October 1977

The Boxwood Bulletin

A QUARTERLY DEVOTED TO MAN'S OLDEST GARDEN ORNAMENTAL

"Glen Burnie," Winchester, Virginia
Picture courtesy Winchester Evening Star

Boyce, Va.

Vol. 17 No. 2

Address: The American Boxwood Society,
Box 85, Boyce, Virginia 22620

Incorporated under the laws of the State of Virginia, December 14, 1967. Exempt for Federal Income Tax. Contributions deductible by donors. Ref. IRS District Director, Richmond, Va.; Letter 430/GBS dated Dec. 4, 1968.

The Boxwood Bulletin is published four times a year by the American Boxwood Society in the quarters beginning with July, October, January and April.

A subscription to the Boxwood Bulletin is included as one of the benefits of membership in the American Boxwood Society.

The Bulletin is $6.00 per annum to non-members in the United States and Canada; single numbers are $1.50 each.

The Editors solicit and will welcome contributions of articles, news notes, photographs suitable for reproduction, of boxwood specimens, gardens, and plantings, and other items of probable interest to readers. While every effort always will be made for the protection of all material submitted for publication, the Editors cannot assume responsibility for loss or injury.

Reprints will be supplied to authors at cost but should be ordered at the time of an article's acceptance for publication.

Make cheques payable to the American Boxwood Society.

Entered as second-class mail matter at Post Office
Boyce, Virginia

Printed in U. S. A. by
Carr Publishing Co., Inc., Boyce, Va.

The Boxwood Bulletin

OCTOBER 1977 Vol. 17 No. 2

EDITOR — MRS. CHARLES H. DICK
EDITOR EMERITUS — MRS. EDGAR M. WHITING

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ILLUSTRATIONS

A beginning Garden *Photograph: R. Lee Taylor*

"Glen Burnie" Gardens

R. Lee Taylor

What does one do with a large acreage with no gardens, but once had a staff of Scotch gardeners? With all records lost, if in fact they did exist, and all traces of former gardens eradicated by many Civil War battles, buried under weeds, briars, and unwanted trees. To follow in the footsteps of Scotch gardeners takes courage, a strong back, lots of planning, and plenty of hard work.

The Chinese have a wise saying which I once read, "if you would be happy for a week, take a wife, if you would be happy for a month, kill your pig, but if you would be happy for all your life plant a garden." The Chinese also made gardens for different seasons and different times of day, which brings me to one of the first gardens built at Glen Burnie.

There are many pit falls for the amature gardener and I have been through them all. The first and worst one was trying to grow crapemyrtle for years, packing them with straw, then wrapping with burlap, just to uncover them in the spring to find they are dead down to the ground.

The parterre was planned especially for the view from the bedrooms of the south wing. From each window is a portrait of a landscape edged by contour English boxwood used to outline all of the various beds. This garden was laid out with hundreds of stakes and balls of string on March 4, 1962 with great difficulty. That night 30½ inches of snow fell. When the snow began to melt it uncovered masses of tangled string and unrooted stakes. Needless to say, the entire time consuming task had to be repeated. Then came the digging out and removing tons of dirt for the various walks. The moving in of 20 tons of sand to make the footing for the 8,000 brick for the walks and edges. After the brick was pounded into the sand with a rubber mallet, then came the planting of 180 small English boxwood and 18 large ones to form the desired hedge designs. This task was completed on April 10. As the box grew to its desired height it is kept trimmed once a year just before the new growth is in evidence. In using this method the new growth covers up any cut leaves which turn brown from the trimming.

On May 13, 1960 a boxwood garden beginning at the back hall door was begun. This garden consisting of 10 beds. These beds contain English boxwood. The first two contain interlocking hearts, the second two interlocking diamonds, and the last two, one heart ending in a baroque pattern. On either side are two low boxwood hedges containing espaliered American holly, this all being enclosed by a ten foot clipped Taxus Hicksi hedge. All of the above mentioned boxwood is also kept clipped. This endeavor required

the removal of more dirt, the addition of many more tons of sand and 6,000 brick.

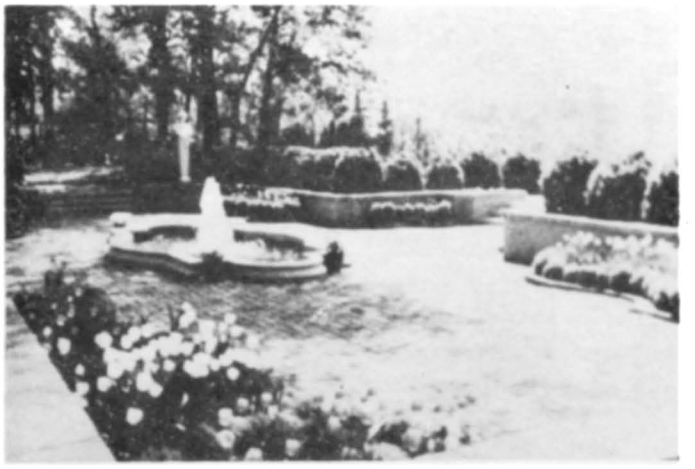
This enclosed garden opens into a long allee planted on a false perspective to give greater distance, the far end being about four feet narrower than at its beginning. On either side of this allee is bordered with a large American boxwood hedge, flowering crab, chrysanthemums, peonies, iris, and tulips. This garden was completed on May 26, 1960.

. . . . *photo: R. Lee Taylor*

Vista: "Glen Burnie" . . . . .

When Col. James Wood came from England, the original owner, to what is now Winchester, which he founded, he came with a land grant from George II. About this same time marked the arrival of Lord Fairfax, also with a land grant that seemed to overlap Col. Wood's. You can imagine what happened next. A lawsuit over the disputed land. James Wood seems to have faired better in the end, and complete revenge has been had in that he has Lord Fairfax's brick in his back yard, which was acquired from one of Fairfax's demolished buildings.

If you follow the brick walk from the back hall door to the end of the walk and turn right it will take you through the hedge to the herb garden, formal vegetable garden, around the greenhouse you will be led into a long pleached allee of flowering crab. This allee is also planted on a false perspective. The trees are woven on an arching framework in a solid mass. Coming to its end you find yourself at a pink palladian Pavilion with a sunken garden. This garden contains several beds planted with English boxwood in a baroque pattern design, all enclosed by a large hedge of American boxwood. This garden also has a fountain which caused double trouble. The coping for the fountain was made in Italy, and before the coping arrived I had finished the brick terrace and beds when a flood came, taking all the sand from underneath the brick work into the pool. The entire terrace had to be taken up and rebuilt. This was accomplished just before the second flood arrived with the same results as before. This time I waited for the coping to arrive.



Sunken Garden *Photo: R. Lee Taylor*

If you had followed the same walk from the back hall door to its end and turned left through the tall hedge you would have arrived in the rose garden which is enclosed with a clipped Taxus Hicksi hedge planted in a serpentine pattern. Halfway through the rose garden turn right into the garden of statues, enclosed with a clipped Taxus Hatfield hedge with a brick terrace. This garden leads you into a formal cutting garden in the design of the Union Jack. The cutting garden is enclosed by a large American boxwood hedge on the south side, and clipped American cedar hedge on the north side. At the west end is another pleached allee and octaginal garden room of flowering crab.

From the rose garden you wander through the parterre and beyond over a small incline, lies the water garden fed by springs and waterfalls.

Wandering out of the watergarden one encounters the Chinese garden and Chinese pagoda which is built into the hillside. Throughout this garden are water falls and pools.

It may be difficult to comprehend, but all the gardens have been created since 1960 with another now in the process, and several more which are in the planning stages.

"GLEN BURNIE"

Home of Col. James Wood —
Amherst Street Extended
Now the Property of Julian W. Glass, Jr.

Dr. Garland R. Quarles

Mrs. Katherine Glass Greene in her book *Winchester Virginia and Its Beginnings* - Page 12 says:

"Notes used by one of his grandsons in answer to one of many enquirers for information, are, in brief, as follows:

"Col. James Wood was an Englishman by birth; and by communication made to me in my youth from his widow, Mary Wood, who lived to a great age, and survived her husband thirty-nine years, I understood he had been a lieutenant in the British Navy before his emigration to this country. He embarked with one of the colonial governors for Virginia, and remained in his family until he located himself adjoining Winchester . . . . The inscription of a mourning ring still in the posession of my branch of the family establishes the fact that he died on the 6th of November, 1759, aged fifty-two years'.

"Family history further affirms that he was from Winchester, England, and that he was educated at Oxford. His clear diction, his handwriting of microscopic fineness and print-like clearness, his thorough knowledge of military tactics, his attention to details, his custom of having witnesses to transactions of whatever nature, his skill in surveying, his strict business methods indicate the legal mind, the trained scholar, the keen man of affairs, the intrepid explorer of the Virginia Wilderness."

In November, 1734 James Wood "produced a commission from the president and masters of William and Mary College — to be surveyor for the county of Orange." (Orange County records quoted in Scott's *History of Orange County* - Page 28). This is the first record documenting the presence of James Wood in this area, for we must remember that in 1734 the area on which *Glen Burnie* and the City of Winchester were built were in Orange County. According to tradition, at about this time he was surveying in the vicinity of present-day Winchester, he selected a site for his home, secured a grant from the Colonial government in Williamsburg, and built his home, which he called *Glen Burnie*. We have made a diligent search to determine if he received such a grant, but have been unable to find any record of it, but James Wood's own claim as recorded by Mrs. Greene (Page 21), together with strong corroborative evidence, convince us that he, as did many others, did secure a grant about 1735 to a tract "on the branches of the Opequon" which was later to comprise a large part of the present site of the City of Winchester. In 1738 he was married to Mary Rutherford, daughter of Hugh Rutherford, and it is natural to suppose that about this time he built the first *Glen Burnie*. We know it was built prior to November, 1743. This was a log building with stone chimneys, and occupied approximately the site of the later brick structure which, according to family records, was built by Robert Wood, the youngest son of Col. James Wood, in 1794. Within the past few years the old home has come into the posession of Mr. Julian W. Glass, who is the great-great-great grandson of James Wood. He has made a major restoration of *Glen Burnie* and the grounds of the old home so that today it is indeed a place of rare interest and beauty. Mr. Glass is sensitive to the historical significance of the place and anxious to preserve it. He says that as a result of his study of the structure of the 1794 building, when the restoration was in progress, he is convinced that at least a part of that building was a wing or an addition to the original house, so that we may perhaps say that the present building also contains a part of the 1735-1740 home.

At the time of the building of *Glen Burnie* Col. Wood also erected "near his dwelling a building of stone and wood, known as the 'Office', where he carried out the mathematical calculations connected with his surveys." (Green and Glass - Page 4). Frederick County was organized in 1743, and the first meeting of the County Court was held November 11 of that year. (F.O.B. 1 - Page 1). This meeting, which represents the beginning of organized local government in this area, was held, and continued to be held, until Frederick County's first log court house was built in 1745, in this "Office" in the yard of *Glen Burnie*. James Wood became the Clerk of the Frederick Court and continued to serve in that capacity until his death in 1759.

On March 9, 1744 Col. Wood asked the permission of the justices of the newly-created County to dedicate a certain number of lots to be "laid off from the tract of land on which he now dwells at Opekon." The justices approved this request and twenty-six half acre lots, plus four unnumbered lots for public purposes, were laid off. Twenty-two of the twenty-six numbered lots were conveyed to the Justices of the County with the understanding that "they or their assigns, shall, within two years of the day of sale of the said lots, build or cause to be built on each lot one house, either framed work or squared logs, dove-tailed, at least of the dimensions of 20 ft. by 16 ft." This was the beginning of the town, at first called Opequon, then Frederick Town, and then Winchester. Col. Wood was its founder, and despite the claims of some that Lord Fairfax donated the public lots to the town, certainly prior to the time when his Lordship appeared in this area, Wood had provided for these lots and had permitted a courthouse (1745) and a chapel of the established church (1747) to be built on the property.

At the time of this agreement between Wood and the Justices it is clear that the County officials were in some doubt as to the validity of the title which he held to the property he was conveying because they required him to give them a bond of one thousand pounds to idemnify them against damage or loss in the transaction. When Lord Fairfax issued his Caveat to all property holders in this area in 1747, who had obtained their grants from the Governor and Council of Virginia, asserting that such grants were illegal, since the lands concerned lay in his proprietory; and that the grantees must come to his office at Greenway Court and secure fresh agreements from him, James Wood took a conciliatory attitude toward the Proprietor's position, and in a deed, dated May 15, 1753, he received from Lord Fairfax a valid patent for his property. *(Prop's Grants* - Book H - Page 307). Mr. Julian W. Glass has this original deed. It records the granting of 1241 acres "on the branches of Opeckon River," and the metes and bounds contained therein identify the grant as containing a substantial part of the present City of Winchester.

In February, 1752 the Virginia House of Burgesses, acting on the petition of James Wood and Lord Fairfax, officially established the town of Winchester *(J. House of Burgesses* 1752 - page 98). Wood and Fairfax joined together to lay off 18 lots in addition to the 26 lots laid off in 1744 on James Wood's land and thirty-six additional lots from the land of Lord Fairfax, making a total of 80 lots. These were half-acre lots and were called in-lots. In addition Lord Fairfax laid off on his land north and east of these in-lots 80 five-acre outlots. It was his stipulation that an inlot was to be coupled with an outlot (not necessarily of the same number) in the deeds to purchasers and that the inlots and outlots so coupled could not subsequently be conveyed separately. This first officially established town of Winchester was bounded on the north by present day Fairfax Lane, on the west by present-day Indian Alley, on the south by present-day Cork Street and on the east by a line half-way between present-day Cameron and Kent Streets.

James Wood was an active and influential figure in all the affairs of the town and County. He was a member of the first vestry of Frederick Parish. He was an officer in the militia in the French and Indian War and appears to have accompanied Lieut.-Colonel George Washington on his ill-fated expedition against the French in 1754 which ended with his surrender at Fort Necessity. He was proxy for Washington when he was a candidate for Burgess from Frederick County in 1758, conducted the campaign for the then Colonel, and received from him a warm letter of thanks. He died, as we have previously indicated, in 1759 and was buried in the family graveyard at *Glen Burnie*. In his will he bequeathed all his property to his wife, Mary Wood.

"Glen Burnie" gardens, as described by R. Lee Taylor in the lead article of this issue of the ABS Bulletin, were toured by the members of the American Boxwood Society following their annual meeting in the spring of 1977.

The combination of an historic site and acres of artiscally planned gardens presents vista after vista of viewing pleasure. Each garden has its own special beauty and flavor, from the vegetable garden to the elegant allees and palladium garden.

Boxwood is used in a variety of ways to accent, to design, to form hedges both high and low. "Glen Burnie's" collection is very large and especially well cared for. The gardens are as well planned as many of our historical gardens, using designs and plantings suitable for those interested in shaping their own formal gardens.

Besides the impressive boxwood collection there are also notable plantings of flowering trees and shrubs, hundreds of bulbs through the seasons, perennials, annuals, herbs, statuary, artifacts, and above all, ample evidence of a love of beauty and an appreciation of the plants used to achieve that beauty.

The house and gardens have often been part of historic and individual tours. They are well worth seeing whenever the opportunity occurs.

The Editor

The National Arboretum And Blandy Workshop

BOXWOOD WORKSHOPS

This fall, successful Boxwood Workshops sponsored by the American Boxwood Society, were held at the National Arboretum, Washington, D. C., and at the Blandy Experimental Farm, Boyce, Virginia. The workshop at the National Arboretum featured *Boxwood Varieties* and the worshop at Blandy emphasized *Boxwood Culture*. Mrs. Thomas E. Ewert served as registrar for both workshops and handled local arrangements.

THE NATIONAL ARBORETUM WORKSHOP

President Albert S. Beecher of the ABS greeted the fifty participants at the National Arboretum Workshop on September 29 and introduced Dr. John Creech, Director of the National Arboretum, who extended greetings and commented on recent developments at the Arboretum. A new entrance to the Arboretum has just been completed, and this will help to improve the image of the Arboretum, and it will make for easier access. A new herb collection is underway. Dr. Creech commented on the severe winter damage that occurred to the camellia collection.

Dr. Henry T. Skinner, a Director of the American Boxwood Society, and the former director of the National Arboretum presented a most interesting and instructive discussion on *Some of the Better Known Boxwood Varieties*. His talk was supplemented by slides, and his collection of labeled boxwood sprigs that were arranged in bottles. This collection of sprigs helped the members to see some of the major differences between the various boxwood varieties.

Brief comments on some of the better known boxwood species and varieties were made by Dr. Skinner as follows:

The Cultivated Species

Buxus balearica. Native to the Balearic Islands and Spain. With large leaves. Tall growing — to 30 ft in the wild. Relatively tender but has survived at National Arboretum.

Buxus harlandii. From China. With elongated yellow-green leaves, round ended or notched. For southern cultivation.

Buxus microphylla. From China, Korea, Japan. Round-ended leaves are relatively small. Usually a low bush but forms can grow to 8 ft or more. Medium to vary hardy and tolerant of a wide range of soil.

Buxus sempervirens. Common Box. From Europe to West Asia. Leaves dark green, usually pointed and broadest below the middle. Very variable in habit — from dwarf or spreading to 30 ft. or more in height. In the wild, a plant, almost exclusively of limestone soils.

Some More Familiar Varieties

Buxus microphylla.

'Curly Locks'. A Henry Hohman selection. Dwarf, compact, somewhat yellowish and with twisted growths.

'Kingsville.' A series of dwarf selections by Hohman. The N. A. formerly had 20 or 30 distinct seedlings from Kingsville Nurseries.

var. japonica. The tallest and largest leaved form of the species — as known in American gardens. Adapted to a wide climatic range, from New England to Florida and Southern California.

var. *japonica.* 'Morris Midget.' A dwarf selection with smooth outline.

'Morris Dwarf.' A slightly less dwarf selection with more tufted outline.

'National.' An N. A. selection of vigorous, upright habit.

var. *koreana.* Korean Boxwood is found in two distinctive forms in older American plantings — as a wide spreading dwarf or 'Garden Variety' not hardy much north of New York City, and as a much taller plant with smaller leaves and open habit which is very cold tolerant. The last was introduced by Wilson and the Arnold Arboretum in 1919. Both deserve separate clonal designations.

Buxus sempervirens.

var. *arborescens.* Tall shrub or small tree. The typical and highly variable form of the European species. This is the "American" or "Tree" box which tends to be contrasted by Eastern gardeners with 'Suffruticosa,' the Dwarf or English boxwood of more compact and rounded habit. 'Suffruticosa' is the "Edging Box" of England where it is customarily trimmed as a low edging to beds or borders.

'Anderson.' An Anderson introduction from Yugoslavia distributed through Kingsville Nurseries and one of the closest to "Suffruticosa' of later introduction.

'Angustifolia.' A tree boxwood with narrow leaves. Makes a broad pyramid. Outstanding in the N. A. collection.

'Aurea-variegata.' Golden variegated and often seen in older gardens.

'Aurea-pendula.' A gold striped weeping form found, not infrequently, in old gardens of the Eastern Shore.

'Bullata.' A tree type with large, very round leaves.

'Elegantissima.' Makes a broad bush with silvery-white variegated leaves.

'Handsworthiensis.' Narrow, upright habit, with large leaves and yellow-green stems.

'Myritifolia.' With smaller leaves. An upright grower but quite slow.

'Rosmarinifolia.' Dwarf and very small leaved.

'Salicifolia.' Rather normal habit but with long and narrow leaves.

'Vardar Valley.' With low, spreading habit and dark grey-green leaves. Distinctive. An Anderson introduction named at the Arnold Arboretum.

Following Dr. Skinner's presentation, Mr. Robert Drechsler, Curator of the National Bonsai Collection was introduced. He explained that, "The Japanese garden complex at the U. S. National Arboretum was developed to provide an appropriate environmental setting for the magnificent National Bonsai Collection, a gift of the Japanese people to the American people in commemoration of the 200th anniversary of the United States. The 53 bonsai, assembled by the Nippon Bonsai Association, range from 30 to 350 years of age and number 34 different species. Many come from the private collections of well-known citizens of Japan. One, a 180-year-old Japanese Red Pine, comes from the Imperial Household, and represents the first time a bonsai from the Imperial Collection has left the country.

The complex will also house six unique viewing stones that are part of the Bicentennial gift from Japan. The same love for natural form expressed in bonsai is also found in suiseki, or stone viewing. The stones on display are outstanding examples of this art. Stones such as these provide the collector with a natural landscape for contemplating the harmony and beauty of all of nature.

The principal architect of the garden complex, Masao Kinoshita of Sasaki Associates, Watertown, Massachusetts, has provided through his design an American interpretation of Japanese concepts of gardening and architecture."

The group next toured the Bonsai collection under the guidance of Mr. Drechsler. The Bonsai collection is located adjacent to the Administration building. Following the tour a box lunch was served.

The afternoon session of the worshop was a tour of the Boxwood collection at the National Arboretum. The afternoon tour was led by Lynn Batdorf, Curator of the Boxwood collection. Many of the varieties that Dr. Skinner discussed during the morning session were pointed out by Lynn Batdorf. He also made some comments concerning the cultural practices that are followed at the Arboretum to keep the plants growing in a good healthy condition. His comments on *Boxwood Maintenance* will be presented in the *Boxwood Journal* in a later issue.

At the completion of the boxwood tour, some of the group on their own toured the Arboretum.

BOXWOOD WORKSHOP AT BLANDY

Thirty five were in attendance at the workshop on October 28 at the Blandy Experimental Farm. The workshop featured *Boxwood Culture*. Attendance was limited to thirty five in order to provide adequate space for those participating in the propogation section of the workshop. Another workshop will be scheduled later for those members who were not able to be accommodated at this time.

The first session was conducted by Prof. Albert S. Beecher, Virginia Tech, Horticulturist and President of the ABS.

Beecher commented that in recent years there has been a good deal of publicity concerning boxwood decline in the newspapers, and in the *Boxwood Journal*. In his estimate a good deal of this decline can be contributed to the fact that in many parts of the East there has been several years where there has been a deficiency of soil moisture plus some severe winter conditions. It has long been recognized that plants under environmental stress became weak and may have difficulty surviving. Two other reasons why boxwood may die in addition to environmental stress were emphasized by Beecher:

1. The failure to adequately pluck or thin some of the inner boxwood foliage to allow light into the center of the plant.

2. The failure to clean out leaves that may accumulate in the center of the plant.

Boxwood are one of the plants that benefits from yearly thinning or plucking. This is especially true of English boxwood. This should be done each year even, if the plant seems to be growing exuberantly. When the interior has adequate light there will be a green center, and leaves will be found all the way up the stem. Without adequate light, the interior shoots may die and very little green foliage will be observed on the inside of the plant.

At least once a year clean out leaves or twigs that accumulate in the center of the boxwood plant. A vigorous shaking of the plant often helps. Remove this material by hand. or by power equipment that sucks the dead material out. Failure to do this annual cleaning will often result in a build up of debris, and aerial root development along the branches is induced. When this occurs, these aerial roots can be easily damaged during periods of dry weather or extreme cold weather.

Beecher pointed out that there are many other reasons that may be responsible for the decline or death of boxwood plants. Damage can occur in the root area, or to the leaves, or to the entire plant because of any of the following:

Roots

Damage to the roots by:

1. Digging in the root area by man-animals
2. Planting too deeply-settling later
3. Applying excessive amounts of fertilizer manure

4. Making a cone of soil or mulch around the plant
5. Setting plants in holes in tight soil with no drainage provided from bottom side
6. Soil washing away from roots thus exposing them to the elements
7. Mulching too heavily
8. Too much peat or manure in filling soil
9. Excessive watering
10. Matting of ivy in and under plant

Leaves

Damage to leaves and branches by:

1. Leaf miners
2. Accumulation of soot and dust on foliage: effect of smoke and grass
3. Crowding by other plants — building
4. Chemical sprays
5. Dead leaves accumulating in dwarf plants
6. Clipped alone to maintain normal effects instead of cutting out weak top branches to admit light and air
7. Winter killing
8. Sunscald and browing on weak plants
9. Injury from sleet or snow, bending or breaking the branches

Whole Plant

Damage to entire plant by:

1. Total lack of water
2. Too much shade
3. Wet feet
4. Salt from coastal storms or well water

Following Professor Beecher's presentation on Boxwood Culture, Mr. Thomas E. Ewert, Director of the Blandy Experimental Farm, spoke on the Propogation of Boxwood. He began by describing the various ways in which plants may be reproduced. Ewert said that when plants are propagated by seed there may be a significant amount of variation in the progeny. While this may be fascinating to an avid plantsman, it is not at all what what one would want to see in plants which are being used in a formal arrangement. To obtain a uniform group of plants, it would be far better to propogate them by means of cuttings.

A stem cutting is just one of the methods of a sexual propogation. Others include lavering, grafting, budding, leaf cuttings and root cuttings. Boxwood generally roots quite easily from stem cuttings.

While describing the way to make a stem cutting, Ewert said that the season of the year does make a difference in the rate of success and the time it takes for roots to form.

He said that from his experience at Blandy, rooting occurs most rapidly on cuttings taken in mid to late summer. Blandy has also noted differences in rooting ability between one variety and another.

All of the participants were given a container fashioned from a one-gallon plastic milk bottle, a plastic bag to cover the container, a packet of Hormodine No. 2, and a supply of plastic labels. Sand was used as the rooting media. Many of the participants had brought in a supply of fresh material from their plants at home and these were identified and passed out to everyone interested. Blandy also provided material for cuttings.

The selection of cutting material included several different specimens of American Box, *Buxus sempervirens*, and English Box, *Buxus sempervirens suffruticosa*, as well as *Buxus microphylla japonica* and *Buxus harlandii*.

Ewert instructed the participants as they made their cuttings, dipped them in the rooting hormone, stuck them in the sand in the container, watered them, and covered the container with plastic. He said it was important to give the cuttings plenty of light but warned that the covered container should never be placed in direct sun. The participants were given suggestions for the care of their new boxwood plants and the morning's session was adjourned.

Following a box lunch a new set of slides on *Boxwood Diseases* were shown. These slides have recently been donated to the American Boxwood Society by Dr. Robert C. Lambe and Dr. Wirt H. Wills of the Virginia Tech Department of Plant Pathology.

These slides are now available for members to borrow, if they are interested in presenting a program on diseases.

The group next moved outside for a demonstration on how to properly pluck or thin boxwood, and for a tour of the Memorial Boxwood Garden to observe boxwood varieties. Beecher and Ewert conducted the demonstration and tour.

Editor's Note:

Persons attending Workshops could be valuable information sources to those living near them.

NATIONAL ARBORETUM WORKSHOP

September 29, 1977

1. Francis A. Alley, 127 Parsonage Hill Road, Short Hills, N.J.
2. Evelyn B. Alley, 127 Parsonage Hill Road, Short Hills, N.J.
3. Mr. J. T. Averitt, Rt. 1, Box 25-B, Kilmarnock, Va. 22482
4. Mrs. J. T. Averitt, Rt. 1, Box 25-B, Kilmarnock, Va. 22482
5. Albert S. Beecher, V.P.I., Blacksburg, Va.
6. Millie P. Beecher, V.P.I., Blacksburg, Va.
7. Scot Butler, 7525 Old Dominion Dr., McLean, Va.
8. Joan Butler, 7525 Old Dominion Dr., McLean, Va.
9. Michael Brown - Mrs. Mars, alternate
10. Neil A. Benfer, 725 DeShields St., Tappahannock, Va. 22560
11. Patricia Brummett, 6801 Brisbane St., Springfield, Va. 22152
12. Bobby Callahan, 14810 Springfield Rd., Germantown, Md. 20767
13. Thomas T. Carter
14. Mrs. Charles Ecker
15. Tom Ewert, Box 175, Boyce, Va. 22620
16. Kay Ewert, Box 175, Boyce, Va. 22620
17. Mrs. Dayton Frost, 1061C Georgetown Pike, Great Falls, Va. 22101
18. Mrs. Robert Gottfried, Winchester
19. Mr. Wellford G. Goode, 5311 New Kent Road, Richmond, Va. 23225
20. Mrs. Wellford G. Goode, 5311 New Kent Road, Richmond, Va. 23225
21. Mrs. John Haggerty, Rt. 1, Box 132-A, Berryville, Va. 22611
22. William N. Hatch (Capt.), Mill Road Farm, Rt. 2, Box 107, Leesburg, Va. 22075
23. Nancy Hatch, Mill Road Farm, Rt. 2, Box 107, Leesburg, Va. 22075
24. Marion Haven, 1000 Courthouse Rd., Vienna, Va. 22180
25. Mrs. Geraldine Kurapka, 505 Academy Rd., Baltimore, Md. 21228
26. Mrs. Richard Lewis, 1605 Handley Blvd., Winchester, Va. 22601
27. Conrad B. Link, Univ. of Md.
28. Robert McCartney
29. Ann McCartney
30. Mr. Frank A. Matuszak. Purcellville, Va. 22132 Tip O The Hill, Rt. 2, #180
31. Mrs. Frank A. Matuszak, Purcellville, Va. 22132 Tip O The Hill, Rt. 2, #180
32. Gerald Moudry, Bureau of Parks, 4915 Greenspring Ave., Baltimore, Md.
33. Mr. Richard C. Plater, Jr., Boyce, Va. 22620
34. Mrs. Richard C. Plater, Boyce, Va. 22620
35. Chip Powell, P.O. Box 867, Fredericksburg, Va.
36. John Pinkerton, 1909 Halethrope Ave., Baltimore, Md. 21227
37. Mrs. Antone Rodgers Pennyroyal, 609 Hilltop Rd., Catonsville, Md. 21228
38. Edward L. Stack, Jr., Havaver Farm, Beallsville, Md. 20704
39. Mollie H. Stack, Hanaver Farm, Beallsville, Md. 20704
40. Harrison Symmes, Mount Vernon, Va. 22121
41. Mrs. Harrison Symmes, Mount Vernon, Va. 22121
42. (Friend of Mrs. Symmes)
43. Dr. Bernice Speese, P.O. Box 1589, Williamsburg, Va. 23185
44. Mr. George Webster (didn't come), 1747 Penn. Ave., N.W., Washington, D.C. 20006
45. Mrs. George Webster, 1747 Penn. Ave., N.W., Washington, D.C. 20006
46. Kathryn Zirkle, 1120 Allen Dr., Winchester, Va.
47. Dr. Skinner
48. Dr. Creech
49. Mr. Drechsler
50. Mr. Neumann
51. Mr. Batdorf
52. Arboretum Secretary

BLANDY WORKSHOP

October 28, 1977

1. John H. Ariail, Jr., Arch Hall, Lorton, Va. 22079
2. Leslie S. Ariail, Arch Hall, Lorton, Va. 22079
3. Richard A. Azzara, 9507 Wire Avenue, Silver Springs, Md. 20901
4. Wilson M. Brooks, 808 Mayberry Dr., Richmond, Va. 23229
5. Mary M. Brooks, 808 Mayberry Dr., Richmond, Va. 23229
6. Scot Butler, 7525 Old Dominion Dr., McLean, Va. 22101
7. Joan Butler, 7525 Old Dominion Dr., McLean, Va. 22101
8. Robert E. Callhan, 14810 Springfield Rd., Germantown, Md.
9. Thomas E. Carter, Rt. 2, Box 217, The Plains, Va. 22171
10. Jessie C. Carpenter, "Carpentera," Box 587, Berryville, Va. 22611
11. Ralph G. Denn, III, Rt. 3, Box 63-A, Front Royal, Va. 22630
12. Dr. A. Budd Fenton, Lucky Hit Farm, White Post, Va. 22633
13. Doris Frost
14. James T. Gallagher, P.O. Box 46, Port Republic, Va. 22471
15. Duncan Gibb, P.O. Box 1597, Front Royal, Va. 22630
16. Mrs. Duncan Gibb, P.O. Box 1597, Front Royal, Va. 22630
17. Marguerite G. Haldeman, P.O. Box 74, Winchester, Va. 22601
18. Milton Hearl, "Grelin," Orange, Va. 22960
19. Judy C. Johnson, 32 Eden Road, Luray, Va. 22835

20. Maurice R. Large, Box 513, Farmville, Va. 23901
21. Kathryn C. Large, Box 513, Farmville, Va. 23901
22. H. Ruffner Lawman, Jr. (Rev.), Rt. 3, Box 21, Waynesboro, Va. 22980
23. Dorothy H. Lawman, Rt. 3, Box 21, Waynesboro, Va. 22980
24. Mrs. Forrest E. Mars or Michael Brown, Marland, Rt. 2, Box 129, The Plains, Va. 22171
25. Jean M. O'Connell (Mrs. H. A.), Oakgrove, 6541 Franconia Rd., Springfield, Va. 2215?
26. Mary B. Shutt, 13501 Fork Rr., Baldwin, Md. 21013
27. Harriet M. Sinclair (Mrs. James), Box 238, Warrenton, Va. 22186
28. J. Drew Samuford, 4500 Franconia Rd., Alexandria, Va. 22310
29. Louis Warden, Grelen, Orange, Va. 22960
30. George Webster (Mrs.), 5305 Cardinal Ct., Bethesda, Md. 20016
31. Mrs. George Revercamb, c/o Mrs. George Webster, 5305 Cardinal Ct., Bethesda, Md. 20016
32. Charles W. Thomas, Rt. 2, Box 352, Oatlands, Leesburg, Va. 22075
33. Joseph Kirk, Rt. 2, Box 352, Oatlands, Leesburg, Va. 22075
34. 2 employees of Harrison Symmes, Mount Vernon, Va. 22121

CONTRIBUTORS TO OCTOBER 1976-1977

1. Mrs. James J. Anderson
2. Prof. Albert S. Beecher
3. Mr. Scot Butler
4. Mrs. R. Harvey Chappell, Jr.
5. Mrs. Clay B. Carr
6. Mr. Joseph R. Dinnen
7. Mrs. William J. Donovan
8. Mrs. Robert L. Frackelton
9. Mrs. D. Goodrich Gamble
10. Mrs. Baylor Hickman
11. Mr. Philip F. Hilbert
12. Mr. D. Luke Hopkins
13. Mrs. Wyford D. Jones
14. Mrs. John K. Knorr, III
15. Mrs. John Q. LeGrand
16. Mrs. Samuel C. Loveland
17. Mrs. James H. McGhee
18. Mr. Jack Newman
19. Mrs. Orsen N. Nielsen
20. Mrs. P. S. Patterson
21. Mrs. A. C. Price
22. Mrs. Karl B. F. Rauch
23. Mrs. A. C. Stewart
24. Dr. Allen Taylor
25. Mrs. Walter Scott Thomson
26. Mrs. John B. Veach
27. Mrs. Helen H. Wolfe
28. Mrs. Charles D. Webster

OFFICER'S AND DIRECTOR'S MEETING

October 18, 1977

A meeting of the officers and directors of the American Boxwood Society convened at 11:00 on October 18, 1977, in the Franklin Street Office Building in Williamsburg, Virginia. The President, Albert S. Beecher, presided. Those attending were Mr. Alden Eaton, Ambassador Harrison Symmes, Mr. Richard Mahone, Dr. Bernice Speese, Mr. Charles Otey, Mr. Thomas E. Ewert, Mrs. Kathryn M. Ewert, Mrs. Linda Jones, and Mrs. Charles Dick. Visiting was Mrs. Millie Beecher.

The minutes of the previous meeting were accepted.

Mr. Ewert reported that Dr. Wagenknecht had been contacted on numerous occasions regarding the boxwood registration material. This was to have been forwarded to Dr. Speese in Williamsburg but as yet she has not heard from nor received any information from him. It was suggested that possibly this same information could be obtained from the Arnold Arboretum. Mr. Ewert was asked to contact Dr. Wagenknecht again to see what the problem might be with the transfer of the material.

The President reported that the slide set which was to be compiled and left at Blandy for loan purposes has been started with slides sent by Dr. Lamb and Dr. Wills. As others are received they will be added to the collection.

As requested in our Newsletters several members reported on winter damage to their boxwood. These replies have been compiled and forwarded to Mrs. Dick for an article in the *Boxwood Bulletin* at a later date. Also, the Buyers Guide will soon be available. The information is being prepared now.

A report on the Memorial Garden by Mr. Ewert followed. There are 41 different plants in the garden at the present time. A discussion was held regarding the different possibilities for labeling of the plants. It was suggested that rather than attaching the names on the plants that the plants be numbered and an explanation of the plants be printed on a sheet and made available at the site. Mr. Ewert is to continue to investigate the possibilities and prices and report at a later date.

Also, an appropriate marker for the garden was discussed. It will first be necessary to research the minutes of previous meetings to determine whether the garden should be named The Memorial Garden or whether it should be named The J. T. Baldwin-Henry Hohman Memorial Garden. A report is to be made at the next meeting.

The treasurer's report followed. Mrs. Ewert reported the price for a *Boxwood Bulletin* has ben $1.25 for members and $1.50 to nonmembers which is confusing. She indicated that she felt $1.50 for each copy would be more appropriate. Ambassador Symmes made a motion that we charge $1.50 for each copy of the Bulletin regardless of who it was sold to. Motion carried. Mr. Eaton made a motion that we not let our supply of any issue of the Bulletin go below 25 unless it was being purchased as part of a complete set. If an individual wished to purchase one issue it should be xeroxed and the customer would be charged whatever the cost for xeroxing was. Motion carried.

Mr. Eaton made a motion that we deposit $100.00 for each life member into a certificate of deposit. Motion carried. Mrs. Ewert also suggested that we move our bank accounts from the Bank of Clarke County to The Farmers and Merchants National Bank due to higher interest rates on the certificates.

Prof. Beecher reported that the Society had a booth at the Washington Metropolitan Horticultural Show at Tysons Corner Mall in August and handed out several hundred brochures and applications for membership. He also reported that the Workshop at the National Arboretum on September 29 was a great success.

Mrs. Ewert discussed with the members the possibility of an over night trip in the Spring to the Philadelphia area to tour the garden of Mr. Thomas Hallowell as well as other members' gardens in that area. The trip would be open to the entire membership. The President suggested that Mrs. Ewert appoint a committee to work out the details.

The Secretary's report followed.

There being no further business, the meeting adjourned at 1:00.

Respectfully submitted,
Linda G. Jones,
Secretary

SECRETARY'S REPORT TO OFFICERS AND DIRECTORS

October 18, 1977

Thus far this year 1977-78, 59 new members have been enrolled. They consisted of 42 regular members, 11 contributing members, 1 sustaining member, and 5 life members. We had 3 reinstatements, and 15 gift memberships. One life member, Mrs. Lucy Haines, died.

The ABS membership as of October 1 consists of:

	Paid	Unpaid
Honorary Life	6	
Life	38	
Sustaining	15	6
Contributing	60	23
Regular	262	176
Subscribers	24	
Free Subscriptions	22	
	427	205
Total Paid and Arrears	632	

We have removed no names from the mailing list due to accounts being in the arrears.

We are still having 750 copies of the *Boxwood Bulletin* printed. 33 back issues were mailed to those upon request.

13 contributions were made to the Memorial Garden and Research Fund totaling $222.50. Thank you letters were sent to them and their names will appear in the Bulletin at a later date.

Since the Spring Board meeting approximately 100 pieces of mail have been answered plus approximately 75 brochures and applications for membership have been mailed out.

A questionnaire was filled in and returned to Gale Research Co. containing information regarding the purposes and activities of the Society for their National Directory of Newsletters and Reporting Services. Several other similar requests for information were also answered for possible listings in publications.

The Workshop at the National Arboretum in Washington, D.C. on September 29 was attended by approximately 50 people and thus far approximately 30 have already signed up for the Workshop to be held at Blandy Experimental Farm on October 28.

On behalf of the Society Mr. Ewert spoke with the Old Fredericktown Garden Club and the Greenway Garden Club and presented each one present with a complimentary plant. He also had an exhibit at the Winchester Garden Council Flower Show on October 1 and 2. The display is now at Lord Fairfax Community College.

In August the A.B.S. had a booth at the Washington Metropolitan Horticultural Show which was held at Tyson's Corner. Over 200 Applications for membership were handed out but none have been returned as yet.

Upon request Mr. Ewert also visited at Carter Hall in Millwood. Project Hope is purchasing the estate and called for advice regarding the gardens. He also met with the Board of Directors and curator at Abram's Delight in Winchester concerning their boxwood plantings.

We extend greatful appreciation to Mr. Ewert for taking time to visit with those who requested our services.

Respectfully submitted,
Linda G. Jones,
Secretary

CONTRIBUTORS TO OCTOBER 1977-1978

1. Mr. Scot Butler
2. Mrs. Alice Jackson Carr
3. Mrs. R. Harvey Chappell
4. Mr. Henry M. Feil
5. Mrs. Robert L. Frackelton
6. Mrs. D. Goodrich Gamble
7. Col. Allen Griffin
8. Dr. James L. Hamner
9. Doris Crane Loveland
10. Mr. William Edward McRorie
11. Mrs. J. Paul Scheetz
12. Mrs. John B. Veach
13. Mrs. Helen Whiting -- In Memory of J. T. Baldwin

Mark this date now in your date book.

18th Annual Meeting

of

The American Boxwood Society

MAY 10, 1978

at

Blandy Experimental Farm

Boyce, Virginia

AMERICAN BOXWOOD SOCIETY

Board of Director's Meeting

Treasurer's Report

October 17, 1977

Balance in checking account, May, 1977			$3,257.18
Receipts:			
Memberships	$3,080.00		
Bulletin Sales	27.89		
Gifts & Donations	222.50		
Workshop-National Arboretum 9-29-77	178.00		
Workshop-Blandy 4-12-77	141.00		
Board of Directors Meeting 4-12-77	42.00		
			3,691.39
Total Funds Accountable			6,948.57
Disbursements:			
The Boxwood Bulletin			
Printing	539.92		
Cuts	93.50	633.42	
Newsletter			
Printing	145.05		
Addressing	38.20		
Advance	30.00	213.25	
Xerox copies	2.20		
Taxes	49.13		
Stamps	38.31		
Box Rent	6.00		
Annual Meeting Exp.	58.45		
Board Meeting	40.56		
Boxwood Workshop	125.00		
Secretary duties	222.75		
Treasurer duties	258.00		
Office Supplies	8.48	809.24	
Savings Account			
Cont. 76-77	1,486.00		
Cont. 77-78	222.50		
Life Membership	700.00	2,408.50	
Total Expenditures			4,064.41
Balance in checking account			2,884.16
Balance in savings account			6,034.43
Total assets, Oct. 18, 1977			8,918.59

All accounts are in Bank of Clarke County, Berryville, Va.

Respectfully submitted,
Kathryn M. Ewert,
Treasurer

According to a report from Tom Ewert on American Boxwood Society Memorial Garden at Blandy:

? Grace Hendrick Phillips ?

1. Buxus species var. Inglis
2. " " Northern Find
3. " himalayensis
4. " microphylla
5. " " var. compacta cv. Helen
6. " " var. japonica
7. " " " " cv. Morris Dwarf (3 plants)
8. " " " " Morris Midget (3 plants)
9. " sempervirens Agram
10. " " Anderson
11. " " arborescens undulifolia
12. " " argentea
13. " " belleville
14. " " butterworth
15. " " decussata
16. " " Edgar Anderson
17. " " fortunei rotundifolia
18. " " glauca
19. " " handsworthii
20. " " hardwickensis fastigiata ←
21. " " hermann von schrenk
22. " " krossi-livonia
23. " " latifolia
25. " " " aurea maculata
26. " " " bullata
27. " " " japonica
28. " " " marginata
29. " " " nova
30. " " longifolia
31. " " maculata
32. " " mysotifolia myosotidifolia
33. " " navicularis
34. " " Northland
35. " " pendula
36. " " ponteyi
37. " " prostrata
38. " " pyramidalis ←
39. " " rotundifolia
40. " " salicifolia
41. " " salicifolia elata
42. " " vardar valley

Photo: Colonial Williamsburg

Libby Hodges using Natural materials in Holiday Decorations

Holliday Decorations

By Libbey Hodges

The green scent of boxwood can conjure thoughts of Christmas at any time of year. During the Christmas season, a variety of decorations are traditionally made with boxwood cuttings for Colonial Williamsburg. Wreaths, roping, kissing balls and arrangements of fresh flowers or fruit are all easily made with boxwood, for today's home.

Winter is a fine time to trim boxwood. By waitnig until Christmas, the clippings can supply material for decorations. Many evergreens such as holly and magnolia require a strong arm, a ladder and much equipment for pruning, but boxwood will yield to a hand and clippers. Decorations last longer if the greens are cut at least a day ahead and soaked in warm water. If the boxwood leaves look a little dingy, they can be rinsed in soapy water.

Arrangements of greens are especially appropriate at Christmas. They can be a single foliage or a dramatic combination. The glossy foliage of boxwood is an excellent contrast to needled greens such as pine and cedar when used in mixed arrangements. Contrast between foliage textures is particularly important when candles are the only source of light.

Boxwood is a rich foliage to use with fresh flowers. Carnations - - a popular flower at Christmas - - look elegant against the dark green of boxwood, whether they are white, red or "peppermint." Carnations also come in the miniature or pixie size. When the flowers fade the boxwood will probably still be fresh. Change the water and recut the stems to make them last up to three weeks.

The boxwood wreaths at Colonial Williamsburg usually last 2-1/2 weeks, however the fruit must be changed when birds peck at the apples or extremes in temperature spoil the lemons.

Although there are many methods for making wreaths, I prefer using a straw base and greening pins. Both can be purchased from a florist or draft shop. The straw base comes wrapped in plastic and in several sizes. About ten years ago, I bought my mother a handful of greening pins and a 12" straw base. The pins still have their hairpin shape and even though a little rusty, they will still pierce the wreath base which now has straw sticking out here and there.

The wreaths for Colonial Williamsburg are made on wire frames. This method makes a very sturdy wreath which will survive our many visitors using the doors on which the decorations hang.

A few tips may make wreath making a smoother operation. Short pieces of boxwood, 6" - 8" long are

more flexible than a woody branch. Also a full wreath is easier to obtain with short pieces than with longer branches which leave bare stems showing. Bunches of only 3 - 4 pieces can be secured tightly with the greening pins, also called fern pins.

Boxwood that is worked in one direction presents a smooth effect. Begin by covering the top, then the outer and finally the inner sides. The back needs to be covered only if it is to hang in a window or on a glass door where the back will be seen.

Fruit and pine cones are attached on top of the boxwood with florist wire. The wire comes in convenient 18" lengths and is pliable enough to twist and wrap around the wreath. Twist the wire tightly in back of the wreath without pulling on the fruit. Then insert the wire ends into the wreath base to save the door from scratches. Ribbon is not used on the wreaths in Williamsburg since it was scarce in the 18th century.

Table decorations of fruit have a finished touch when boxwood is added. If fruit and greens are placed in a design directly on a table, cut plastic to go beneath them. This precaution prevents stains on the table.

The fruit cone is a traditional table decoration in Williamsburg. Mounding fruit has been popular since the 17th century. Today a wooden pyramid with finishing nails makes a sturdy base; you can impale apples or other fruit on it. Gaps always occur between the fruit and this is where sprigs of boxwood can be placed.

Kissing balls probably began as a bunch of greens rather than as the formal ball we know. Boxwood has been associated with the balls, which usually have a bit of mistletoe and streamers at the bottom.

For a quick kissing ball, try sticking the boxwood into a styrofoam globe. The inner ball does not need to be more than one-third of the size of the completed kissing ball. Straight woody stems are the easiest with which to work.

If the ball is expected to last a week or more indoors, it should have a source of water. This can be supplied by a piece of oasis or shredded, not milled, sphagnum moss. Both of these materials are soaked in water and wrapped in chicken wire. Once the ball is thickly covered with boxwood, there should not be any dripping. Just in case, do not hang it in place immediately. When it needs reviving, remove any ribbon or decorations and resoak the ball of boxwood in a bucket of water.

Boxwood as a cut green is elegant, easy to handle and long lived in decorations any time of year. The first on the list of Christmas greens should be boxwood.

Christmas Decorations Made with Natural Beauty

Thomas E. Ewert, Director

Blandy Experimental Farm

Deck the Halls with boughs of Holly — Bring in the Yule Log — Hang the mistletoe in just the right spot — Decorate a young fir tree to brighten the home — Hang garlands of pine or boxwood — Bring home a brilliant, red poinsettia.

What part do plants play in your Christmas celebration? At Blandy we emphasize the use of natural materials in making Christmas decorations. In decorating your home, you should, of course, use those things which appeal to you. But with such an abundance of natural beauty in the world around us, we think its kind of a shame to fill our homes with plastic and chrome.

We have many "Christmas Plants" at Blandy. For December 1977, our "Plant of the Month" will feature just one group of these special plants. We will be featuring the genus *Juniperus.*

The traditional Christmas tree for many families in the Shenandoah Valley is "Red Cedar." Undoubtedly, one of the reasons is its abundance. The early settlers brought the trees into their home at Christmas to brighten up what must have been rather dismal surroundings at times. It can be found growing wild almost anywhere. Despite an eradication program many years ago in many of the local counties, you can still find "Red Cedars" growing along fence rows and in abandoned pastures all over the area.

The eradication program came about when it was discovered that "Red Cedars" were an alternate host for Cedar-Apple Rust, a disease which can cause tremendous financial loses for apple producers. By eliminating one host plant-in this case the "Red Cedar"— you eliminate the disease. So it was decided the "Red Cedars" should be destroyed. Since then, we have developed effective fungicides to control the disease on apple trees, and the need to do away with th persistent "Red Cedars" no longer exists.

"Red Cedar" is one of those troublesome, common names. Last month's "Plant of the Month" at Blandy was Deodar Cedar. This was one of the true cedars belonging to the genus Cedrus. "Red Cedar" is not a cedar at all. It is *Juniperus virginiana.*

Plant Disease Reporter Etiology Of Decline Of English Boxwood

G. B. Montgomery, W. H. Wills, and R. C. Lambe

Vol. 61, No. 5 May 1977

Former Gradute Assistant, present address E. I. du Pont de nemours & Co., Inc., Wilmington, Delaware 19898; and Professor and Associate Professor, respectively, Department of Plant Pathology and Physiology, Virginia Polytechnic Institute and State University, Blacksburg 24061.

Contribution No. 339, Department of Plant Pathology and Physiology, Virginia Polytechnic Institute and State University. Portion of a dissertation submitted to the Gradute School, Virginia Polytechnic Institute and State University.

ABSTRACT

English boxwood decline is increasing in severity and incidence in northern Virginia and the Shenandoah Valley. *Phytophthora* was not associated with the present decline but *Paecilomyces buxi* and *Fusarium oxysporum* were consistently isolated from healthy and declining plants. Plant-parasitic nematodes, especially *Pratylenchus* sp. and *Melicotylenchus* sp., were recovered from the roots of healthy and declining English boxwood, but field populations did not appear to be large enough to explain the cause of the present decline. There was no correlation found between disease incidence and soil pH and soil fertility in several locations. A complex of factors appears to be associated with this disease.

Plant Dis. Reptr. 61: 404-408.

The etiology of many boxwood diseases has not been adequately defined. A notable exception has been root rot and blight caused by *Phytophthora parasitica* Dastur (*P. nicotianae* var. *parasitica* (Dastur) Waterhouse) (2, 7). On the other hand, boxwood decline has been associated with defective soil drainage, insects and nematodes (1, 18), cold injury (15), and excessive rainfall (4). Periods of decline have also been associated with preceding years of drought (11, 18). Fungi assumed to be weakly pathogenic have been associated with declining and dead plants (1, 5, 18). One of the principal fungi found with declining plants has been *Paecilomyces buxi* (Link ex. Fr.) Bezerra (10), but its significance as a primary pathogen has not been unequivocally established (8). One destructive phase of boxwood decline is not really apparent and thus has gone relatively unnoticed. Uprooting of declining plants has revealed a severe deterioration of the root system before foliar symptom development (12). *P. buxi* and *Fusarium oxysporum* Snyd. & Hans. have been consistently associated with these deteriorating root systems.

When this research was begun in 1972 little was known of the etiology of any root rot of boxwood except that caused by *Phytophthora parasitica* (2, 7). It had become apparent that English boxwood was declining in northern Virginia and in most cases the decline could not be attributed to any species of *Phytophthora* (8). During the present epiphytotic, it has been noted consistently that symptoms of decline have been limited to English boxwood (*Buxus sempervirens* cv. *suffruticosa*). American boxwood, *B. sempervirens*, is unaffected by this disease, in fact, it thrives in the same gardens and nurseries in which severe losses of English boxwood have occurred (10).

The objectives of the present study were: 1) to determine the rate of boxwood decline in Virginia; 2) to describe more completely the symptoms of the decline; and 3) to identify microorganisms and edaphic factors associated with declining plants.

MATERIALS AND METHODS

A private English boxwood nursery in Loudoun County, Virginia was made available by the owner for a comprehensive field evaluation of disease development. Each of 255 plants was rated on a disease scale of 0-5 based on the color of foliage. The ratings are described as follows:

0 — apparently healthy plants with all foliage green
1 — green leaves but with scattered portions of the plant showing light chlorosis
2 — greater than 75% of green foliage remaining
3 — 25-75% green foliage
4 — 1-25% green foliage
5 — no green foliage

The nursery was evaluated periodically for 27 months.

Twenty-four soil samples from declining plants in the nursery were analyzed by the Soils Testing Laboratory, VPI & SU, for the following: soil pH, dilute HCl-H2SO4 extractable Ca, Mg, P, and K; and soluble salts. Forty-six similar analyses were made from six other locations in Virginia.

Diseased plants rated into categories 0-4 were selected at random at the nursery and cultured for fungi. Roots on four sides of preselected plants were

dug with a trowel, the soil shaken loose, then placed in polyethylene bags, and stored for 48 hours at 4°C. All root material was washed in tap water for 5 minutes, cut into 5-mm lengths, surface sterilized for 2 minutes in 0.5% NaOCl solution, and rinsed in two washes of sterile distilled water. Sections were placed on acidified potato-dextrose agar (APDA), antibiotic-amended cornmeal agar (6) and a penta-chloronitrobenzene (PCNB)-amended medium (14). Serial dilutions of soil samples were made of 10^{-4} and 10^{-5} in sterile distilled water. One ml of each solution was poured onto hardened plates of rose bengal-streptomycin sulfate agar (RBSS) (17).

Six plants each of grades 0-3 were selected at random at the Loudoun County nursery to determine population levels of parasitic nematodes. Soil samples were obtained by pushing a soil probe to a depth of 20 cm at an angle at which the end of the probe was beneath the center of the plant. All samples were refrigerated at 4°C until analyzed. Analysis was conducted no later than 7 days after returning from the field. Nematodes were separated by the sugar-flotation technique (13). Samples were obtained from the root zones of the identical plants on four different dates.

RESULTS

The rate of decline of English boxwood in the Loudoun County nursery was determined by computing a Disease Severity Index (DSI) expressed as the ratio of actual disease ratings to the highest possible rating for the entire plot. Numbers of plants in each rating group and the DSI are shown in Table 1.

Foliar symptoms were noted and a distinct syndrome was observed. Healthy English boxwood plants were normally characterized by a dark green foliage luster. Early phases of chlorosis were manifested by a metallic gray leaf color which in cold weather appeared red-bronze. Wilting often appeared rather suddenly. The lamina of the bronzed leaves collapsed and the veins became readily noticeable. After death the leaves became straw-yellow. Leaves later turned brown and the edges exhibited a tendency to fold inward toward the adaxial side. Stem cankers were associated with declining plants. Discontinuous dark brown to black discoloration below the bark was commonly observed at various positions on stems bearing wilted leaves, but these discolored areas only rarely yielded *P. buxi* when cultured for fungi, except at the soil level. Discoloration below the bark on stems with wilting leaves is of diagnostic value, even when no pathogen can be isolated from such lesions.

Field observations indicate that deeper portions of the root system deteriorate initially and the root rot then progresses in an upward direction; roots nearest the soil surface survive the longest time. By the time foliar symptoms are observed, the root system has been reduced at least 50%.

Table 1. Date or rating, percentage of English boxwood in each disease category in a total of 255 plants, and disease severity indices (DSI) for the Loudoun County nursery plot.

Table 2. Percentage isolation of fungi on acidified potato-dextrose agar (APDA) from roots of three declining English boxwood plants in the Loudoun County nursery in 1974.

Organism	Disease rating	Percent isolation
Paecilomyces buxi	3	23.4
	3	2.1
	2	7.1
Fusarium solani	3	6.4
	3	2.1
	2	2.3
Fusarium oxysporum	3	8.5
	3	10.6
	2	18.6
Fusarium roseum	3	17.0
	3	0.0
	2	11.6
Gliomastix sp.	3	8.5
	3	48.9
	2	32.6
Cephalosporium sp.	3	2.1
	3	4.3
	2	2.3
Curvularia sp.	3	0.0
	3	2.1
	2	2.3
Phoma sp.	3	0.0
	3	0.0
	2	7.1

Table 3. Percentage frequency of occurrence, total numbers, average number per plant, and maximum numbers of nematode species associated with English boxwood at the Loudoun County nursery.

There were no consistent differences among soil samples from around healthy and diseased plants for soil pH, which ranged from pH 5.1 to 5.9, and for dilute HCl-H_2SO_4 extractable Ca, Mg, P, and K in the Loudoun County nursery. Differences in soluble salts were not correlated with disease ratings, and were not at levels at which root damage would be expected. Soluble salts and pH values higher than those recorded at the Loudoun County location were noted from other areas of Virginia but no correlation with disease severity was apparent. English boxwood decline was as severe in those locations as in Loudoun County. This would suggest that the soil factors examined in this study are not the major factors in decline of English boxwood.

Paesilomyces buxi was isolated frequently from discolored root and basal stem tissue when placed in moist chambers. This fungus was isolated from plants collected in Loudoun, Fauquier, Clark, Orange, Rockbridge, Shenandoah, Halifax, and James City counties in Virginia. *Fusarium oxysporum* and *F. solani* were also isolated consistently from declining plants with *F. oxysporum* being the most commonly isolated of the two. Several other fungi with pathogenic potential were isolated from roots of declining plants. These results are summarized in Table 2.

Paecilomyces buxi was only occasionally isolated from soil samples taken from healthy and declining plants apparently due to its slow *in vitro* growth rate. The principal organisms recovered from soil included *Trichoderma* sp., *Fusarium lateritium, F. oxysporum, Penicillium* sp., *Cephalosporium* sp. and *Aspergilus* sp.

Parasitic nematodes, including *Pratylenchus* sp. (meadow), *Tylenchorhynchus* sp. (stunt), *Helicotylenchus* sp. (spiral), *Macroposthonia* sp. (ring), *Hopolaimus* sp. (lance), *Trichodorus* sp. (stubby root), and *Tylenchus* sp. were found in the root zones of healthy and declining English boxwood (Table 3). Meadow and spiralnematodes were found on 91% and 85%, respectively, of all plants sampled on the various sampling dates. The significance of the nematode populations in the disease etiology is unknown, therefore no conclusive statement concerning their role in the disease can be made. The recovery of high populations of parasitic nematodes associated with English boxwood, however, suggests a possible role in plant decline.

DISCUSSION

English boxwood decline in the early 1970's was originally limited to a relatively small area of northern and western Virginia but is now becoming epiphytotic throughtout the State. Decline has progressed slowly but steadily in other areas of the State. Perhaps this difference exists because English boxwood has been more intensively cultivated in these northern and western areas than in other areas of the State.

Foliar symptoms, as described, were the same throughout the different affected areas. Basal stem browning is generally associated with plants in all the geographic areas of decline.

Soil factors examined do not appear to be correlated with decline of English boxwood. Because declining plants are found in both acid and alkaline soils of Virginia, soil pH does not appear to influence the onset of plant decline. Neither soluble salts nor major mineral elements appear to be a factor in the present epiphytotic of decline.

The results of the isolations from roots demonstrate that *Paecilomyces buxi* is consistently associated with the roots of declining plants in Virginia. This fungus was formerly classified as *Verticillium buxi* (Link) Sacc. and has been commonly confused with *Volutella buxi* (Corda) Berk. (3). It grows very slowly on APDA and is usually overrun by other fungi in isolation attempts. It can be isolated readily, however, from surface-sterilized, diseased roots in moist chambers after a few days' incubation.

Although nematodes have been postulated as a cause of decline of various forms of boxwood, populations necessary to induce decline under field conditions have not been defined. Results show that *Pratylenchus* spp. and *Helicotylenchus* spp. are the two most common nematodes associated with boxwood plants. The root syndrome reported for damage by the meadow nematode (16), however, has not been observed in any decline locality. Therefore, nematodes are probably not the primary cause of the present English boxwood decline epiphytotic. It is possible that nematodes do play a role, as injury to roots does occur during feeding, thereby providing access for infection by otherwise saprophytic or weakly pathogenic organisms.

Results of these studies demonstrate that English boxwood decline is spreading but no single pathogen can be uniformerly associated with the disease. *P. buxi,* however, is consistently found on diseased roots and should be considered at least as a facultative pathogen which is probably favored by a weakened plant. Inoculation experiments with *P. buxi* are in progress.

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THE AMERICAN BOXWOOD SOCIETY

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