frozen, roots cannot replenish moisture to supply the foliage; during thaws this lack must be made up. If plants are located on a site exposed to wind and sun, this replenishment of moisture is critical to prevent winter damage. Newly set out plants will benefit from some thinning (plucking) in the upper portion, so that the reduced root network has less foliage to support and nourish.

Preparing for winter: If large established boxwood have weak stems that could be damaged by snow and ice storms, wrapping the whole plant loosely with strong nylon cord, from bottom to top in a spiral may provide support. Tie cord securely to a bottom branch, pressing the boughs upward and inward as you wrap the cord in an upward spiral around the bush at intervals of eight to 10 inches. Have the cord tight enough to prevent breakage but not so tight as to exclude air circulation through the plant. If there are many large plants which need thinning and shaping, it is possible to find commercial firms which will do this work in fall to furnish clippings for florists' holiday decorations. Such thinning and pruning encourages much stronger and more vigorous plants. (**The Boxwood Bulletin** -1989)

Donna Williamson

STANTON GILL

BOXWOOD—BULLETPROOF DEER-RESISTANT PLANTS

If you hang around in the landscape and nursery industry long enough you see plants come into favor and go out of popularity. Years ago boxwood was pushed aside by Japanese and Chinese holly. Now boxwood is back in demand and in a big way. Why the renewed interest? What other plant species do browsing deer shun as if it was an electrified plant? The odoriferous foliage of common European boxwood just isn't pleasant to the average deer. This deer damage resistance combined with some excellent new varieties has resulted in a resurgence in the use of boxwood in landscapes.

The new popularity of boxwood allows designers to play with a variety of forms: prostrate, globe, half-erect, weeping, columnar, and pyramidal. Boxwood has a wide range of potential sizes and rates of growth. Low and tall forms and fast- and slow-growing boxwood are available. There are also some interesting variations in size of foliage and leaf texture.

Where did they come from?

Boxwood is native to Europe and Asia. Yes, you find boxwood in Williamsburg but, no, colonial villages did not usually have boxwood plantings. There are 30 species of boxwood found throughout the world. Two species, *Buxus sempervirens* and *Buxus microphylla*, and selections or cultivars of these two species are the most commonly-grown boxwood.

It used to be that just a few boxwood cultivars were available in the market and now there are so many cultivars of outstanding boxwood available to choose for use in the landscape it is hard to pick the best. The common boxwood, *Buxus sempervirens*, also called "common boxwood" and "American boxwood", has been the standard that most people know. I tried to find out why it is called American boxwood when it is not native to North America. My search has gone unrewarded. *Buxus sempervirens* has a reputation as a relatively fast-growing boxwood. It also tends to be more prone to boxwood leafminer problems.

The slower-growing boxwood called "English" boxwood is *Buxus sempervirens* 'Suffruticosa'. This is the one that left unpruned will assume a billowy growth habit that is elegant and graceful. This is the one that most people associate with a colonial-style landscape.

Suzanne Klick

Buxus sempervirens 'Elegantissima'

Some of the outstanding *Buxus sempervirens* cultivars include the variegated boxwood such as *Buxus sempervirens* 'Elegantissima' with cream-margined leaves. There is a tall, narrow, upright boxwood called *Buxus sempervirens* 'Dee Runk'. It looks very formal, sentinel-like, in the landscape. *Buxus sempervirens* 'Vardar Valley' is a low-growing, flat-topped, mound-forming boxwood. There is even a weeping, pendulous-branched boxwood that is grown as a small tree, *Buxus sempervirens* 'Pendula'.

These cultivars with their various forms, foliage size, textures and plant shapes give landscape designers several options to use boxwood in many landscape sites with great visual impact.

The Japanese boxwood or littleleaf boxwood, *Buxus microphylla* var. *japonica*, are especially tough plants that tolerate a wider range of planting situations. The foliage is bright green, elliptical to rounded. They are usually used as edging or low hedge. They also work well in rock gardens. There is a miniature boxwood called *Buxus microphylla* var. *japonica* 'Morris Midget' that is low-mounded, slow-growing and with yellow-green notched leaves.

Any problems?

Landscape designers and landscape installers sometimes mistakenly place boxwood into difficult growing sites where problems are bound to appear. If boxwood is placed into a location where it receives reflected sunlight and the area is hot and dry, you can expect to experience damage from the boxwood mite (*Eurytetranychus buxi*). Interestingly, if many of the boxwood species are grown in filtered light you rarely see damage from boxwood mite. Boxwood mites thrive on plants placed into hot sunny locations while their naturally occurring predators do not do as well.

How do mites inflict injury?

The mite causes injury by piercing the foliage with needle-like mouthparts and causes a silvery-stippled damage to the upper surface of the foliage. Boxwood mite disfigures the foliage of boxwood and in severe outbreaks can stunt or kill a plant. The susceptibility of boxwood to this pest varies with the different boxwood species. This pest rarely damages Japanese boxwood. We have seen that the cultivar 'Dee Runk' is highly susceptible to boxwood mite even in best landscape settings.

Stanton Gill

Mite damage you will see showing up from late May into June.

Description and life cycle

The mite overwinters on the undersides of boxwood foliage as yellow-green-colored eggs that are oval in shape. These can be seen using a 10-–16X magnifier. This mite is considered a cool-weather mite and hatch occurs in spring when temperatures go above 50–55°F during the day. In Maryland, actively-feeding nymphs can be found in April through May and adults are present from May through June. Generation times are relatively short and multiple generations occur in spring. In cool, wet summer the boxwood mite can continue activity into the summer months. When warm weather arrives in mid to late-June, the mite lays eggs which will remain on the foliage until the next spring when they hatch and start the lifecycle over.

Monitoring

Examine the undersides of foliage in winter and early spring for presence of yellow-green-colored eggs. Look for nymph and adult spider mites, which are present mainly on the undersides of foliage in April through June.

Biological Control and Non-Chemcial Control

Several predators and parasites attack boxwood mites and in many cases they can keep a boxwood mite population from causing major injury. Predacious mites in the family *Phytoseiidae* have been observed feeding on boxwood mites. Other predators such as the big-eyed bug, minute pirate bug, lacewing, lady beetle, and rove beetle all feed on boxwood mites. The best thing you can do is avoid planting boxwood in exposed areas with a lot of direct or reflected sunlight. The naturally-occurring predators and parasites are able to keep boxwood mites below damaging levels.

Chemical control

Horticultural oils can be applied at the dormant rate of 2% during late-fall or late-winter when temperatures are above 50°F for four to five days.

The warmer temperatures increase the respiration of the mite and the oil is more likely to cause suffocation of the the pest. In May, you could use a 1% horticultural oil but make sure you hit the undersides of the foliage where the mites are located.

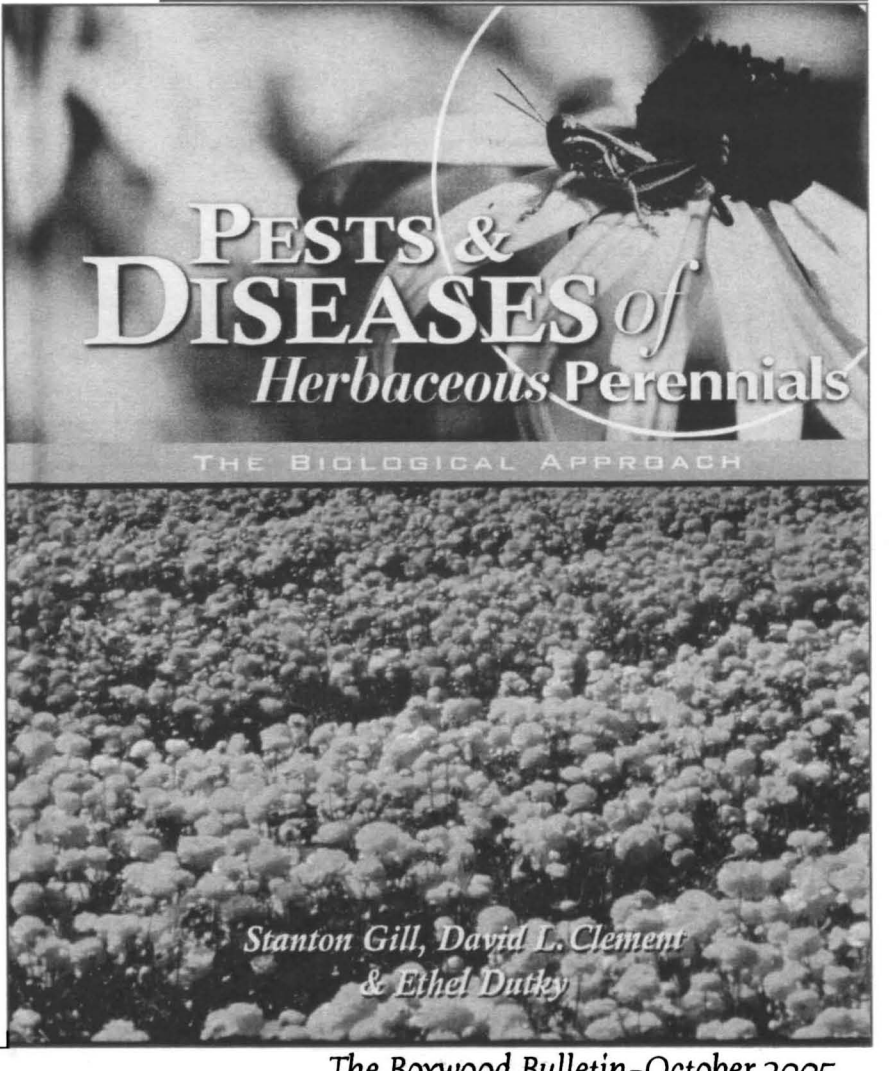
Mite growth regulators such as Hexagon or TetraSan can be applied to control immature mites. These mite growth regulators usually last at least 25–30 days. Often they are mixed with a 1% horticutural oil to improve efficacy. The great thing about mite growth regulators is that they control the immature stages of the mite without causing major negative impacts on beneficial organisms.

Newer materials such as Floramite or Akari, which give 20–25 days of control, have minimal impact on most beneficial organisms. Older materials such as Kelthane (dicofol) will also control boxwood mite, but will have a negative impact on beneficial organisms.

Stanton Gill is a principal extension regional specialist with the University of Maryland Cooperative Extension Service, where he leads the Integrated Pest Management team working with the herbaceous perennial greenhouse industry in Maryland. Gill is also a professor with the Montgomery College Landscape Technology Program.

With Ethel Dutky and David Clement, he has written an excellent book, *Pests and Diseases of Herbaceous Perennials, The Biological Approach.* While it includes vivid pictures of all types of insects, there are also great photos of the types of foliar damage typically caused by these critters and diseases. A great reference and while not for the casual or armchair gardener, this book is a must for the serious perennial gardener.

ISBN 1-883052-20-3 Available from: Ball Publishing, 335 North River St., Batavia, IL 60510, USA. Contact person is Rick Blanchette at 1-888-888-0013 and their website is www.growertalks.com.



Boxwood–a little care goes a long way

Boxwood are great plants but keep in mind that they should be planted in well-drained soil and maintain a pH of 7.0. I can tell you from expereince that boxwood respond to having organic material worked in around the root system. Older plantings of boxwood can be revived with a good renewal pruning and excavating at the dripline of the plant and working in soil compost with a pH around 6.5–7.2.

Avoid poorly drained soil. Boxwood are very susceptible to *Phytophthora* root rot. Most species will perform optimally if they are planted in locations where they receive about half-day shade or filtered light. Boxwood will also benefit from periodic renewal pruning to keep plants full and healthy. Finally, monitor the plant in spring for presence of boxwood mites and if the population starts to reach damaging levels, apply a miticide to bring the mites under control.

Understanding IPM and GDD

Dan Gilrein, Extension Entomologist
Long Island Horticultural Research & Extension Center
Cornell Cooperative Extension of Suffolk County

Implementing a successful integrated pest management (IPM) program can be challenging due to many factors such as variations in weather from year-to-year. Timing pest and disease controls according to the calendar is frequently ineffective, since treatments are best applied during the most susceptible stage(s) of the pest or when protection is most needed. This is especially true for environmentally friendly but short-residual pesticides such as horticultural oils and soaps, and for insects such as scales and borers that are susceptible only during specific stages.

One way to more accurately time needed controls is through use of plant phenology and growing degree-days. Phenology is the study of recurring biological phenomena and their relationship to weather. Bird migration, blooming of flowers, budbreak of trees, and the seasonal appearance of insects are examples of phenological events. Sometimes these events correspond closely with activity of certain insects or mites, or they may indicate a particular plant stage that is most susceptible to infection by pathogens.

Environmental conditions, especially temperature, also correlate well with insect and mite activity in many cases. Insects, which are highly dependent on temperature, emerge earlier in warm years and later in cool ones irrespective of the calendar. The degree of warmth in any season can be estimated using a simple measure of heat units called growing degree-days (GDD, sometimes written DD50). These heat units can then be used to predict insect or mite activities such as spring egg hatch or first emergence of the adult stage, which is a basis for accurately timing control actions.

There are various methods for estimating GDD, but the simplest uses average daily temperatures. 50°F is used as a baseline, since most plants grow very little when termperatures fall below 50°F. Subtracting 50 from the daily average temperature leaves the number of GDD or heat units for that particular day. For example:

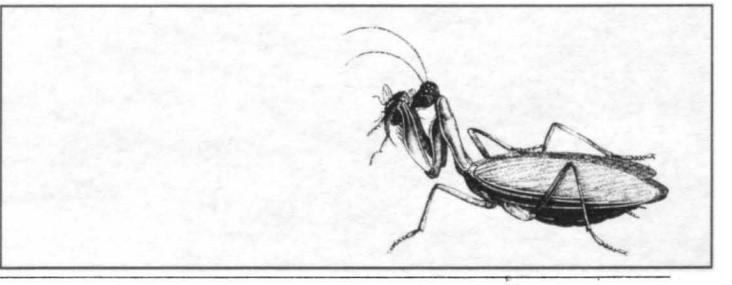
On June 10 the maximum temperature is 75°F and the minimum is 55°F, the average is 65°F (75+55=130, 130÷2=65). Subtract the base temperature (50F)=15 GDD (65–50=15). So, on June 10, 15 GDD were measured. The GDD for each day is calculated and added to the total already accumulated. For example:

Date	Maximum	Minimum	Average	GDD
June 10	75	55	65	15
June 11	70	50	60	10
June 12	80	60	70	20
Total GDD	June 10 – 12			45

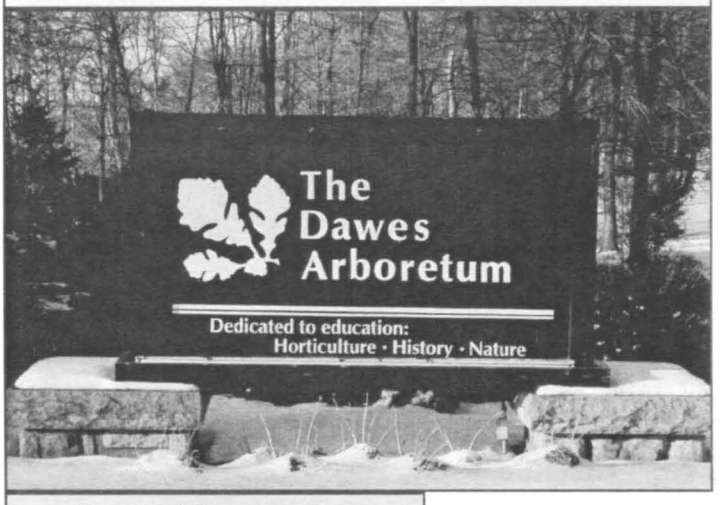
Usually GDD are measured starting around March 1, although earlier starting dates are sometimes used especially in warmer temperate zones.

Since calculating GDD is somewhat time-consuming, scientists have shown that phenological events such as plant flowering time or budbreak (plant phenology indicators, or PPI) can sometimes be used instead of or along with GDD to predict activities of some insects and mites, since plants are responding to the same temperatures as many insects. Dr. Dan Herms at Ohio State University has studied the phenologies of insects and plants for years. He has learned, for example, that eastern tent caterpillar eggs hatch as forsythia is blooming, which occurs about 97 GDD. Gypsy moth caterpillars hatch with peak bloom of redbud, at around 200 GDD, boxwood psyllids emerge at around 191 GDD.

Many Extension offices or public gardens now collect GDD and PPI data and they are also included in some pest management guides. For example, in Virginia current growing degree information by county is available at http://www.ext.vt.edu/cgi-bin/WebObjects/ClimateAnalysis/. Contact the local Extension office for information pertinent to your area.



More reasons to visit the Dawes Arboretum



Beautiful Cypress grove

Japanese Garden

R Childs–UMASS at Amherst

THE DREADED BOXWOOD PSYLLID

Landscape Nursery and Urban Forestry - UMass Amherst Extension Service

Boxwood foliage displaying the characteristic cupped foliage from the feeding activity of the boxwood psyllid.

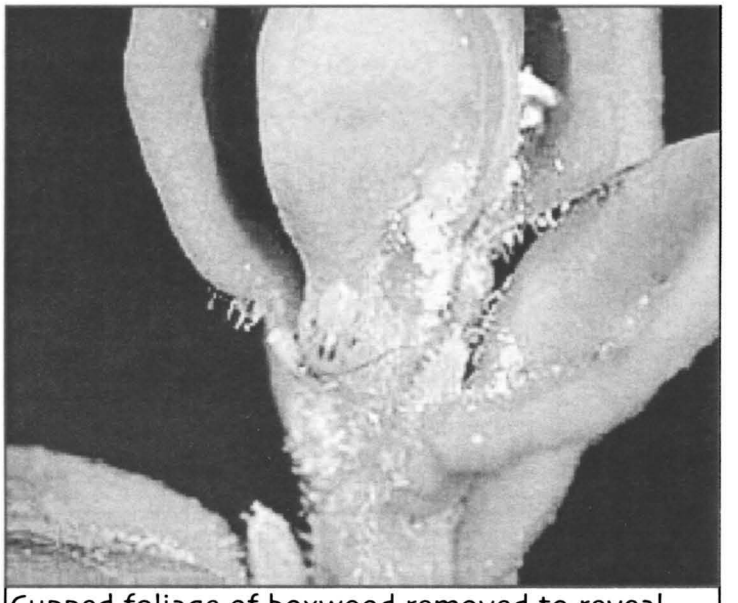
Name of Pest: Boxwood Psyllid (*Cacopsylla (=Psylla) buxi* Linnaeus)
Order: Homoptera
Family: Psyllidae
Host Plants: Boxwood (*Buxus*)

Description: Immature nymphs can be seen protruding from the cupped foliage in the early spring. Some wax ribbons are also produced by these feeding immatures. Yellow stippling of the foliage does not appear as with other piercing sucking insects. Host plants are never injured beyond the aesthetics of leaf-cupping.

Life Cycle: By early summer the winged adults appear, mate and the female lays eggs in the bud scales of the host plant. These adults have jumping legs and are sometimes referred to as "jumping plant lice". The eggs will remain buried in the bud scales until the following spring when they hatch around the time of bud-break on the host. Young yellowish nymphs then feed on the newly-expanding leaves causing enough injury for them to cup. These psyllids then utilize the protection of the cupped foliage to continue feeding while being mostly concealed, until late May into early June. There is one generation per year.

Management Strategies: Eggs hatch around 200 growing degree days. The adults will begin to appear around 300-440 growing degree days. Given that the eggs are well protected within the bud scales, horticultural oils are usually not effective in managing this life stage. Once leaf cupping occurs, the nymphs are also somewhat protected from oil sprays and insecticidal soaps. Several chemical pesticides are labeled for this pest. Injury is primarily aesthetic and, given the setting, no management intervention may be necessary.

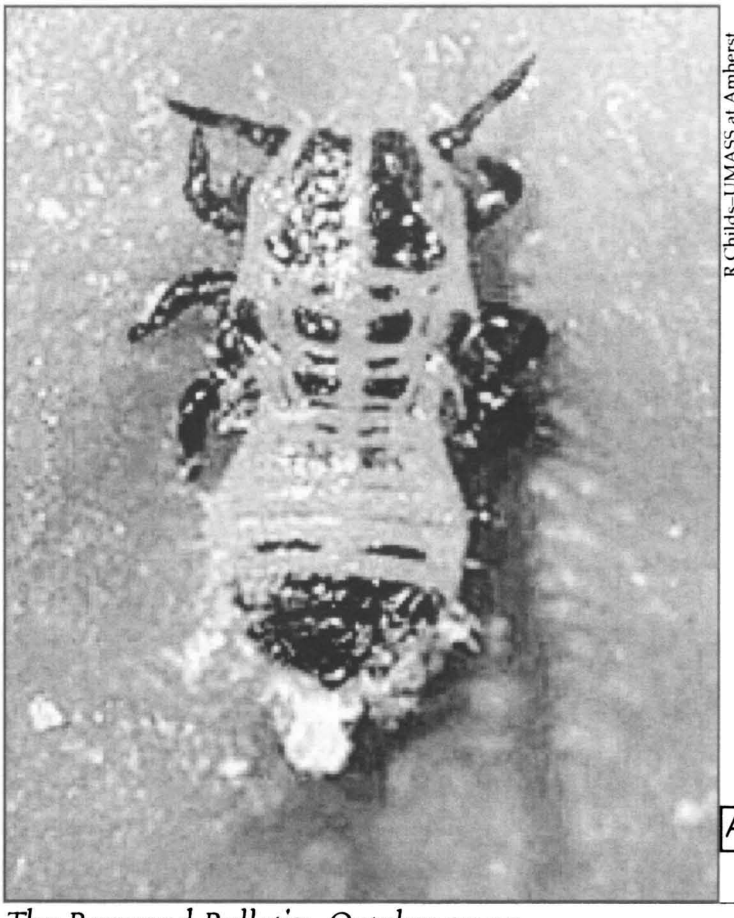
http://www.umassgreeninfo.org/fact_sheets/piercing_sucking/boxwood_psyllid.html
Reprinted with permission



R.Childs–UMASS at Amherst

Cupped foliage of boxwood removed to reveal the immatures of the boxwood psyllid feeding within.

I am grateful to Dr. Robert Childs for his cogent explanation of regional differences in growing degree day (GDD) information.
Dan Gilrein of Cornell University Extension was essential is helping to explain GDD and phenology is a straight-forward way. Thanks to you both!

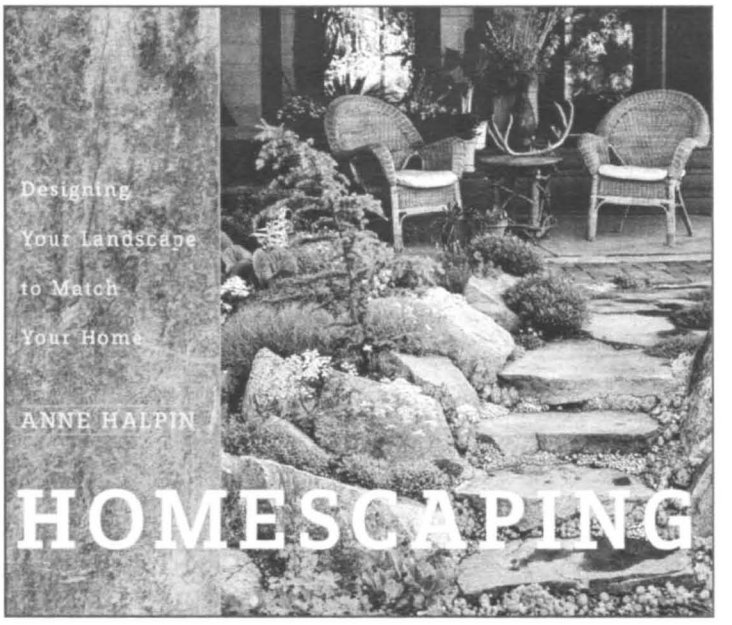


R.Childs–UMASS at Amherst

A boxwood psyllid immature or nymph.

Books of Interest

HOMESCAPING
Designing Your Landscape to Match Your Home
by Anne Halpin
ISBN 1-57954-903-9



As a garden designer and teacher, I am always on the lookout for books that provide the non-professional gardener with clear, useful concepts and practical ideas for applying design principles in home landscapes. While many authors describe concepts of mass and balance and congruity with elaborate language, Halpin makes it simple, accessible and straightforward. And the highest compliment to her, when you read the text you think, well, of course, I know that! A great example is included in her discussion of water gardens.

> If you want to have a reflecting pool, be sure to locate it where it will have something to reflect. Stillwater reflects the clouds above and nearby plants, too. The glistening surface draws and holds your attention.

Now you may think this is unreasonably simple, but I can tell you from experience that folks often think of five other things when placing a pot of still water, including whether the hose will reach, and forget about the reflection.

Halpin includes an interesting variety of lists throughout the book where she encourages the use of appropriate plants, paving materials, or other materials depending on the style of your home. In the section on garden structures, she recommends materials for several styles, including:

> Bungalow, Cottage or Saltbox
> Garden: Informal
> Fences: picket (painted to match door, shutters or trim) or post-and-rail
> Paths: flagstone, fieldstone or dry-laid brick
> Patio: irregular flagstone, fieldstone or informal pavers
> Deck: natural wood; if house is painted, pick up trim color for railing posts

Conceptual information on structures is handled easily. I enjoyed the section on arches, arbors and pergolas where Halpin encouraged the use of arches, etc., for framing views, privacy, and as 'through' spaces rather than destinations in themselves. She goes further in discussing the utility of these structures:

> There are lots of ways to use arches, arbors, and pergolas to create special effects in the landscape. Their vertical lines contrast with the horizontal lines of lawns, paths, and garden beds, and they can make interesting accents. Training vines on them enhances their vertical effect; the vines draw the eye upward and can help a small garden feel bigger.

Along with a very useful discussion of color in the garden, there is an interesting section on the often-forgotten color of your home. Halpin provides arrays of colors that look best with the major background tones that include wood, stone, paint, brick, etc. Enhancing your home is crucial to successful landscape design.

> Red Houses
> A garden for a red house, whether of brick, red wood, or red siding, bears some careful consideration. For a harmonious scheme, yellows, oranges, and golds can work quite well. For a pleasing con trast, consider blue and yellow, or blue and peach. Deep red flowers can work, too, such as chocolate cosmos or *Knautia macedonica*. But you will probably want to avoid using magenta, cool pinks, bright reds, and strong purples next to a red house, unless you have an adventurous spirit.

Most useful for the home gardener is the premier chapter on melding home architecture with garden styles. Halpin outlines three broad approaches:

> ...formal, informal and naturalistic. And there are particular plants to suit each kind of garden. Many variations exist within the three categories, but the basic design concepts apply to all gardens in each of the three. Formal gardens represent an idealization of nature, and they clearly show the hand of the gardener. In a formal garden, beds and borders are precisely shaped, plants are clipped into perfect forms, and maintenance is meticulous. Like classical paintings, formal gardens convey a feeling of serenity and repose. The landscape is well ordered and controlled. The very discipline of a formal garden can be reassuring. The stability of the design can give you a sense of calm and balance.

Anne Halpin goes a long way to make garden design easier for the folks who want to understand and do it themselves. And it's a great book for those of us who are fascinated by design, even when someone else does it. A wonderful gift for the new homeowner and the winter armchair gardener.–*Donna Williamson*

Anne Halpin

The best plants for formal gardens are naturally neat of habit or amenable to pruning and shaping. Boxwood is a classic example: It grows slowly and stays compact, and it also takes shearing beautifully. You can use individual boxwood as focal points or specimens, especially when you clip them into neat cones or ovals. Or you can plant a row of them and shear the group into a diminutive hedge. When left unpruned, boxwood eventually becomes rather billowy–a soft, appealing shape that's lovely in more informal gardens.

Anne Halpin

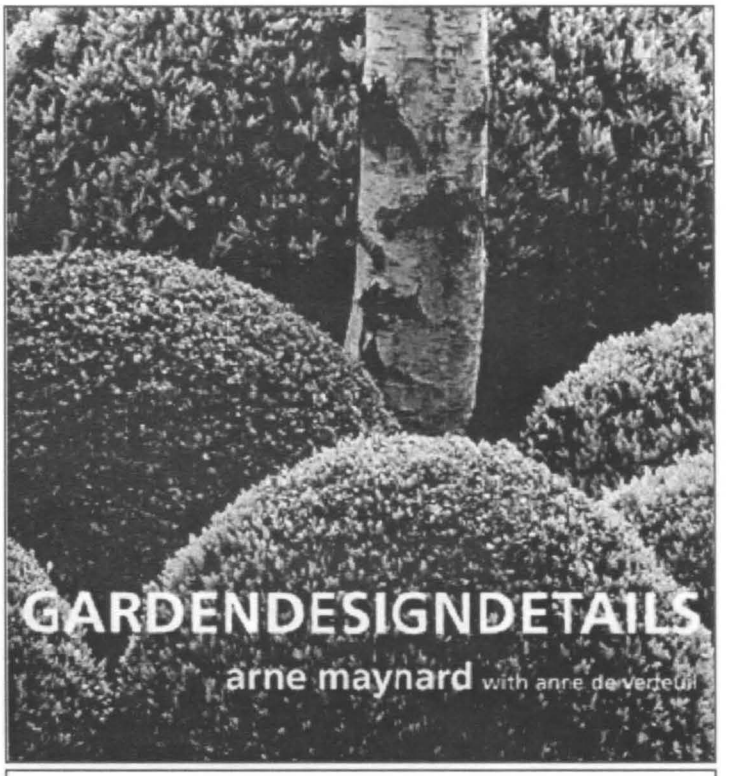
GARDEN DESIGN DETAILS

by Arne Maynard with Anne de Verteuil
ISBN 0-06-059631-7 .

A spring visit to Arne Maynard's own garden left me highly impressed. His home is in the North Cambridgeshire fenlands, surrounded by huge horizons. In a mere seven years he has created a wonderful garden of linked rooms. It is classic in conception, providing a series of well-proportioned intimate spaces of different moods within the seemingly limitless level green expanse beyond. Space is structured with walls, hedges and pleached trees and there is a pleasing sense of symmetry and balance. A fine old yew tree has been pruned and clipped into a cylinder, exposing a substantial 1.5m trunk, adding venerability to what is substantially a new garden. An area to the rear of the house has been kept wild and informal, linking into the field hedges of the countryside around. The design is first-class, well executed, well developed and maintained and a real pleasure to visit.

After this, I was keen to see his new book, *Garden Design Details*. At first glance it appeared to be yet another coffee table book with exquisite photographs elegantly arranged, but it is far more than that. The accompanying text is bursting with inspiration and ideas. I like his positive and adventurous approach. He is prepared to experiment and take the risk that some things will not work. He sees the garden as a process rather than it being fixed in three dimensions at any one time. The book is easy to dip into as the illustrations are clearly captioned and adjacent to the related text. After a quick thumb through, however, I found myself settling down to read the entire book.

This is certainly the best garden design book I have seen for a long time. It will be of great interest to many members with hedges and topiary; pleaching and other techniques are as well represented here as they are in his garden. It is a stimulating source of ideas and possibilities although it does not attempt to deal with the practical methods of achieving them. Perhaps those will be found in Arne's next volume. *Simon Rose*

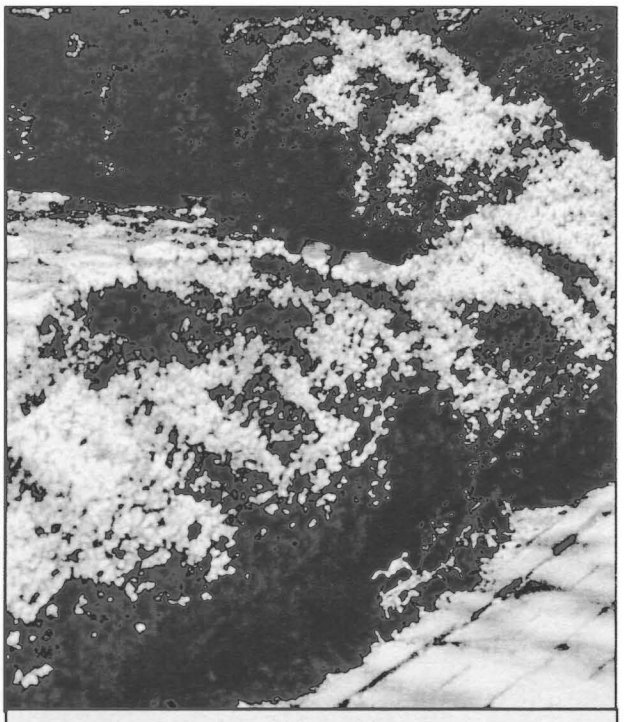


TOPIARIUS, Volume 8, Autumn 2004
Reprinted with permission

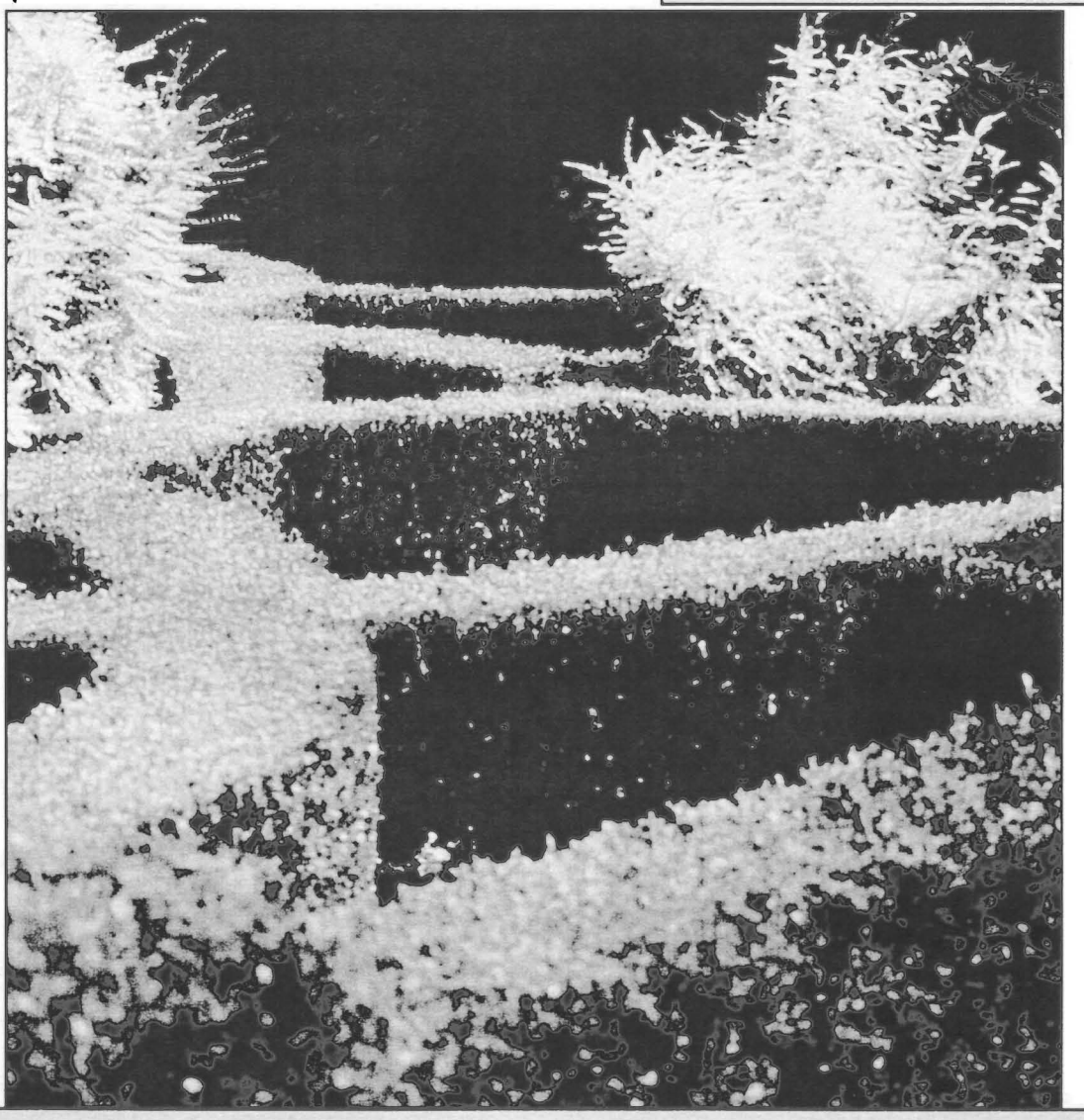
Simon Rose is a celebrated and talented topiarist in England specializing in hedges, knot gardens, parterres and old, specimen, massive buttressed yews. Whether developing a new garden or rescuing overgrown trees, Rose considers gardening a four-dimensional art symbolized by the perfectly-clipped evergreen. "Presently undergoing one of its perennial revivals, topiary continues to provide central or subtle structure in space, and can no more go out of fashion than clothes of a classic cut.".

He's converted an overgrown and somewhat collapsed 2-meter *Buxus sempervirens* spiral into a squatting monkey and shaped other old specimens into a pair of stone banquettes. We hope to learn more about his work in the future and perhaps, next time he visits the US, we can learn from him in person!

Look at the efficiency of the box edging - retaining the soil and mulch in the beds (even when years of cultivation have raised them high above the paths); they look beautiful throughout the year, and when clothed in their new spring leaf, exquisite. Yet they will tolerate most soils, sun, shade, tree drip, frost and drought allowing us to use them almost anywhere.-Simon Rose



Lovely box edge.



Box and lonicera parterre at former home of designer Phillip Watson. Designed by Watson and Rosemary Verey.

Photos this page by D. Williamson

MEMBERSHIP CONTEST

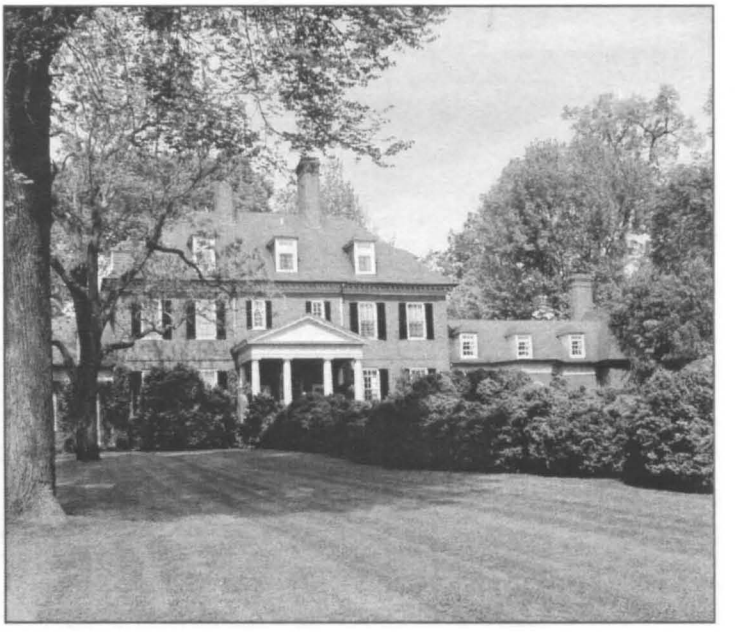
ROSS A. HOTCHKISS

YOU are eligible to win a copy of Lynn Batdorf's fabulous new book, **Encyclopedia of Boxwood**, with a retail value of $110. Interested? Lynn is donating a personalized, signed copy to be awarded to the person who secures the most new memberships to our America Boxwood Society (ABS) between now and **January 15, 2006**. In the event of a tie, we will have a drawing in May, 2006 at the Annual Meeting in Memphis. In addition to the **Encyclopedia**, more awards will be announced in the next issue of **The Boxwood Bulletin**!

Seriously, our membership has been stable for a number of years and we need new members in order to continue upgrading our quarterly publication, **The Boxwood Bulletin**, and to provide support for other projects. We are asking that each current member make a concerted effort to secure at least one new member and that is certainly not a difficult task.

Please let me offer some simple, but helpful hints. All of us know non-members who are either neighbors or close friends who have beautiful boxwood plantings around their home and in their garden. We all pass homes with beautiful boxwood plantings and we don't know who lives there. Take a recent copy of **The Boxwood Bulletin**, stop by the residence, ring the doorbell and introduce yourself. Then compliment their beautiful landscape and introduce them to yourself and the ABS. Ask them to consider joining. These folks and many others are prime candidates for membership in the American Boxwood Society.

Our quarterly publication will provide them with information about new cultivars that are being discovered around the world and invaluable information relative to the care of their boxwood plantings. Our web-site even offers an opportunity for members to send in questions they may have about care of plants, propagation, new and hardier varieties, and a plethora of other topics. Folks who attend the annual ABS meeting are treated to a great auction, fascinating speakers and tour the most beautiful private boxwood gardens and homes, often not open to the general public.



If you have identified a potential new member and would like for them to be contacted by a member of the Board, please send that information to me and I will send them a personal letter containing an invitation to join the ABS. If they join, **you** will be credited with this new membership. Your Board is available to assist you in our membership drive and we appreciate your support of this effort.

O.K., it's time to get started, the membership contest has begun and you may be the one to receive a personalized copy of the new **Encyclopedia of Boxwood**!

You can reach me:

Ross A. Hotchkiss
8916 Alendale Road
Richmond, VA 233229-7702

(804) 740-3408
Email: Hotchkss@aol.com

Green Beauty and Virginia Beauty

The misconception that all boxwood grow slowly has disconcerting consequences. The plants known as American box may increase in size as much as ten inches or more in one season; this may cause unexpected crowding in the garden and spoil what was originally a carefully-planned design. Box can overwhelm a small space, yet the dwarf boxwood, especially the Asiatic forms, make ideal choices for our modern homes with limited areas for gardens. Boxwood is an attractive addition to most landscapes...*Joan Butler*

Reprinted with permission from Westbury World

Joan Butler poses with 'Green Beauty' in September, 2000 in Winchester, Virginia.

This is the same Japanese boxwood, 'Green Beauty', in June, 2005, nearly five years later. Joan, at five feet tall, provides the measure of the plant's growth in that period.

Both photos by Les Shubert

Everything that slows us down and forces patience, everything that sets us back into the slow cycles of nature, is a help. Gardening is an instrument of grace.

-May Sarton

LYNN R. BATDORF

INTERNATIONAL CULTIVAR REGISTRATION AUTHORITY (ICRA) FOR *BUXUS L.*

Introduction:
The American Boxwood Society (ABS) serves as the International Cultivar Registration Authority (ICRA) for the genus *Buxus*. The purpose of the *Buxus* ICRA is to promote stability in *Buxus* nomenclature and to produce and promote authoritative checklists as well as register all names known to have been used in its taxa. The ABS is to designate an appropriately-qualified individual to serve and accept the responsibilities as the International Registrar.

History:
In 1968, the Secretary of the Commission for Horticultural Nomenclature and Registration of the International Society for Horticultural Science (ISHS) invited the American Boxwood Society to accept the responsibility as the International Cultivar Registration Authority (ICRA) for *Buxus*. The ABS accepted and Dr. Burdette Wagenknecht, taxonomist at the Arnold Arboretum in Boston, Massachusetts, served as the first registrar. In 1965 he wrote *Registration Lists of Cultivar Names in Buxus L.* documenting 179 cultivars. By 1978, he had registered a total of 194 cultivars. Dr. Bernice Speese, a Professor of Biology at the College of William and Mary in Williamsburg, Virginia, served from 1978 to 1985, registering six cultivars. Mr. Lynn Batdorf, Curator of the National Boxwood Collection at the US National Arboretum in Washington, DC, has served since 1985, registering 79 cultivars by 2004. Batdorf has published several checklists and books.

Authority:
The ICRA reports directly to the ISHS. The current (2005) Chairman of the ISHS Commission on Nomenclature and Cultivar Registration is Mr. Piers Trehane. The Vice-Chairman and Secretary to whom all correspondence should be addressed is

Dr. Alan C. Leslie
Royal Horticultural Society's Garden,Wisley
Woking, Surrey GU23 6QB United Kingdom.
Phone: 44.1483212327
E-Mail: alanl@rhs.org.uk

ICRA Website: www.ishs.org/icra/index.htm

International Code of Nomenclature for Cultivated Plants (Code)
The Code contains the international rules for naming plants in cultivation. It also contains much ancillary information such as lists of special denomination classes, ICRAs, statutory registration authorities, and herbaria maintaining specimens that act as nomenclature standards, together with a comprehensive glossary of terms used in nomenclature. The Code contains all the technical information necessary for the registrars to effectively accomplish their assigned duties. The current edition of the Code is *The International Code of Nomenclature for Cultivated Plants.* Seventh Edition.*Acta Horticulturae* #647. ISHS Leuven, Belgium. February 2004.
ISSN 0567-7572.
ISBN 90 6605 527 8.
Authored by: C.D. Brickell (Commission Chairman), B.R. Baum, W.L.A. Hetterscheid, A.C. Leslie, J. McNeill, P. Trehane, F. Vrugtman, and J.H. Wiersema editors.

Primary Functions of ICRA for *Buxus*:

1. To register cultivar and group names in *Buxus* for which they have accepted responsibility, and to ensure their publication and establishment.
2. To record, publish, and make otherwise available, full lists of all cultivar and group names in *Buxus* whether they are in current use or are part of the historical record so as to provide the world community with authoritative listings of names.
3. To maintain records, in as great a detail as is practical, of the origin, characteristics and history of each cultivar and group in *Buxus*.

Primary Duties of the ICRA for *Buxus*:

1. The *Buxus* ICRA should list any cultivar name that is technically unacceptable yet has been sanctioned for use and submit it to the International Union of Biological Sciences (IUBS) Commission on Nomenclature and Cultivar Registration for confirmation as names to be permanently conserved over any competing name. Once ratified as conserved, such names should be noted as being explicitly conserved in any Checklist or International Register published by the ICRA.
2. The registrar is likely to be consulted by trademark authorities and statutory plant registration authorities inquiring whether a name has already been used for a plant, prior to listing or denomination in a statutory register. The registrar must respond to these cases with

alacrity. The ICRA must, in some situations, also be in a position to formally register an objection to a proposed trademark or varietal denomination proposed by a statutory plant registration authority.

3. Checklist. At a reasonable interval after the checklist has been published (the last was by Batdorf in the ***Boxwood Bulletin***, July, 2005) so that corrections, amendments, omissions and additions may be included, the ICRA should publish and promote a comprehensive International Register.

3a. Periodic full revised editions of the International Register should be published which incorporate all supplementary lists, together with any corrections and amendments.

3b. Promotion of this list, with or without ancillary information, through *Internet* sources is highly desirable.

4. Specific listing requirements are very detailed and lengthy, making up the bulk of the book: *The International Code of Nomenclature for Cultivated Plants*. Seventh Edition. 2004. It is essential that the ICRA should understand and frequently refer to this, or the most recent, edition of the Code to be informed of the responsibilities to properly name and register a boxwood cultivar.

5. The ICRA must produce annual progress reports of all activities and publications to the Vice-Chairman and Secretary of the ISHS Commission on Nomenclature and Cultivar Registration. Currently (2005) this position is filled by Dr. Alan C. Leslie at the previously listed address.

These annual reports are the primary method used to evaluate the effectiveness of the International Registrar (and ICRA) in order to determine the eligibility for recertification for the next three year appointment of the ICRA. Taxa Limitations for ICRA for *Buxus*:

The ICRA should establish the limits of *Buxus* (or its class) following consultation with, and agreement from the International Union of Biological Sciences (IUBS) Commission on Nomenclature and Cultivar Registration. The current (2005) chairman is:

Dr. Wilbert L. A. Hetterscheid
Department of Plant Sciences
Generaal Foulkesweg 37
6703 BL Wageningen The Netherlands
Phone: (+31) 3174 83178
E-Mail: wilbert.hetterscheid@wur.nl

Liaison with the (IUBS) Commission on Nomenclature and Cultivar Registration is coordinated through the ISHS.

Buxus sempervirens 'Elegantissima' at Dawes Arboretum

Buxus sempervirens 'Graham Blandy at Dawes Arboretum

All Dawes Arboretum photos by Laura Kaparoff

HENRY F. FRIERSON, JR., MD

ANALYSIS OF A 19TH CENTURY ENGLISH PRINT

A print, of minimal monetary value, from an 1858 London newspaper was recently purchased on the internet from a book dealer. If accurate, at least in part, and not merely a fictitious illustration, "Boxwood Forest on the Shore of the Black Sea" gives interesting insights regarding the harvest of boxwood timber in the 19th century. The depiction likely represents *Buxus sempervirens* growing in the eastern or southeastern region of the Caucasus (countries of Russia, Georgia, and Turkey and the politically disputed territory of Abkhazia) along the Black Sea, although it is possible that the southern part of Turkey is illustrated. The wearing of turbans by the lumberjacks would suggest that the boxwood forest was located in Turkey, but Moslem populations also resided in the other countries of the Caucasus.

Stacks of boxwood timber were loaded onto small vessels, then would presumably be transferred onto larger ships for export. This aspect of the print might be a conjecture by the illustrator. The presence of boxwood trees growing directly along the shore of the Black Sea is unusual, and may also be a presumption. In more recent expeditions to Georgia and Russia, boxwood populations were not typically found distributed along the shoreline, but were noted at higher elevations (1-7). In addition, it has been reported that in Turkey "in almost every case the boxwood locations are well above sea level and in what are mostly limestone areas" (8). If, indeed, boxwood had grown at shoreline, then a plausible explanation for its absence today would be its extensive harvest in the 19th century.

For several thousand years, boxwood was valued for its wood (as well as horticultural merits) and was used for small carved or turned objects, as veneer, and as wood blocks for engraving. In the United States, in the first half of the 19th century, an advertisement in a Baltimore newspaper listed the importation of two tons of " Turkey Box Wood" by pianoforte makers (9). By mid-century, new uses for the wood in the manufacture of mathematical devices (such as scales and rules) and, especially, shuttles for the textile industry required large quantities of the timber. " The invention and development of the power loom brought a demand for shuttles of wood of great strength and elasticity and of exceeding fineness and uniformity of texture–qualities in which boxwood is preeminent. The timber became of great demand, and during the period 1860-1880, the imports into England from the Caucasus, Asia Minor, and Persia averaged about 6000 tons annually" (10).

The size of the boxwood logs in the print is impressive, and seems unrealistic. In the Caucasus today, however, it is possible to see *B. sempervirens* trees having diameters of one foot or more. Fortunately, in the latter half of the 20th century, boxwood in Russia and Georgia became protected rather than exploited.

REFERENCES

1. Fooks, Charles T. Boxwood Expedition to the Republic of Georgia. ***Boxwood Bulletin***: Vol. 41, number 4, p.60, 2002.
2. Fooks, Charles T. Boxwood Expedition to the Republic of Georgia. ***Boxwood Bulletin***: Vol. 42, number 1, pp.12-15, 2002.
3. Frierson, Henry F. Jr. Boxwood in Nature and Gardens. Travels to Southern Russia and Ukraine. ***Boxwood Bulletin***: Vol. 42, number 2, pp.27-33, 2002.
4. Anisko, Tomasz. Georgian Boxwood-2001 Expedition. ***Boxwood Bulletin***: Vol. 42, number 2, pp.34-38, 2002.
5. Frierson, Henry F. Jr. Boxwood in Nature. Travels to Azerbaijan and Georgia in 2002. ***Boxwood Bulletin***: Vol. 42, number 4, pp.69-76, 2003.
6. Frierson, Henry F. Jr. Return to the Greater Caucasus, 2004. Collecting Boxwood in Russia. ***Boxwood Bulletin***: Vol. 44, number 2, pp.27-36, 2004.
7. Mosulishvili, Marina. Boxwood Exploration in the Republic of Georgia: The Mapping of Boxwood in Georgia. ***Boxwood Bulletin***: Vol. 44, number 3, pp.47-49, 2005.
8. Symmes, Harrison. Native Stands of Boxwood in Modern Turkey. ***Boxwood Bulletin***: Vol. 23, number 4, pp.76-79, 1984.
9. Frierson, Henry F. Jr. Importation of Boxwood in the 18th and Early 19th Century in the American South. ***Boxwood Bulletin***: Vol. 37, number 1, pp.13-14, 1997.
10. Record, Samuel J. and Garratt, George A. Boxwood. New Haven: Yale University, *School of Forestry Bulletin* no. 14, pp.8, 1925.

BOXWOOD FOREST ON THE SHORE OF THE BLACK SEA.

PHOTOS FROM UNIVERSITY OF MARYLAND EXTENSION SERVICE

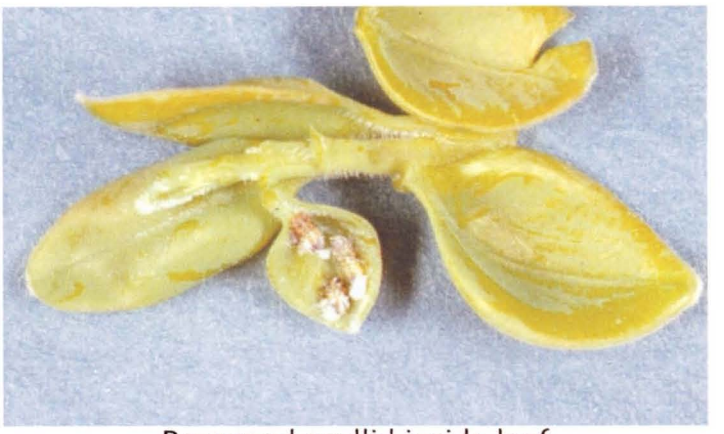
Leaf miner

Leaf miner larvae

Boxwood mite damage

Oystershell scale

Boxwood psyllid nymph



Boxwood psyllid inside leaf

Pink *Volutella* spores

Winter damage